

Ewa Grandys

Technical University of Lodz  
 Institute of World Economy and Textile Marketing  
 ul. Zeromskiego 116, 90-543 Łódź, Poland  
 e-mail: ewa.grandys@poczta.onet.pl

# Barriers to the Development of Knowledge Absorption of the Polish Clothing Industry

## Abstract

*The Polish clothing industry will be able to gain competitive advantage in the European market by replacing labour intensive technologies with knowledge intensive solutions. However, this process will be possible, when many barriers stemming from the financial condition of many firms are lifted. Investment in new technology, modern machinery, recruitment of a high-skilled workforce and contracts for external research services require substantial financial outlays. A lack of working capital is the main barrier impeding the development of the Polish clothing industry.*

**Key words:** Polish clothing industry, knowledge absorption, development barriers, competitive advantage.

## Introduction

After a period of recession, the drop in the output of the Polish clothing industry has been clearly decelerating. This is a positive observation, because this industry continues to play an important role in Poland's economy. In 2005, it employed 171,400 people nationwide (5.9% of the total employment in industry) and had sales estimated at 8,310.8 million PLN. In this number, exported clothing accounted for 5,224.4 million PLN (62.9%) [10]. Radically improved transfer of knowledge between science and industry could even enhance the industry's position. It is, however, not quite certain how the present situation should be judged. Attempts aimed at finding out whether the limited transfer of knowledge was the cause or perhaps the effect of the present condition of the textile industry produce dubious answers. Nevertheless, it is obvious that the insufficient transfer of knowledge was behind the low competitiveness of Polish clothing manufacturers (with their excessive employment, obsolete machinery) that prevented them from accumulating resources necessary to absorb knowledge in the transition years after 1989.

Considering the above circumstances, the article will concentrate on identifying the main barriers limiting transfer of knowledge between science and industry and negatively affecting further industrial development.

## Barriers impeding knowledge transfer to Polish clothing manufacturers

Polish industry is characterised by a low level of innovation. The most re-

cent ranking ordered by the European Union placed Poland in the last position (25) [5]. Therefore, the causes should be sought, not only from the manufacturers' side. Investments in new technologies, modern machinery, recruitment of a highly skilled workforce and contracts for research services are obvious lines of action for every entrepreneur, but transformation of the clothing industry from labour intensive to knowledge intensive encounters many barriers. They can be divided into the following:

- external barriers that the manufacturers only partially control,
- internal barriers, which emerge inside enterprises.

The limited transfer of knowledge between science and industry has two main sources: low financial resources that clothing manufacturers have at their disposal and their borrowing problems. Considering the situation, not only the manufacturers, but also the State should undertake some countermeasures, because the State also suffers from the degradation of the clothing industry, as a result of lower budget revenues and job loss.

## External barriers to the financing of knowledge transfer

The main external barriers that undermine the financial condition of the domestic clothing industry (and thus necessitate the trimming of R+D funds) are diverse. This article names the barriers and briefly discusses their impacts.

## High labour costs

The cost of labour in Poland is determined by charges levied on wages by the legislature. Because the charges are excessive, they reduce manufacturers'

profitability and consequently diminish the amount of resources available for knowledge, etc. Even though labour costs paid by clothing producers in Poland are competitive compared to those incurred by many EU enterprises in this sector (Table 1), they are not competitive enough to allow Poland to rival against Asian countries.

Table 1, containing data on the extent of labour costs in EU clothing industries, shows that they range from 1.600 to 37.000 Euro per worker. Italy has higher labour costs than Poland, but at the same time a significantly larger number of jobs in this industry. This should be credited not only to the Italian design sector, but also to the policies pursued by the Italian government. As for the Polish clothing industry, its labour costs could be reduced by decisions made by the government, which, in turn, would help businesses to update their manufacturing technology (lower input of human labour needs to be emphasised) and promote broader use of the outsourcing of manufacturing processes.

#### **Shortage of qualified workers in some occupations**

According to data assembled by the Inter-Ministry Team for Labour Demand Forecasts, operating within the Government Centre for Strategic Studies (Międzyresortowy Zespół do Prognozowania Popytu na Pracę przy Rządowym Centrum Studiów Strategicznych), the demand for jobs in the textile industry

and in the clothing industry is expected to drop to the year 2010. This trend is demonstrated in Table 2. Despite the predicted fall in employment, a shortage of workers with specific qualifications was already reported at the end of 2004. The reasons were the improving economic situation and the changing expectations of employers who need a qualified workforce in their enterprises to absorb knowledge. So far, neither existing laws [11] nor the strong role of employers in vocational education and training has helped to formulate a consistent concept of education for textile trades. Changes taking place in the external environment should entail the development of training curricula for such trades, as well as appropriate modifications in the system of education, because enterprises can absorb knowledge when they have users ready to consume it.

#### **Non-representation of the textile and clothing sector**

In a civil society, industrial policy is formulated by representative bodies collaborating with the State. Employer organizations, chambers of commerce and other associations are present in Poland, but non-representation of the sector of industries discussed is observable. The present legal framework is a mixture of the right to autonomic management (economic self-government) and the right to associate (associations established under private law). Statutory establishment of economic self-governments endowed with broad powers and requiring obliga-

tory membership of the subjects of rights, such as law societies or medical associations, would strengthen the position of the textile and clothing sector and allow the creation of a representative body linking the economy and the government [7]. This approach would enable the accumulation of resources necessary to conduct expensive research supporting the clothing industry. Enterprises should lobby for the amendment of relevant laws.

#### **Unavailability of institutional solutions facilitating contacts between science and industry**

According to the existing legal framework, the effects of researchers' work are controlled by centres for technology transfer operating within tertiary education institutions. These institutions function under the public finance law, which prohibits the establishment of partnerships, while the tertiary education law allows it. Such an ambiguous legal situation makes procedures much longer, because the authorities of a tertiary institution must approve every decision. This situation may prevent the absorption of 3 bn euro available under the EU „Innovative economy” programme 2007-2013 for cooperation between science and economy [5]. Combining national government funding, research money from enterprises and EU resources would be most effectively used by commercial law companies established for affecting technology transfers to firms.

#### **Unavailability of new anthropometric data on the Polish population [1]**

The dimensions of the human body change in time. Knowing that, Western Europe runs anthropometric surveys every decade using state-of-the art technologies. Trends suggest that new generations are taller and the weight of the average European is growing. Evolution consistently affects other body dimensions as well: the length of limbs, chest and waist diameters, etc. Therefore, anthropometric surveys are necessary because current measurements allow enterprises to construct garments fitting today's consumers, i.e. to meet their expectations. Unlike other European countries, Poland does not conduct such surveys systematically using:

- the traditional method (it is time consuming and thus expensive), or
- 3-D scanners allowing quick transfer of a 3-D human figure to a computer's memory (specialised equipment is required).

**Table 1.** The clothing industry. Selected data from 2003. **Source:** European business. Facts and figures, Office for Official Publications of the European Communities, Luxemburg 2006.

Country	Employment, thousands	Average labour costs, EUR k/employee
Denmark	3	37.0
Italy	278	19.8
EU-25	1200	14.4
Poland	172	3.8
Romania	329	1.6

**Table 2.** Trades affected by the strongest decline in demand to the year 2010 (a selection). **Source:** Międzyresortowy Zespół do Prognozowania Popytu na Pracę przy Rządowym Centrum Studiów Strategicznych, Szacunki zapotrzebowania na główne zawody do 2010 roku, vol. III, www.rcss.gov.pl/.

Groups of occupations	2010 indicators (1996 = 100%)		Avg. annual rate of decline 1997-2010, %	
	Variant I Version B	Variant II Version B	Variant I	Variant II
Hide and pelt processing workers	50	50	-4,8	-4,8
Workers manufacturing textiles, clothing and related articles	82	85	-1,4	-1,2
Production machine operators in light industry	92	95	-0,6	-0,4

It is, however, a well-known regularity that the volume of garments sold also depends on how they fit customers.

### **Internal barriers to the financing of knowledge transfer**

The existing internal barriers that obstruct the absorption of knowledge in the clothing industry are frequently as difficult to overcome as external barriers, although they arise inside enterprises. Even trying to name them seems to pose certain problems. The managerial staff of an average enterprise is usually motionless about them, and thus unable to take an impersonal attitude and to analyse the existing constraints. The two main internal barriers hindering knowledge transfer to industrial organisations are:

- The intellectual unreadiness of managerial staff to absorb knowledge because of:
  - its inability to identify the scope of the knowledge required,
  - a lack of openness to knowledge and an incapability of consuming it.
- Shortage of skills necessary to find funds for the purpose. Sources of funding are divided into:
  - enterprises' own resources,
  - external funds available from the national budget, EU financial facilities, among others.

The aim of analysis is to try to establish why enterprises have problems with accumulating their own funds. These problems are both, the cause and the effect of the enterprises' uninventive approach to the creation of their own products, developing clothing techniques and technologies, to organising their processes and management. A list of barriers will be briefly presented, based on their impacts.

### **Shortage of quality management knowledge validated by ISO 9000 certificates**

According to the survey, knowledge of quality management processes certified by ISO 9000 was possessed by 17.2% of the organisations in the sample. Implementation of a quality system increases a firm's competitiveness in the domestic market and facilitates the export of its products. Polish clothing meets European standards (regarding quality, security, environmental safety) and the EU market buys 62.9% of the domestic output [10]. Recognised certificates are the condition for enterprises to go international. In an increasing number of cases, implementation of the ISO 9000 quality management system must precede international cooperation even

in cases where the partner company does not have the system [6]. In other words, knowledge flowing to an enterprise together with the implementation of a quality management system is necessary to enlarge its market share.

### **Strategic decisions unsupported by market analyses [4]**

The BCG analysis is a special market analysis tool. Its results support decision-making processes, as well as provide an enterprise with a basis for formulating its strategy. Application of the tool to the sampled group of organisations helped establish that:

- 6.9% of producers showed growth potential (stars),
- 10.3% of them were stabilised (cash cows),
- 34.5% of them had an uncertain future (question marks),
- 48.4% of organisations were declining (dogs).

An enterprise should make strategic decisions in relation to its market position. However, the survey revealed though that business practice differed from the theoretical model of behaviour. Enterprises tended to attribute occurring problems to external factors, although data indicate that different enterprises operating in identical business circumstances had financial results that were poles apart. A case in point is Gdansk clothing company LPP that in 2006 made a net profit amounting to 42 million zlotys, with gross sales totalling 820 million zlotys. The company's board planned that the 2007 sales would reach 1 billion PLN and that export would range from 20 to 25% [9]. However, clothing market analyses are a routine procedure in this company.

### **Weak product competitiveness of the domestic clothing industry**

Today, the clothing industry requires the development and implementation of a marketing strategy intended to make business competitive. Contrary to that, the survey found that [2]:

- 34.5% of manufacturers in the sample constructed comprehensive marketing plans,
- 20.7% implemented only some parts of their marketing strategies,
- 44.8% acted as if marketing rules were yet unknown.

The findings are alarming, because marketing strategies specifically addressing the requirements of the ever-changing clothing market are the only tool that can

provide companies and their products with competitive advantages.

### **Mismatch between enterprise structure and the type of products [2]**

According to the survey, clothing producers do not have a homogenous structure. The necessity to cut costs has compelled changes in the structure of organisations in order to adjust it to the type of products created, with the subsequent emergence of two groups of enterprises (concentrated on their own season collections manufactured in a full production cycle and those providing exclusive garment assembling services, requiring a shorter production cycle). Firms in the third group offer both types of products, but this approach to business increases their production costs. Clothing companies making their own brand of garments (24.1% of the sample) had a network structure composed of a large number of units. Those providing exclusive garment assembly services had a flat structure (34.5%). All the firms with mixed production surveyed (41.4%) also had a network structure. A firms' inability to adjust its structure to the type of product has a negative impact on its profitability.

Limited marketing activities of Polish clothing manufacturers in foreign markets [3]

A firms' revenue and purchasing power in a market are correlated. Although data from the Central Statistical Office (GUS) indicate that the wealth of Polish customers has been growing (average monthly gross wages in 2005 were 591 euro, 636 euro in 2006 and 681 euro after the first quarter of 2007), the only way of boosting sales is expanding export activity. In addition, a strategy for international operations allows clothing manufacturers to gain competitive advantage, no matter if they sell their own products or assembly services. Strong foreign marketing (visible advertising campaigns and promotion of brand, participation in international fairs) is crucial for a firm's development. Investigation into the area provided following figures [2]:

- 44.8% of manufacturers rendered garment assembly services to foreign firms. Their export ranged from 3.5% to 95% of output.
- 20.7% of manufacturers only exported their own products, and the export varied from 10 to 70%.
- 27.6% of manufacturers exported both types of products. Their export sales ranged from 15 to 65%, but garment

assembly services made up a larger part of business.

- only 6.9% of manufacturers in the sample did not have any export sales at all.

Polish companies show a high degree of internationalisation, but the degree still needs to be raised, especially in the area of export of a firm's own products.

#### **Limited innovation activities in enterprises**

Every enterprise must finance innovation to follow the changing environment. The high intensity of labour in the clothing industry and the resulting costs have reduced sales. The Leapfrog project started by the EU [8], and considered the most important undertaking in the industry, is expected to bring about considerable improvements in profitability. The working-time savings are estimated at:

- 60% for design processes (through the introduction of the virtual design method),
- 80% for the machine sewing of complex garments, with parallel elimination of quality flaws (because of the implementation of new manufacturing technologies and methods).

What's more, clothing enterprises should extend their innovation activities to address other issues, such as the replacement of mass production with on-demand manufacturing, or standardised products with special or niche articles. However, a large part of their innovation efforts is unrelated to new technologies and targets organisational issues, management, and marketing. These areas require new thinking and new approaches to processes, as well as the accumulation of funds.

#### **Final remarks**

The external barriers outlined constrain the absorption of knowledge in all Polish clothing enterprises. The removal of any of these barriers (by amending the law or modifying the tax system) would facilitate industry-wide and simultaneous transfer of knowledge. The internal barriers discussed in the article only apply to firms that either continue to struggle with them, or do not have to take action, because of the specific nature of their business. Fortunately, despite barriers constraining knowledge transfer to clothing enterprises, there are also hopes for institutional support. They are associated with a process that started in the EU countries on 29 October 2003, when the European Commission adopted the

communication "The Future Of The Textiles And Clothing Sector In The Enlarged European Union" and appointed a High Level Group for Textiles and Clothing in early 2004. The Group's working teams prepared recommendations that will be implemented using EU funds [8]. It is quite probable that the measures undertaken will help lift barriers impeding the absorption of knowledge that determines the growth and restructuring of the Polish clothing industry.

#### **References**

1. Grandys E., *The Area of Cooperation Between Clothing Manufacturers and Research Centres in Poland*, *AUTEX Research Journal*, Vol.6, No. 2/2006.
2. Grandys E., *Strategie marketingowe polskich przedsiębiorstw odzieżowych na europejskim rynku*, Wydawnictwo Naukowe Śląsk, Katowice 2006.
3. Grandys E., *Strategies for Operation in Foreign Markets as a Source the Polish Clothing Industry's Competitive Advantage in Europe, Fibres & Textiles in Eastern Europe*, vol.14, No.4/2006.
4. Grandys E., *Specialist Market Analysis Methods and the Strategic Decision-making Process in the Polish Clothing Companies, Fibres & Textiles in Eastern Europe*, vol.15, No. 1/2007.
5. Mirończuk U., 'Science near bussines' (in Polish), *Rzeczpospolita*, 4 May 2007.
6. Mokrosińska K., 'Management by quaity according to ISO-9000': *proceeding, of the International Conference „Textile Industry in the Prospect of Integration with the EU”*, Łódź, 29-30 March 2001.
7. Plutecki K., 'Legisletive Representation of the Polish Textile and Footwear Industries' (in Polish), *proceedings of the Congress of Polish Textile Association „Prospects for the Domestic Textile Industry”*, Łódź 18 Nov. 2005.
8. EC communication 'Textiles and Clothing after the Year 2005' (in Polish), *Recommendations of the High Level Group for the Textile & Clothing Area*, Brussels 2004.
9. *Information of LPP V-ce President Mr. Dariusz Pachal for Puls Biznes III/2007*.
10. *Statistical Yearbook of Industry 2006*, GUS, Warsaw 2006.
11. *Law of the Polish Republic of 23 August 2001, on changes in the Polish Education System, Official Polish Legislation Com-mitee (Dz. U.) 2001, Nr 11, pos. 1194*.

Received 12.06.2007 Reviewed 24.08.2007

## **UNIVERSITY OF BIELSKO-BIAŁA**

### **Faculty of Materials and Environmental Sciences**

The Faculty was founded in 1969 as the Faculty of Textile Engineering of the Technical University of Łódź, Branch in Bielsko-Biała. It offers several courses for a Bachelor of Science degree and a Master of Science degree in the field of Textile Engineering and Environmental Engineering and Protection. The Faculty considers modern trends in science and technology as well as the current needs of regional and national industries. At present, the Faculty consists of:

#### **The Institute of Textile Engineering and Polymer Materials**, divided into the following Departments:

- Physics and Structural Research
- Textiles and Composites
- Physical Chemistry of Polymers
- Chemistry and Technology of Chemical Fibres

#### **The Institute of Engineering and Environmental Protection**, divided into the following Departments:

- Biology and Environmental Chemistry
- Hydrology and Water Engineering
- Ecology and Applied Microbiology
- Sustainable Development of Rural Areas
- Processes and Environmental Technology



University of Bielsko-Biała  
Faculty of Materials  
and Environmental Science

ul. Willowa 2, 43-309 Bielsko-Biała  
tel. +48 33 8279 114, fax. +48 33 8279 100