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Areas for Improving the Innovation Performance of the Textile Industry in Russia

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Abstract

This paper approaches the situation of the textile sector in Russia, shows its main challenges and presents possible solutions of how to increase the competitiveness of the industry by improving its innovative performance. The textile industry in Russia went through major changes after USSR dissolution in 1991, and its performance has been declining since then. In order for the Russian textile industry to increase its competitiveness, it has to improve its innovation performance. The methods for doing this in the textile industry are presented in the article. They are as follows: (1) switching to different from imported cotton types of raw materials, particularly flax and blended fibres, (2) using stains of better quality, (3) purchasing new production equipment which will allow to switch from mass production orientation to low-volume output, (4) creating joint ventures with foreign firms, leading to employment growth and quality increase, which can result in higher competitiveness of the textile industry in Russia.

Key words: Russia, textile industry, innovation, innovative performance.

Introduction

The innovation performance of an industry is determined not only by the innovative activity of a business sector, but also by the condition of the economy in the country. Innovation Union Scoreboard's report [1] shows that the innovation performance of Russia is at a relatively low level, remaining far behind the main innovators – South Korea, the United States and Japan, and has a performance lead just over Brazil and South Africa. The state of the textile industry in Russia is an example of the overall innovation level in the country. The situation in the textile industry changed drastically in 1991 after the USSR's dissolution. On the one hand, it blocked cheap material supplies from the former Central Asian republics, and on the other the industry went through a major change, as it was designed for the mass manufacturing of products of the same type. Consequently textile production output decreased from 8.5 mln m² in 1990 to 3.5 mln m² in 2011 [2]. Improving innovation performance is essential for the growth of output and productivity in the industry. Therefore innovative activities should be undertaken in order to improve textile industry performance in Russia.

The aim of this paper is to analyse innovation of the performance of the textile industry in Russia and to propose possible areas for its improvement. It presents the following: (1) the situation in the Russian textile and clothing industry

and the dynamics of its development in the last decades, (2) the key problems Russian textile manufacturers face, (3) the innovation performance of the country, and (4) recommendations for increasing the innovativeness of the textile industry in Russia.

The textile industry in Russia. Statistics and main characteristics

In order to analyse the textile and clothing industry in Russia, its segment within Russian light industry as a whole should be defined. The industry's characteristics can be described using an analysis of statistical data – share of spending on light industry goods and production dynamics in the industry.

Light industry in Russia can be described by the chart presented in *Figure 1*.

According to the latest data, light industry in Russia comprises 14 sub-industries with 29 thousand companies and 49 thousand individual entrepreneurs which employ 369 thousand workers. Many small and micro-companies operate in light industry, employing almost one third of all industrial workers [2].

Light industry products are one of the main articles of expenditure within the structure of consumer spending. In 2013 non-food products made up 37% of the overall spending, among which 5.5% was on clothes and linen, 2.5% - on

shoes, and 1% - on both knitwear and fur products (see *Table 1*).

Table 2 shows that production volumes decreased drastically at the beginning of the 1990-s due to economic reforms in the light industry. In 1990 textiles production volume was at the level of 8449 mln m², and by 1995 it had decreased to 1774 mln m² (almost a five-fold decrease). By the year 2000, the industry had partly recovered to a production volume of 2329 mln m², but later the growing trend stopped, showing only slight fluctuations. Although production volumes in 2010 reached the 3572 mln m² level, increasing to 3572 mln m², it was still almost 2.5 times less than the 1990 level.

Cotton textiles showed the largest volume of production among all types of textiles produced. In the years 1990 - 1995 their production volumes decreased 4.5 times. In the years 1995 - 2003 a slight increase in cotton production volumes was observed, which stopped in 2004 and began to decrease till 2011.

The wool, silk and flax textile production volumes decreased even more drastically. For example, the volume of wool textile production decreased 6.5 times on the basis of quantities in the years 1990 - 1995 and continued to shrink till it decreased 32 times. Flax production output decreased 4.5 times in the years 1990

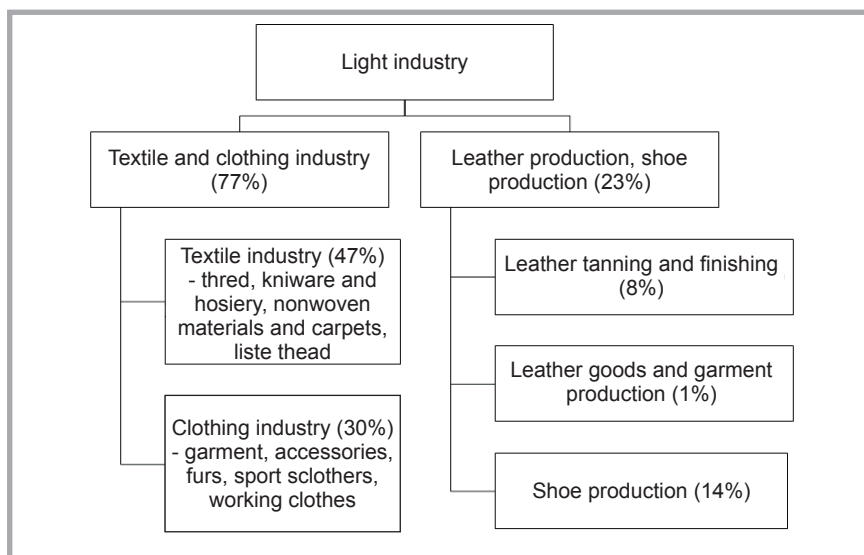


Figure 1. Structure of light industry in Russia based on [2].

Table 1. Non-food goods within the structure of consumer spending in %, based on source [3].

	2006	2007	2008	2009	2010	2011	2012	2013
Non-food products	33.74	35.13	35.99	37.37	36.25	35.57	36.88	37.12
Clothes and linen	5.19	5.27	5.13	5.55	5.48	5.59	5.55	5.46
Fur products	0.56	0.74	0.70	0.72	0.65	0.66	0.66	0.69
Knitwear	1.29	1.30	1.32	1.31	1.34	1.33	1.33	1.27
Leather, textile and combined shoes	2.52	2.55	2.52	2.53	2.54	2.56	2.50	2.36

- 1995 and continued to decrease up to 2009.

Decreasing production output was also observed within garment manufacturing. Production dynamics shows the same trends as in textile manufacturing – a sharp decrease in the years 1990 - 1995,

while further maintaining production output at the same level.

Challenges faced by the Russian textile industry

The specificity of production dynamics in the Russian textile industry can

Table 2. Production dynamics of light industry goods in the years 1990-2011 (on the basis of quantities). Own presentation based on source [2].

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Textiles - total, mln m ²	8449	1774	2329	2625	2783	2869	2690	2785	2804	2700	2485	2611	3355	3572
cotton	5624	1240	1822	2094	2264	2329	2149	2225	2222	2108	1915	1477	1542	1237
wool	466	72.2	54.6	56.5	47.9	44.6	36	30.3	29	28.7	23.9	18.1	15.8	14.4
silk	1051	198	178	176	141	145	139	126	136	141	114	91.3	52.5	47.7
flax	603	133	113	125	143	157	160	122	124	101	97.9	46.8	-	-
Carpets, mln m ²	43.5	12.9	9.2	5.4	5.8	5.4	13.5	13.6	32.2	32.1	30.2	23.9	22.9	20.6
Hosiery, mln items	872	288	291	282	297	274	242	282	325	338	319	298	-	-
Knitwear, mln items	770	108	121	130	132	131	122	116	114	111	119	120	135	132
Garments, mln items:													-	-
Coats	28.1	2.7	2.3	2.7	2.4	2.3	1.8	1.3	1.2	1	1.3	1.2	-	-
Jackets	33.9	7.3	5.7	7.2	8.6	7.2	7.2	7.5	8.4	6.7	6.2	4.3	-	-
Suits	28	5.4	4.6	5.2	5.3	5.9	5.8	6.6	7.1	6.3	5	4	-	-
Dresses	136	10.7	8.5	6.8	5	4.7	3.9	3.4	3.2	3.8	3.8	4	-	-
Trousers	54.4	7.9	14.8	16.1	15.3	20.7	16.2	16.2	17.9	15.8	16.2	13.3	-	-
Skirts	13.6	1.6	2.9	2.4	2.3	2.2	2.3	2.3	3	3.9	3	2.9	-	-
Blouses	11.6	2.1	3.8	4.1	4.2	3.5	3.2	2.6	2.1	2.1	2.3	2.3	-	-

be explained by the USSR's dissolution in 1991, which blocked cheap wool and cotton supplies from the former Central Asian republics. Consequently the industry went through major changes. Textile production decreased from 8.5 mln m² in 1990 to 3.5 mln m² in 2011. Leather garment production output decreased from 1249 mln to 41.6 mln dm² in 2011 [2]. The need of purchasing materials at standard prices caused textile price growth, hence it decreased industry competitiveness on the domestic market. Moreover the structural changes to the textile industry before 1991 were designed for the mass manufacturing of products of the same type. A decrease in domestic demand led to the under utilization of capacities and even to idle factories.

Another factor significantly influencing the competitiveness level of the textile industry in Russia is its poor qual-

ity. Its design, ergonomics and wear are worse than those of imported products. The quality of light industry items is deeply interconnected with supporting industries. Textile manufacturing requires quality input from the chemical industry, determining textile composition, its properties, colouring and stability. The accessories market is very important for ready-made textile garments (buttons, zips) [4], as it determines the final quality of the product, and therefore the level of demand. Currently those industries are recovering after a major breakdown similar to the textile industry, therefore the overall quality level in light industry is at a relatively low level.

Due to the situation in the industry, the only manufacturers which keep working relatively steadily are producers of mixed yarn and cotton textiles with chemical fibres. Usually these are

technical fabrics or fabrics for work clothing. The market for those fabrics is relatively small compared to the cotton market. The Russian cotton industry cannot compete with such actively developing cotton textile markets like in China, India, Pakistan, Turkey, Latin America, and the countries of Southeast Asia [5]. Consequently Russian textiles have seen progressively less demand on the international markets and on the domestic market as well.

Innovation performance of Russia

The annual Innovation Union Scoreboard report [1] provides the comparative research and innovation performance of the EU Member States and non-EU countries. It allows to analyse the innovation performance and dynamics in Russia, as well as the relative strengths and weaknesses of its innovation system. The Innovation Union Scoreboard (2014) measures innovation performance using an indicator called the Summary Innovation Index, which is based on the following three groups of indicators – *enablers*, *firm activities and outputs*. The *enablers* include the external drivers of innovation performance like “New doctorate graduates”, “International scientific co-publications” or “R&D expenditure in the public sector”. *Firm activities* show innovation efforts at the level of the firm, which include “R&D expenditure in the business sector”, “SMEs innovating in-house”, “public-private cooperation” or “community trademarks”. The last group of indicators, the *outputs*, shows the effects of firms’ innovation activities and includes “SMEs with product or process innovations”, “employment in knowledge-intensive activities”, “license and patent revenues from abroad” or “knowledge-intensive service exports”. Based on the indicators above, the innovation performance of Russia within a comparison of BRICS countries (Brazil, Russia, India, China), the EU countries and its other economic partners is reviewed.

Figure 2 shows the innovation performance of Russia among the countries analysed. The average performance is measured using a composite indicator based on the groups of indicators mentioned above, ranging from the lowest possible performance of 0 to a maximum possible performance of 1. The average performance reflects the performance

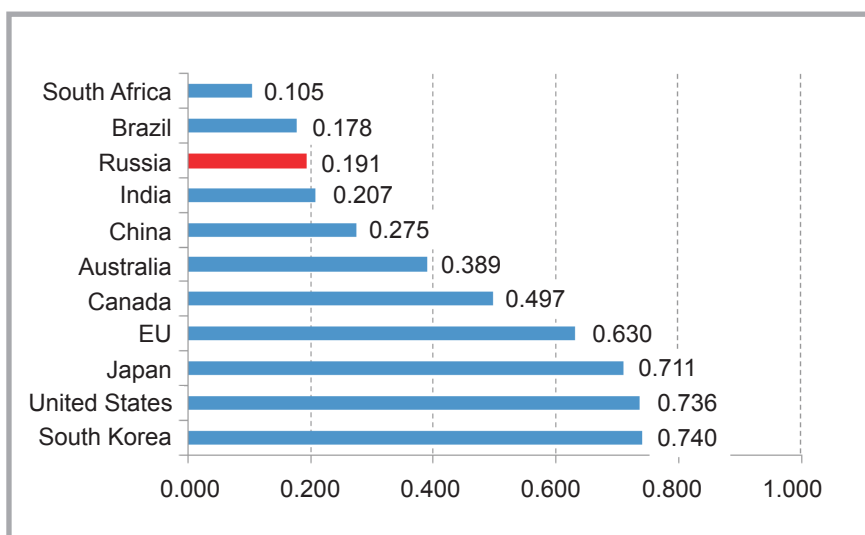


Figure 2. Global innovation performance. Based on source [1].

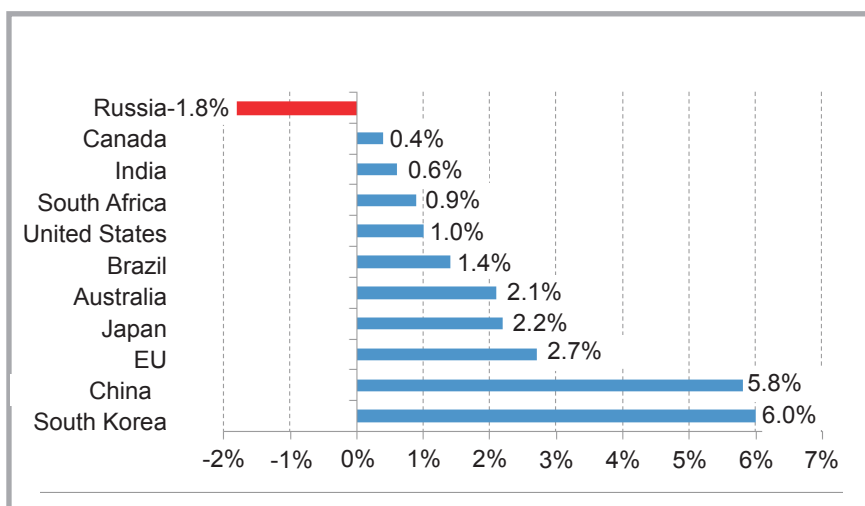


Figure 3. Global innovation growth rates. Based on source [1].

in 2010/2011 due to a lag in data availability. **Figure 1** shows that Russia has a performance lead over Brazil and South Africa. However, its innovation performance is at a relatively low level compared to the three top global innovators – South Korea, the United States and Japan. The report states that enterprises in these leading countries invest more in research and innovation as well as collaborative knowledge-creation between the public and private sectors.

Figure 3 shows the average annual growth rates of the innovation index calculated over an eight-year period (2006 - 2013). Russia is the only country which showed a decline in innovation rates over the period researched, where the innovation rates declined by 2%. A closer look at the Russian indicator value and its comparison to the EU27 indicators show the reasons for such an innovation gap.

Figure 4 shows Russia’s individual indicator scores calculated by dividing the Russian indicator value by that of the EU and multiplying by 100. It reveals that a 87% higher share of Russia’s population has completed tertiary education. However, Russia is performing worse than the EU for 10 indicators, in particular public-private co-publications, license and patent revenues from abroad, patent applications, international co-publications, most-cited publications and doctorate graduates.

The Russian report “Strategic research program of a technological platform “Textile and light industry” [6] states that the innovativeness of firms is restrained by the institutional environment characteristics.

The world economic crisis’ consequences decreased the level of R&D investments, therefore foreign textile and clothing companies started searching for markets with lower investment requirements for placing orders based on technological outsourcing. The demand for scientific and technical products is created mostly by the state, which is caused by the low innovational activity of firms and the lack of effectiveness of tax and legal instruments supporting scientific and innovative activity. Firms’ innovative activity has stayed at a low level. **Figure 5** shows that in 2010 only a 9.4% share of manufacturing firms introduced technological innovations, which is significantly lower than the same rate for Germany (73%),

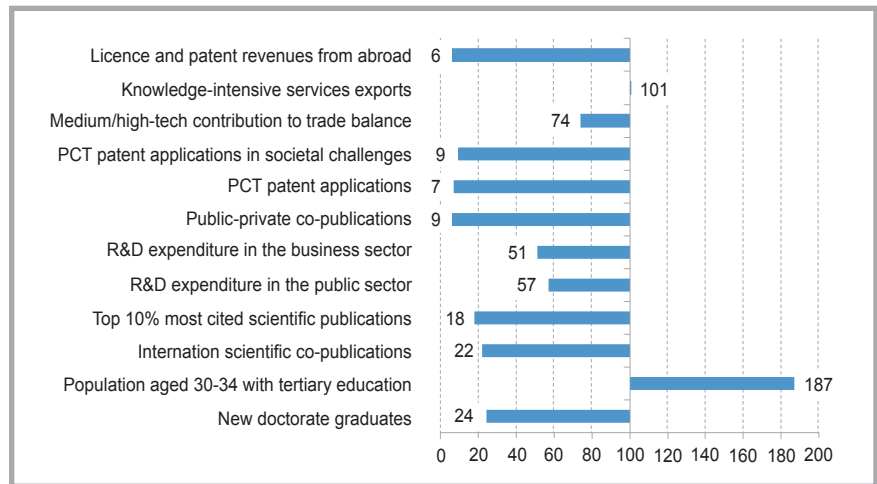


Figure 4. Innovation performance lead: Russia and the EU, based on source [1].

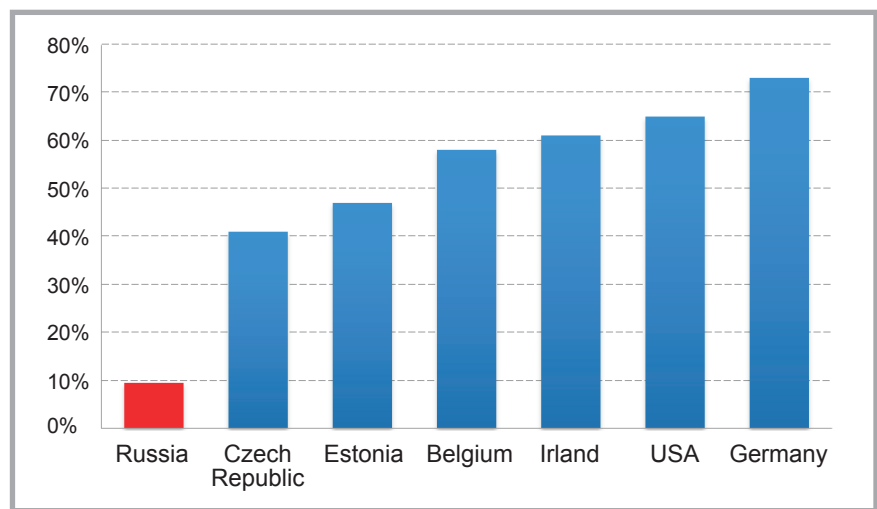


Figure 5. Manufacturers which developed and commercialised technological innovations in 2010, % of total, based on: [6].

US (65%), Ireland (61%), Belgium (58%), Estonia (47%) and Czech Republic (41%).

Innovativeness as the key to industry development

Increasing innovativeness is an important challenge that enterprises face all over the world. The ability of a firm to introduce innovations determines the scale of the advantage over the competition [7]. Therefore it is crucial to create optimal conditions inside and outside the firm, and to find and implement innovative solutions which correspond with current challenges in the firm or industry.

According to the definition of OECD/Eurostat presented in the Oslo Manual [8], innovation is the implementation of a new or significantly improved product (good or service), a process, a new mar-

keting method, or a new organisational method in business practices, workplace organisation or external relations. Four types of innovations are distinguished: product, process, marketing and organisational innovations. Taking into consideration the decline which the Russian textile industry has experienced in the last decades, new directions for increasing competitiveness should be developed by improving the innovativeness of the industry. This can be done by introducing different types of innovations.

A product innovation is the introduction of a good or service that is new or significantly improved. It includes improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics [8]. The proposed way to introduce product innovation and

thus increase the competitiveness of the textile industry in Russia is switching to different types of raw materials produced in the country, particularly flax and blended fibres, which will allow to save on imported cotton. However, the linen industry is currently in a complex situation. On one hand, Russia is one of the main producers of flax fibre in the world, but on the other, current methods of its cultivation and processing result in its low quality and lack of price-competitiveness compared to Ukraine, Belorussia, and especially to developed countries like France and Belgium [4]. The competitiveness of the Russian textile industry can also be increased by using stains of better quality. Currently this can be done mostly by importing. Thus increasing the quality of the textile industry requires reorganisation and an innovative approach in the supporting industries.

Process innovation is the implementation of a new or significantly improved production or delivery method, like changes in techniques, equipment and/or software. One of the possible directions for introducing process innovations is increasing the quality by purchasing new production equipment - machinery which will allow to switch from mass production orientation to low-volume output, which can dynamically respond to the market needs. Such purchases can be realised within multinational cooperation, which allows to attract foreign investments. However, the textile industry in Russia does not currently attract much FDI (Foreign Direct Investment), hence this way of increasing competitiveness can be very costly. Modern production equipment could decrease the unit costs of production and significantly increase the quality of production.

Organizational innovation is the implementation of a new organisational method in the firm's business practices, workplace organisation or external relations. Textile and clothing manufacturers can create joint ventures with foreign firms, upgrading production by purchasing machinery and technology from abroad. In this scenario Russia provides only manufacturing sites and a workforce, while using materials, machinery, and sewing technologies from abroad. Such products usually possess comparatively good quality, while their prices are lower than those of imported goods due to lower labour and transport costs. Consequently it can be competitive on the domestic

market compared to the cheap products from China, South-East Asia and Turkey [4]. The Russian government has to promote the Foreign Direct Investment in light industry and support joint venture creation. This can lead to an increase in employment in the country and in the quality the domestic production, which will result in higher competitiveness of the textile industry in Russia.

Marketing innovations involving significant changes in product design or packaging, product placement, product promotion and pricing should also be introduced in the Russian textile industry. New marketing methods of domestically manufactured textile promotion would increase domestic sales. A comprehensive package of measures including product, process, organizational and marketing innovations could improve the situation in the Russian textile industry.

Conclusions

The textile industry in Russia went through major changes after the USSR's dissolution in 1991 - cheap wool and cotton supplies from the former Central Asian republics were blocked, hence prices increased, and factories designed for mass manufacturing had to become more flexible. Consequently production volumes decreased almost 3 times in the years 1990 - 2011. Russian textiles have seen progressively less demand on the international markets and on the domestic market as well. In order for the Russian textile industry to increase its competitiveness, it has to improve its innovation performance.

A suggested product innovation is switching to different types of raw materials produced in the country, particularly flax and blended fibres, which will allow to save on imported cotton. The competitiveness of the Russian textile industry can also be increased by using stains of better quality. Purchasing new production equipment is a suggested process innovation for the textile industry. New machinery has to allow to switch from mass production orientation to low-volume output. A recommendation for organizational innovation is creating joint ventures with foreign firms. Promoting FDI in the textile industry can lead to an increase in employment and in the quality of domestic production, which can re-

sult in higher competitiveness of the textile industry in Russia.

There is no doubt that improving innovation performance is very important for the growth of output and productivity in the industry. However, undertaking innovative activities and improving textile industry performance in Russia could be challenging due to the innovation climate in the country.

References

- Hollanders H, Es-Sadki N. Innovation Union Scoreboard 2014 – Methodology report. Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT). http://ec.europa.eu/enterprise/policies/innovation/files/ius/ius-2014_en.pdf (accessed 27.07.2014).
- Radaev VV (ed). Key problems of the light industry development and ways of dealing with them: analytical report. Publishing house of Vizshaya Shkola Ekonomiki, Moscow 2013; 13: p. 343. http://www.hse.ru/data/2014/01/13/1340846877/analitika_2013.pdf (accessed 05.08.2014).
- Rosstat data. <http://www.gks.ru/> (accessed 05.08.2014).
- Textile industry state overview. Flax Industry. Cottonized flax. Regional expert analytical center "Perspektiva", 2002. <http://rea-centre.narod.ru/analiz/len-01.htm> (accessed 10.08.2014).
- Larin IU, Razumeev KE, Loginov VS. Ways for the textile industry in Russia to come out of crisis. *Delovie Vesti Jaroslavii* 2013. http://yartpp.ru/index.php?option=com_content&view=article&id=43224&Itemid=98&lang=ru (accessed 12.08.2014).
- Strategic research program of a Technological platform "Textile and light industry for the years 2013-2020", 2013; p.70. www.sptl.tatarstan.ru/rus/file/pub/pub_165329.docx (accessed 17.08.2014).
- Mikołajczyk B. Pomiar i ocena innowacyjności MSP. *Journal of Management and Finance* 2013; 11, 2, Part 2: 265-279.
- Oslo Manual. The Measurement of Scientific and Technological Activities. Guidelines for Collecting and Interpreting Technological Innovation Data. Third Edition, 2005, OECD/Eurostat, Paris.
- Hanzl D, Havlik P. Textiles in Central Eastern Europe and Russia: A comparative analysis in the European context. *Journal of Economics and Business* 2003; VI, 2: 63-88.

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