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COMPETITIVENESS OF ENTERPRISES IN MANUFACTURE OF TEXTILE: EMPIRICAL EVIDENCE OF CZECH REPUBLIC

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The paper deals with the competitiveness of enterprises in manufacture of textiles, which is currently closely linked to innovations taking into account the principles of circular economy. Globally, textile consumption has the third largest negative impact on water and land use and the fourth largest negative impact on the environment and climate change. The motivation for companies to mitigate their negative environmental impact and to implement circular economy principles should always be efficient and cost-effective. The competitiveness of a company or sector can be assessed through labour productivity, which should grow at a rate higher than the rate of growth of the average wage. The paper recommends assessing the relationships between the development of the indicators of labour productivity, average wage and return on assets using inequalities. It also analyses the frequency of innovation of enterprises in the textile industry. Using the example of a specific enterprise, it points out the possibilities of innovation, such as the use of renewable energy, increasing revenues in the form of selling textile waste for further use, and introducing environmentally friendly processes into production.

Keywords: manufacture of textile, competitiveness, enterprises, labour productivity, circular economy

Introduction

The definition of competitiveness is not unambiguous and can be understood at the national, sectoral or enterprise level. In a narrower sense, competitiveness can be understood as the ability to steadily increase productivity. The main drivers of productivity growth at the firm level are the generation and application of technological and organisational knowledge (innovation). Nowadays, competitiveness is very closely linked to the circular economy. The motive of the circular economy is to break away from the principles of the hitherto prevailing linear production chains, which end in the production of waste. The principles of the circular economy have various indicators by which they can be identified. These include waste management, the use of renewable energy sources, and the reduction of waste, among others. However, none of these principles would be applied if they did not bring efficiency and also competitiveness.

Businesses aim to make a profit, so implementing circular economy principles must be efficient and cost-effective for businesses. It must lead to an increase in profitability, otherwise the introduction of these principles would be disadvantageous to the enterprise in terms of its existence. Competitiveness can be measured in many ways. In terms of business performance, one of the most important factors affecting competitiveness is profitability and also productivity, with labour productivity being the most commonly monitored by businesses. Labour productivity captures the amount of output per employee or hour worked (Preenen et al., 2015). Both profitability and productivity indicators are relative indicators and thus can be used for inter-firm comparisons.

The use of circular economy approaches is also attributed by Klepek (2018) to increasing the competitiveness of the firm. It is important not to forget the connection between circular economy and sustainability as indicated by Kislingerová et al. (2023). Indeed, the reduction of the quantity of raw materials and materials used in production, as well as the recycling of waste and its use as a production factor, contribute significantly to sustainability. It is profitability that should motivate companies to protect the environment and save energy and materials. VItavská and Sixta (2011) state that the labour productivity indicator can be used as a dynamic measure of economic growth and competitiveness.

Competitiveness is assessed at all levels of the economy (countries, regions, sectors, and enterprises). In the context of the European Green Deal (www.europarl.europa.eu) objectives such as: Reducing emissions from industry, transport, and other sectors, boosting the circular economy, it is essential to consider competitiveness together with sustainability and progress in the circular economy. These principles apply to every sector of the national economy, i.e. directly to every business.

The paper deals with the textile industry and textile enterprises. The textile and clothing industry in the EU is economically important and occupies one of the key positions also in terms of the circular economy. An EU Strategy for Sustainable and Circular Textiles has been developed by the European Commission (Euratex, 2020). The EU textile sector is mainly made up of small and medium-sized enterprises (SMEs), so it is essential that they become more resilient, especially in terms of energy and raw material availability (Euratex, 2022).

From a global life-cycle perspective, textile consumption, most of which is imported into the EU, now has the third largest negative impact on water and land use and the fourth largest negative impact on the environment and climate change in the EU. Moreover, the growing demand for clothing encourages the unsustainable use of non-renewable resources, such as the production of synthetic fibres from fossil fuels (European Commission, 2022). These negative impacts result from a linear model that often does not prioritise quality, durability or recyclability in the design and production of garments. Moreover, it is characterised by low rates of reuse, repair, and recycling of fabrics from one fibre to another. The environmental impact of this sector is further exacerbated by microplastics released from synthetic fabrics and footwear at all stages of their life cycle (European Commission, 2022).

Another important theme of this strategy is to address the problem of low wages for women in textile enterprises, as women make up the majority of the usually low-skilled workforce. Therefore, improving the viability of the supply chain has a significant impact on gender equality. The EU strategy calls for strengthening global value networks

and supporting the Sustainable Development Goals globally by paying more attention to social and environmental sustainability (European Commission, 2022). According to Benes (2006), innovation is essential for competitiveness because it improves production efficiency through process improvement and acts as a source of differentiation through new products and services. As a result of innovation, companies, regions or countries are more competitive than those that innovate more slowly or not at all. Innovation thus becomes a key explanatory element of the performance gap.

Tomek and Vávrová (2009) state that the main reason for the demand for product innovation is the short lifetime of even the most successful products. Although companies try to use specific marketing tactics to extend the life cycle, they are often not very successful. The solution to short life cycles is to invest in R&D or spend on new production technologies.

According to De Angelis (2020), CE becomes possible through multiple, cooperative and simultaneous innovations at different scales in a broader socio-economic context, including regulation, policies, and systems of production and consumption. Companies that operationalize CE can gain sustainable competitive advantage through innovative business models in which circular principles applied to supply and relationships enable economic value to be created, delivered and captured, while ecological and social values for nature and society are accumulated.

Material and methods

The aim of the paper is to evaluate the competitiveness of enterprises included in the textile industry by assessing the relationship between the development of economic indicators labour productivity, personnel costs, average wage. The paper also examines the links between the competitiveness of enterprises and the application of circular economy principles.

Data were drawn from the National Accounts database of the Czech Statistical Office, from the statistics of the Ministry of Industry and Trade (MIT) of the Czech Republic (specifically from the panorama section of manufacturing industry and trade).

Labour productivity (LP) was measured as the ratio of Value added (VA) and Number of employees (N), Average wage (AW) as the ratio of Personnel costs (PC) and number of employees (N), Return on Assets as the ratio of Earning before Interest and Taxes and Assets.

In order to increase the competitiveness of enterprises, it is possible to require that the wage cost ratio (the ratio of personnel costs – PC and enterprise value added – VA), which affects the cost efficiency of the enterprise (the ratio of enterprise costs and revenues), and thus the enterprise performance measured by profitability indicators (Return on Equity – ROE and Return on Assets – ROA, respectively), to be reduced.

Within the framework of increasing competitiveness, the wage cost ratio should decrease, i.e.

$$\frac{PC_1}{VA_1} < \frac{PC_0}{VA_0}$$

Wage cost efficiency can be expressed as the ratio of average wages to labour productivity.

$$\frac{PC}{VA} = \frac{PC}{N} : \frac{VA}{N}$$

The point is that the dynamics of labour productivity should be higher than the dynamics of average wages.

$$\frac{PC_1}{N_1} : \frac{PC_0}{N_0} < \frac{VA_1}{N_1} : \frac{VA_0}{N_0}$$

$$I_{WA} < I_{LP}$$

From the point of view of the requirement of performance growth, it is the desire of every enterprise to increase labour productivity. Increasing labour productivity has a positive effect on return on assets (ROA). A higher ROA means higher capital utilisation and a higher rate of enterprise development.

Results and discussion

First, the position and importance of the textile industry in the national economy of the Czech Republic was investigated through the share of gross value added – GVA (Figure 1). The textile industry is classified within the NACE-CZ classification as Manufacturing (Section C). Figure 1 also illustrates the share of GVA of the textile industry in the GVA of Manufacturing.

The share of gross value added of enterprises in the textile industry in the total GVA in the Czech Republic is relatively low, around 0.3%, and this share has not changed much over the last 10 years. As regards the share of GVA of manufacture of textiles in GVA of manufacturing, this share is not

Figure 1 Share of gross value added of the manufacture of textiles
Source: authors' calculation based on the data CSÚ

Table 1 Economic characteristics of innovating enterprises in the Czech Republic in manufacturing in 2018–2020

Indicator	Number of enterprises			Sales of goods and services (billion CZK)		
	total	innovating	share (%)	total	innovating	share (%)
Manufacturing	11,826	6,897	58.3	4,346.8	3,754.5	86.4
Manufacture of textiles, wearing apparel, leather and related products	651	327	50.2	64.4	48.7	75.6

Source: authors' calculation based on the data CSÚ

significant. At the beginning of the period under review (2012) it was 1.4% and this share has slightly decreased over the years, so that in 2022 it is 1.18%. The low share of GVA is due to the low number of enterprises engaged in textile manufacturing. In particular, at the end of the last century, many textile enterprises were returned to their original owners who were forced to close them down due to their obsolete production and low competitiveness. The Czech market was also flooded with cheap textile products imported mainly from third countries, which also influenced the closure of enterprises.

In the context of the application of elements of the circular economy and corporate social responsibility, the view of the production, distribution and usability of textile products is changing. Even the competitiveness of enterprises is being assessed in the context of environmental protection and means for enterprises to introduce innovations that respect these elements but are also economically viable. Some companies are building their image on the sustainability of environmentally friendly products and targeting environmentally conscious consumers. Innovative enterprises are defined as enterprises that implement a new or significantly improved product (good or service) or process, a new marketing method or a new organisational method in business practices, workplace organisation or external relations (www.czso.cz). Innovation activities are illustrated in Table 1.

Table 1 shows that more than a half of the enterprises in the Manufacturing industry have made some innovation in 2018–2020 (58.3%), while 50.2% of enterprises in Manufacture of textiles, wearing apparel, leather and related products have made an innovation.

Although textile enterprises introduce a variety of innovations, it is important to maintain the basic proportions between economic indicators. If we compare the growth rates of average wages and labour productivity (Figure 2) for textile enterprises in aggregate, it is possible to find an unfavourable relationship between these indicators in almost all years. Although the growth rate of labour productivity is greater than 1, i.e., increasing, except in 2014, the growth rate of average wage exceeds the growth rate of labour productivity (except in 2019). It should be noted that the average wage in the textile industry is one of the low wages, it is about 52% of the level of the average wage in the country (www.platy.cz). Labour productivity growth should be based on innovation (Expósito and Sanchis-Llopis, 2019), an increase in the share of expenditures to finance the development of internal and external research (Chernychko et al., 2020), and access to credit (Jimi et. al., 2019).

Figure 2 shows the annual growth rates of average wages and labour productivity in the textile manufacturing sector of the Czech Republic for the periods from 2012 to 2021. Based on the indices, inequalities can be constructed (Table 2).

Table 2 Relationships between selected indicators in the Czech textile sector

Inequalities	Years
$I_{ROA} < 1 < I_{AW} < I_{LP}$	2013, 2020
$1 < I_{AW} < I_{LP} < I_{ROA}$	2014
$I_{ROA} < I_{LP} < 1 < I_{AW}$	2015, 2016, 2018
$1 < I_{LP} < I_{AW} < I_{ROA}$	2017, 2019, 2021

Source: authors' calculation based on the data CSÚ

The inequalities reflect the relationships between the growth rates of the indicators and it can be concluded that in 2014 the monitored indicators developed optimally. The periods 2019 and 2021 can be considered satisfactory.

Using the example of a specific textile enterprise, which is engaged in a wide portfolio of textile finishing services, an assessment of the enterprise's approach to competitiveness as well as to the circular economy is made. Regarding the development of the competitiveness of this enterprise, assessed through the growth rates of the indicators of labour productivity, average wage and ROA, it can be concluded that it shows a positive development of the indicators in 2019 and especially in 2020. The development of the indicators in the enterprise does not differ much compared to the industry as a whole (Figure 3).

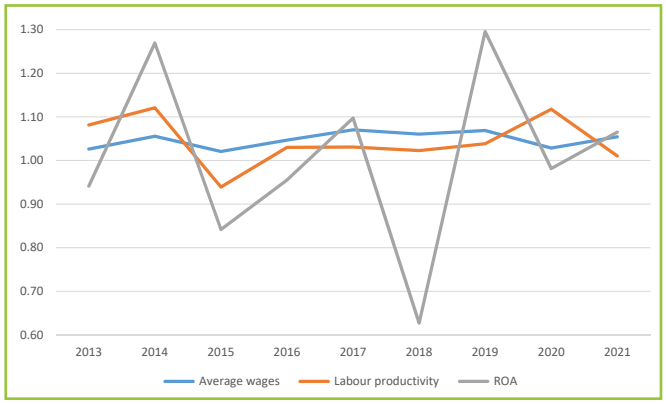

Figure 2 Annual growth rate of chosen indicators
Source: authors' calculation based on the data MIT

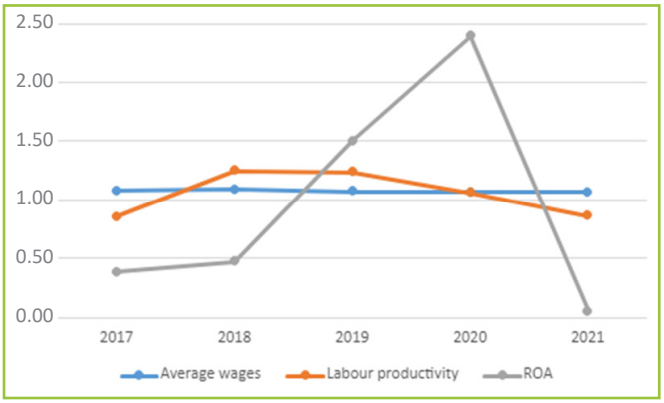

Figure 3 Annual growth rate of chosen indicators in enterprise
Source: authors' calculation (Herlíková, 2023)

At the same time, it was found that the company is introducing innovations to increase competitiveness also with regard to environmental protection. Examples include the promotion of a more environmentally friendly production process (neutralisation of the chemical process through bacteria, reduction of water temperature, washing time), which leads to a reduction in costs and environmental impact. It also uses renewable energy, which it consumes or feeds into the grid. Last but not least, it sells the textile waste generated, thereby increasing its revenues.

Conclusions

The EU has the potential to become a world leader in terms of new technical advances, creative business strategies and sustainable and circular value networks in textiles. This would enable the textile industry to become more resilient and competitive. At the same time, it is necessary to ensure that the value of textiles remains in the economy for as long as possible and to reduce dependence on primary raw materials. The textile industry could then reduce the ecological footprint of textiles. It also needs to explore new markets for more sustainable goods and improve its attractiveness to a talented and experienced workforce. Innovative enterprises, originality, expertise and high-quality fabric goods have always come from Europe and this should continue to be the case.

Paper points out the need to monitor the proportions of the development of performance indicators within the company and the industry as a whole. In order to increase the competitiveness of a company or an industry, it is necessary to introduce innovations that are not only socially responsible and environmentally friendly, but also efficient and profitable. As one of many tools for monitoring the development of economic indicators, inequalities can help set a positive direction of development. Labour productivity should grow faster than the average wage, which means a more dynamic growth of value added compared to the cost per employee. The introduction of new technologies in production allows for a reduction in the number of employees, but on the other hand requires more skilled workers who demand higher wages.

Using the example of a specific enterprise, the possibilities of innovation in the form of circular economy elements such as the use of renewable energy or increasing revenues in the form of textile waste sales were highlighted.

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