

**DETERMINANTS OF USING GOOD SPANISH PRACTICES IN THE FIELD OF IMPLEMENTATION
OPEN INNOVATION BY POLISH TEXTILE AND CLOTHING COMPANIES**

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Abstract

The article presents a comparative analysis of the innovation support system in Poland and Spain and references the innovation issues of clothing and textile manufacture sector in Poland. A list of recommendations for clothing and textile companies from the Łódź region was drawn up based on the Spanish experience and the idea of Open Innovation. This article analyzes the thesis that open innovation, social entrepreneurship, incentives for creativity and interdisciplinarity are far more important for economic success than capital resources or natural resources.

Key words

innovation, textile and clothing industry, Spanish economy, open innovation

1. Introduction

Innovations are the tools that entrepreneurs use to create the opportunity to start a new business or to provide new services. This means that innovation is more a social and economic concept than a technical one.

An innovative society is one that can create new values in the social, economic, and technological spheres. Innovations are therefore based on innovative solutions designed to effectively meet diverse social needs and create new, synergistic collaborative relationships. Regardless of the area in which innovation is created, it is always at the end of this process that one gains an economic advantage. However, the current transformations in the scale of countries or economic blocs are no longer the simple sum of active, innovative activities in an isolated country, region, scientific institute, or protected enterprise. The world has now opened in terms of information and communication. Distance is being mitigated as technological, logistic and educational processes have become standardized [2].

The basic premise of being a leader of innovation and actively developing socio-economic progress on a global scale, but also for effective partner engagement and participation in development processes, is to create conditions for building an innovative society and a knowledge-based economy. The emergence and use of innovation is accompanied by various interactions between participants. In these processes, knowledge networks and co-operative relationships are built, and inter-sectoral and international cooperation is established. The easier the flow of knowledge, and the higher the trust and openness of society, the easier it is for creative and prolific attitudes that are conducive to innovation.

The countries leading in innovation rankings from the European Union are primarily Germany and those in Scandinavia. In those countries, the sources of high innovation rates are not only seen in the systemic determinants favorable to the development of science and research, but also in a broader public-private co-operation in which social capital is a more important determinant [3].

2. Innovation and the R&D sector in Poland compared to Spain and the European Union

The Polish economy in terms of innovation occupies one of the last places among EU countries; a lower level of innovation in 2013 was recorded only by Latvia, Romania and Bulgaria. Fig. 1 shows the ranking of the European innovation level, which was created as a result of the analysis of eight thematic areas (Innovation Dimensions) and 25 specific indicators. The analysis assessed the potential of human capital, the openness of the research system, the financing of innovation, company interest in innovations, financing from company funds, entrepreneurship, the intellectual potential of the economic sector, inventiveness, and the measurable economic effects of innovation.

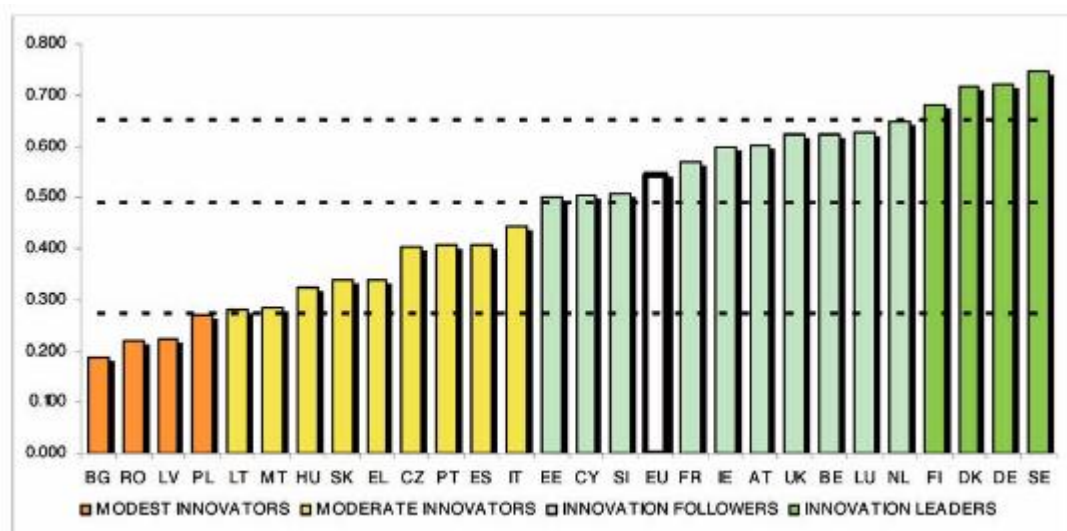


Fig. 1: Innovation in the European Union in 2013

Source: [4]

Poland is in the group of "Modest Innovators", while Spain is in the group of "Moderate Innovators". Germany and Scandinavian countries like Sweden, Denmark, and Finland are ahead in the rankings.

As shown in Table 1, the growth rate of innovation in Poland is alarmingly low. In the period between 2008 and 2012 it was 0.4%, the worst result in the EU, with the average for the group of Simple Innovators being 1.7%.

Table 1: Growth of innovativeness in EU countries in the period 2008-2012

Group	Growth rate 2008-2012	Growth leaders	Moderate growers	Slow growers
Innovation leaders	1.8%	Denmark (DK 2.7%)	Finland (FI 1.9%) Germany (DE 1.8%)	Sweden (SE 0.6%)
Innovation followers	1.9%	Estonia (EE 7.1%) Slovenia (SI 4.1%)	Netherlands (NL 2.7%) France (FR 1.8%) United Kingdom (UK 1.2%) Belgium (BE 1.1%) Luxembourg (LU 0.7%) Austria (AT 0.7%) Ireland (IE 0.7%)	Cyprus (CY -1.7%)
Moderate innovators	2.1%	Lithuania (LT 5.0%)	Malta (MT 3.3%) Slovakia (SK 3.3%) Italy (IT 2.7%) Czech Republic (CZ 2.6%) Portugal (PT 1.7%) Hungary (HU 1.4%) Spain (ES 0.9%)	Greece (GR -1.7%)
Modest innovators	1.7%	Latvia (LV 4.4%)	Romania (RO 1.2%) Bulgaria (BG 0.6%)	Poland (PL 0.4%)

Source: [4]

Equally poor is the evaluation of the Polish R&D system. In terms of openness and attractiveness, right before Latvia and Romania, Poland takes the worst position among EU countries. It is worth noting that the Spanish research system was rated above the EU average.

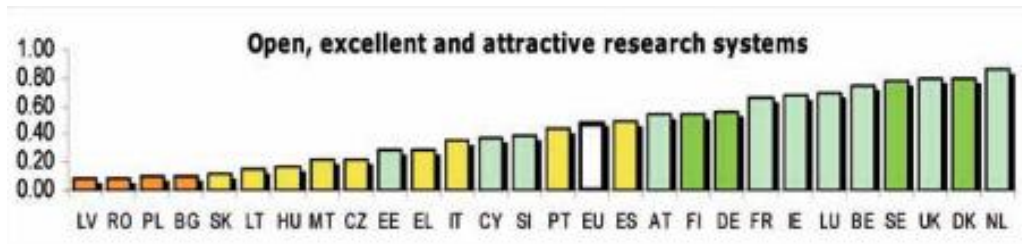


Fig. 2: Ranking of research systems of European Union countries in 2013
Source: [4]

Poland is equally disadvantageous against the European Union in terms of inventiveness and inventors. As the next EU statistics show, the country occupies the second-to-last position.

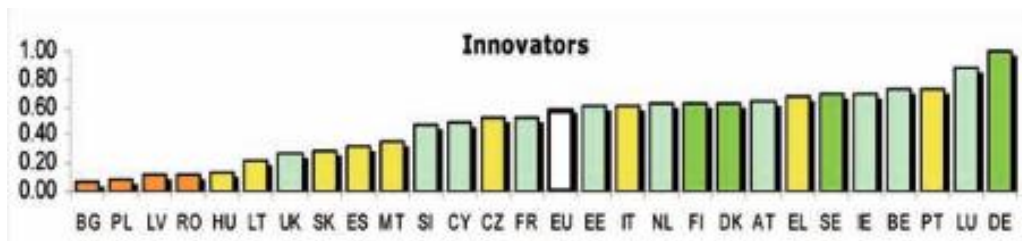


Fig. 3: Ranking of EU countries in terms of inventions and inventors in 2013 Source: [4]

One of the key conditions for the development of innovation is structural capital, especially in the form of intellectual potential, mainly concentrated in the research and development (R&D) sector. Structural capital is most often represented by universities, research institutes, and individual researchers. Human resources in science and technology are defined as persons who have acquired a higher education or are employed in science or in technical industries where high qualification and innovative potential (HRST) are required [5]. The HRST group includes experts in the sciences like physics and mathematics, engineering, environmental and medical sciences, as well as in social sciences.

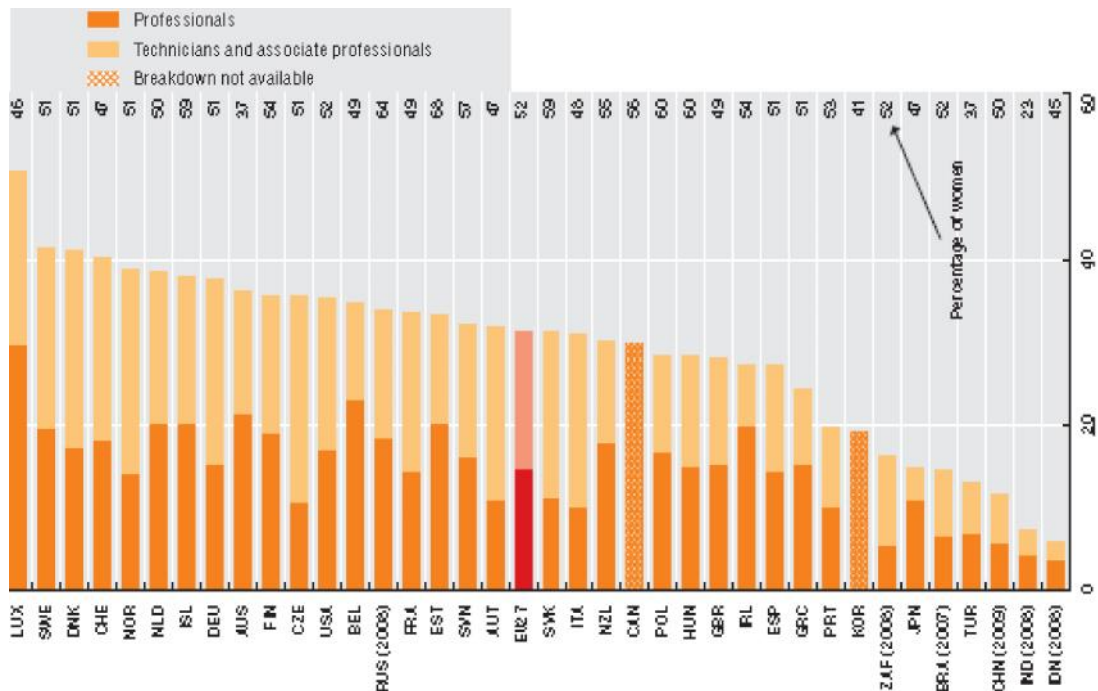


Fig. 4: Share of HRST experts in selected countries in total employment in 2010
Source: [4]

The share of HRST experts in the national labor market is among the highest among the EU Member States in Germany and Scandinavian countries (Sweden, Denmark, and Finland). At the same time, innovation analyses expressed by the number of patent applications confirm the relationship between the amount of social and technological innovation and the productivity of structural capital and human capital. It is worthwhile to note another relationship between the ability to cooperate in science and innovation at the level of social capital in the R&D sector and the level of innovation. Researchers in Sweden, Denmark, Finland, Belgium and Austria are eagerly and frequently undertaking international cooperation on publications and inventions. The situation in Poland is interesting, but it is clear from the chart below that Polish scientists and researchers participate in international research and copyright teams. However, more often than scientists from most EU countries, they are co-authors of inventions, and less often than most EU countries, co-authors of publications.

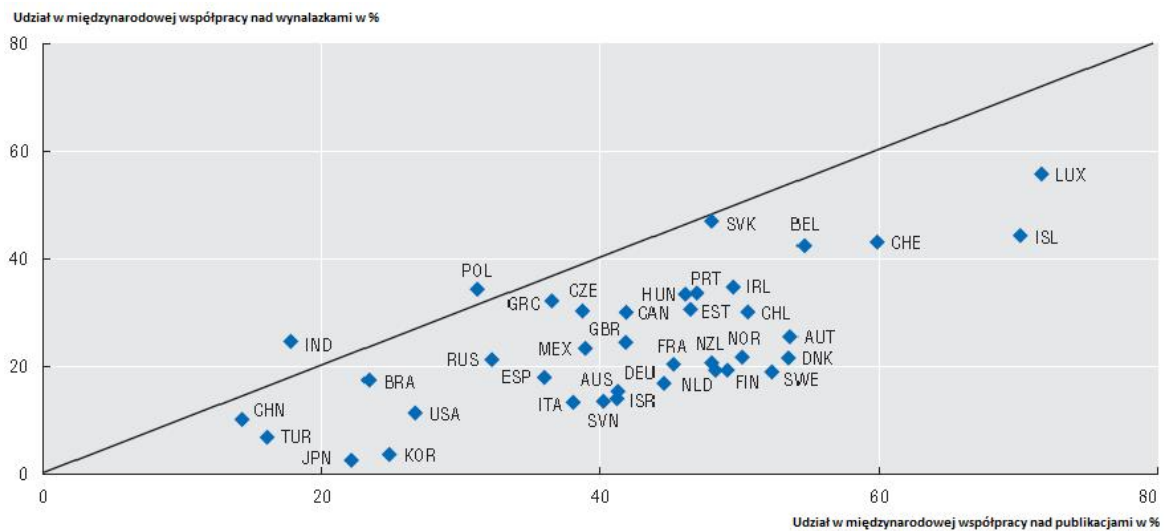


Fig. 5: International cooperation in science and innovation in the period 2007-2009
Co-authorship and co-ownership as a percentage of scientific publications and patent applications
Source: [6]

One of the most important factors characterizing the capacity of the national education system to create innovation is the number of doctorates obtained. Compared to the OECD countries, Poland and Spain are sluggish: they take the last places in the ranking. Poland is the only country covered by the study where the number of doctorates in 2009 did not increase compared to 2000 and, in fact, slightly decreased. At the same time, both Poland and Spain occupy top positions in statistics, describing the level of education and indicators of employment of PhD holders in the economy.

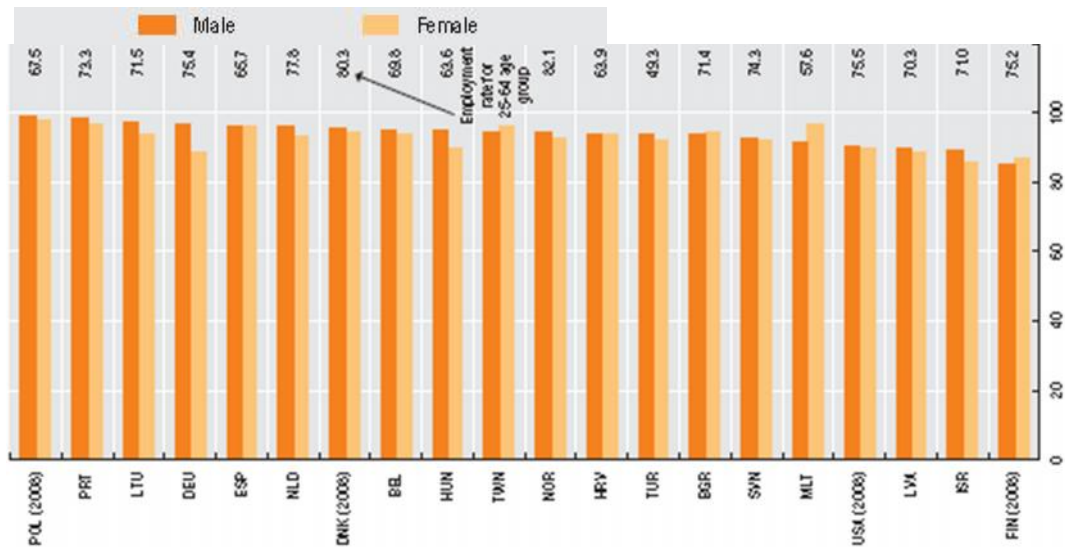


Fig. 6: The employment rate of persons with a doctoral degree by sex in selected countries in 2009 as the percentage of total doctorate titles Source: [4]

Fig. 6 shows that PhD holders in all OECD countries surveyed are almost 100% active in the labor market. Poland takes 1st place in this ranking. This is great news for innovation because PhD researchers are primarily young people and often the most creative social group capable of dynamizing various areas of socio-economic life.

3. Innovation and the textiles and clothing sector of Poland and Spain

The most rapidly developing innovative economies are based less on natural resources and material resources than they were in the 20th century. Instead, they are based on high-quality social capital, information and telecommunications technologies, and international cooperation. Most importantly, the introduction of innovative products and services into the economic practice resulting from the work of research institutes, universities and development centers now characterizes innovative economies [7]. The Polish socio-economic system is characterized by unfavorable fragmentation and sectoral polarization. This also applies to the links between research and development and entrepreneurship. Sociologists call this a "molecular system of socio-economic development" [8].

As shown in Figures 7 and 8, in 2010 around 55% of innovations were created internally, 39% of companies implemented innovations resulting from the work of other companies, 2% to 6% of innovations were provided by foreign institutions, and 1% by scientific institutions [9]. The above statistics mean that 97% of Polish innovations are created in enterprises, and networks of pro-innovation connections function relatively well between enterprises, less so between economic entities and other domestic and foreign institutions [9].

- głównie samo przedsiębiorstwo
- przedsiębiorstwo we współpracy z instytucjami krajowymi
- przedsiębiorstwo we współpracy z instytucjami zagranicznymi
- głównie krajowe instytucje naukowe
- głównie instytucje zagraniczne



Rys.7: Product innovations by place of origin in 2010
Source: own study based on [9]

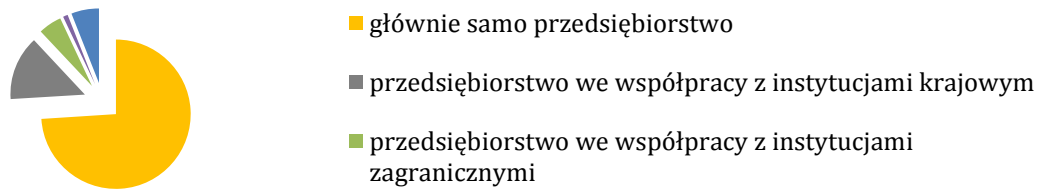


Fig. 8: Process innovations by place of origin in 2010 *Source: own study based on [9]*

Among companies that develop and implement innovative products and processes, companies producing and supplying gas lead the way. However, like most of the remaining Polish industrial enterprises, power companies have been working on innovative solutions without substantial cooperation with external entities, not the involvement of the science sector. Polish companies rarely conduct research and development activities. Only 33% of Polish industrial companies defined as innovative conducted internal R&D activities, which gave Poland 22nd place in the list of selected European countries. In Finland, meanwhile, this indicator amounted to 81%. R&D claims only 1% of small businesses, and the remaining 3% do so only if necessary [9].

According to the statistics of GUS [Main Statistical Office] for 2012, 13.6% of textile enterprises and 3.7% of clothing companies carried out innovative activity. The structure of innovation inputs is shown in Figure 9.

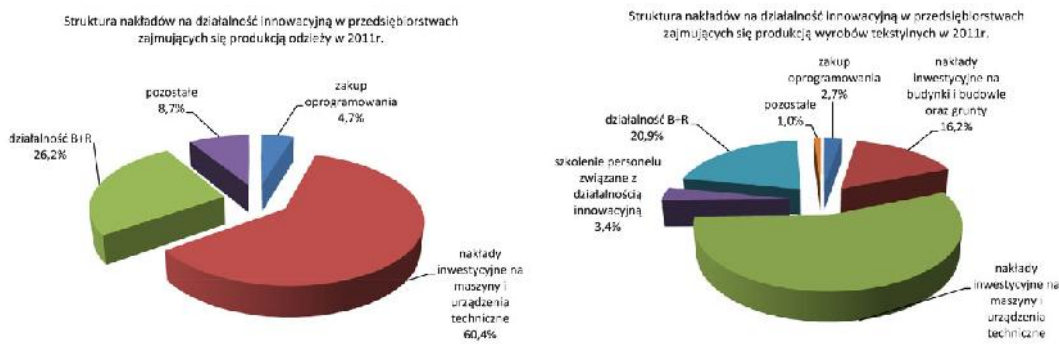


Fig. 9: The structure of expenditures on innovation activities of textile and clothing enterprises in 2011

Source: [10]

For textiles and clothing, which are low- and medium-tech sectors, incremental innovations and the acquisition of innovations created elsewhere are characteristic. For this reason, innovative activity often focuses on productivity, product diversification, and marketing. Small and medium textile companies are generally narrowly specialized and are limited to a small market. This means that the role of effective interactions with other companies and public R&D research institutions, knowledge exchange and, potentially, commercialization and marketing activities are enhanced. The research on the sector of small and medium textile and clothing companies most often shows that according to management staff, the determinant of innovation activity is financial considerations. The sector often suffers from a lack of internal resources to enable innovative projects and, in comparison with larger companies, encounters much greater difficulties in the acquisition of external financing. From non-financial barriers for conducting innovation in the textile and clothing industry, uncertain demand for innovation, a market dominated by global companies, difficulties in finding partners for cooperation, and a lack of or insufficient knowledge of other areas than the core business area are often indicated. The problem of Polish textile companies is a low internal ability to create new products, technologies or organizational methods. There is also a lack of ability to absorb and apply knowledge produced outside the companies. Cooperation between Polish companies and the scientific community is hampered by many barriers to innovation that exist both on the part of enterprises and R&D institutions.

Comparing the situation of Polish and Spanish textile companies, one can say that an important aspect of innovation in both countries is the fact that they are more complex than simply adopting new technologies. In many

cases, innovative activities in the textiles and clothing sector, in the low to medium technology sectors, involve the introduction of high technology and high technology products from other economic sectors, such as the adaptation of electronic systems and advanced chemistry. In addition, both in Poland and in Spain, there is a tendency to build cooperative links, develop networks, clusters and interdisciplinary and inter-sectoral links.

The structure of the textile industry in Spain, textile specialization, and main customers is shown in Figure 10. It follows that the most important textile customer in Spain is the car industry, and the second is equipment for homes and public buildings. Construction, packaging, sports and health care are the most important customers.

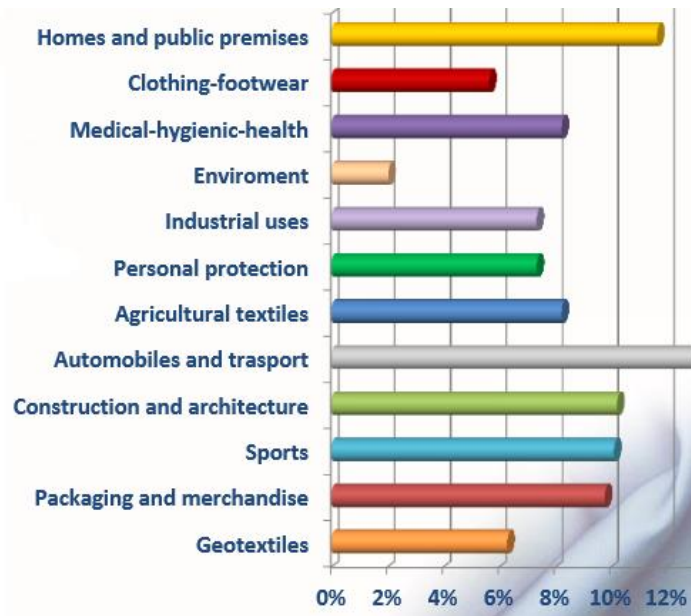


Fig. 10: Specialization of the textile industry in Spain and its main customers
Source: [11]

4. Recommendations for clothing and textile companies from the Łódź region

Despite the uneasy situation of the sector, there are chances and opportunities that textile and clothing companies can take to improve their innovation and competitiveness to increase profitability.

First, it is worth trying to get a creative subcontractor into the network of transnational corporations that is reliable, timely, and affordable.

For many reasons, Polish small and medium textile companies are not able to keep up with global textile networks and the price competition from Chinese or Indian suppliers. At the same time, as a company well-versed in the local, national, and central European textiles market, they can create an interesting partner, agent, and subcontractor for a transnational corporation. However, in order not to rely on the directives of a stronger partner, it would have to offer a unique added value, attractive from the standpoint of the offer or the market.

Second, thanks to the support system for small- and medium-sized enterprises, including those based on family-owned capital, it will be possible to develop niche, narrowly specialized products and services.

The forthcoming EU 2014-2020 financial perspective will enable textile and clothing companies from SMEs to apply for subsidies on preferential terms. Major economic initiatives will be supported based on innovative solutions that are interdisciplinary and implemented in industrial-scientific partnerships. All initiatives support social inclusion, such as those involving difficult social groups outside of the labor market, and trigger development potential in marginalized areas.

Third, there is an opportunity for Polish textile companies to develop low-tech services connected to production activities.

The development of specialized services related to the production and trade of textiles, such as textile refining, retrofitting of textiles into electronic sensors, and imprinting electronics or photovoltaic cells are interesting development opportunities for the textile industry. Marketing and organizational innovations that use broadly understood information, telecommunications and logistics technologies are different areas of opportunity for improving competitiveness.

Fourth, networking and co-operation, clusters should operate with a clear focus on specific tasks.

Several cluster initiatives dedicated to the textile industry have been set up in Poland. For the development of small and medium-sized enterprises, however, it is not so important to establish a structure or a legal entity, but to define areas, tasks, and themes for joint implementation. The basic requirement for successful cooperation is to build a consortium of such partners, each of which would bring unique, complementary skills, competences, and resources.

5. Conclusion

Among the persisting barriers hindering entrepreneurs, especially small and medium ones, the introduction of innovative solutions should address:

- High costs of developing and implementing innovations that exceed the capital capacity of most companies, while hindering access to external funding;
- Poorly developed infrastructure for commercialization of R&D results;
- High risks, both financial and legal, related to investing in new technologies and creating new companies based on these technologies.

There is an obvious connection between intellectual capital, social capital, and innovation. While it is well understood in the social consciousness that technological innovation, including new products, patents, and utility models are important and testify to the level of civilization of a country, there is no such knowledge in the case of social innovation.

In Poland, it is necessary to build interdisciplinary, cross-sectoral and intergenerational research spaces, which primarily require the integration of available intellectual and infrastructural potential. This applies, in particular, to the clothing and textile industries, as well as sectors with low innovative potential.

Comparing the conditions for the development of innovations in Poland and Spain and analyzing textile industries in both countries, it can be concluded that despite the very similar systemic pro-innovation conditions in both countries, the development of the textile sector in Spain is significantly higher. However, the forthcoming EU financial outlook for 2014-2020 creates a real chance to stimulate and speed up the development of the textile sector in Łódź Province. Using the Spanish experience, Polish textile companies should offer Europe an innovative, original and attractive range of technologically advanced products and services.

Bibliography

- [1] Drucker, P. F. "Przedsiębiorczość i innowacje." PWE, Warsaw 1992
- [2] Rybiński, K. "Globalizacja w trzech odsłonach." Difin, Warsaw 2007
- [3] Innovation Union Scoreboard 2011, The Enterprise & Industry online magazine, http://ec.europa.eu/enterprise/e_i/index_en.htm
- [4] European Commission, Innovation Union Scoreboard 2013, Brussels 2013
- [5] OECD, Canberra Manual, "The Measurement of Human Resources Devoted to Science and Technology", Canberra 1995
- [6] OECD, Patent Database, Maj 2011; OECD and SClmago Research Group (CSIC) (forthcoming), Report on Scientific Production, June 2011.
- [7] Kocharńska E. [ed.], Europejski paradygmat innowacji technologicznych, CBI Pro-Akademia and the Polish Academy of Sciences 2012

[8] Czapiński, J. "Molekularny rozwój Polski. in: J. Szomburg (ed.)." Modernizacja Polski. Kody kulturowe i mity, pp. 95-102, 2008

[9] PARP, Innowacyjność, 2010

[10] Rynek mody 4/2012

[11] Ateval, Innovation Procurement for the benefit of industries, SMEs & stronger public services, Kraków, 2013