Determinants affecting the current state and perspectives of development of textile and clothing industry clusters within the European Union

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ABSTRACT – REZUMAT

Determinants affecting the current state and perspectives of development of textile and clothing industry clusters within the European Union

The textile and clothing industry is one of the oldest industries ever, as the need for clothing is as old as human existence itself. Of course, the challenges and problems it faces are connected with this, currently primarily the environmental burden, the need for digitization, low wages for workers as well as the protection of brands and the development of the grey economy. With its positions, the European Union declares its interest in solving these issues. Many traditional companies are undergoing changes and there is a natural need for innovation, thus the textile and clothing industry is interfering with the creative industry. The barriers to innovation in this area are frequently small and medium-sized enterprises, which cannot solve many things and be competitive compared to large enterprises, but their flexibility and quick response to the changing needs of customers and the market give them advantages compared to the big ones. The possibilities of how smaller businesses can succeed and compete even in the long term are through clusters, which will provide them with the necessary scope, strength, and research, but at the same time keep them independent. In our contribution, we tried to find out the perspective of the development of textile and clothing industry clusters in Europe given the existing market situation and consumer expectations.

Keywords: creative industry, clusters, the European Union, localization coefficient, innovation

Factori determinanți care afectează starea actuală și perspectivele de dezvoltare a clusterelor din industria textilă și de îmbrăcăminte în cadrul Uniunii Europene

Industria textilă și de îmbrăcăminte este una dintre cele mai vechi industrii, deoarece nevoia de îmbrăcăminte este la fel de veche ca existența umană. Desigur, provocările și problemele cu care se confruntă sunt legate de aceasta, în prezent în primul rând fiind impactul asupra mediului, nevoia de digitalizare, salariile mici pentru lucrători, precum și protecția brandurilor și dezvoltarea economiei gri. Prin pozițiile sale, Uniunea Europeană își declară clar interesul pentru rezolvarea acestor probleme. Multe companii tradiționale trec prin schimbări și există o nevoie firească de inovare, astfel că industria textilă și de îmbrăcăminte interferează cu industria creativă. Barierele inovării în acest domeniu sunt adesea întreprinderile mici și mijlocii, care nu pot rezolva multe aspecte și nu pot fi competitive în comparație cu întreprinderile mari, dar flexibilitatea și răspunsul rapid la nevoile de schimbare ale clienților și ale pieței le conferă avantaje față de întreprinderile mari. Posibilitățile prin care întreprinderile mai mici pot avea succes și concura chiar și pe termen lung sunt prin intermediul clusterelor, care le vor oferi amploarea, puterea, cercetarea necesară, dar în același timp le vor menține independente. Prin contribuția noastră, am încercat să aflăm perspectiva dezvoltării clusterelor din industria textilă și de îmbrăcăminte din Europa, având în vedere situația existentă pe piață și așteptările consumatorilor.

Cuvinte-cheie: industria creativă, clustere, Uniunea Europeană, coeficient de localizare, inovare

INTRODUCTION

The field of textile and clothing production is an important industry in all countries of the world because every country is at least in the position of a consumer from this point of view. The European Union pays considerable attention to this sector, as almost 60% of production comes from countries outside its territory. As part of a package of measures within the framework of the circular economy, in March 2022 it adopted a comprehensive EU Strategy for textiles, which is focused on sustainability, circularity (circulation), competitiveness and innovation [1]. It is primarily oriented on the creation of eco-design, which will ensure the recycling of materials, the prevention of the use of harmful and dangerous elements in the production of textiles and the strengthening of businesses that will offer consumers sustainable textiles and their recycling. Of course, the textile ecosystem is one of the 14 industrial ecosystems that the European Commission has identified as important for the creation of the single market, after the period of the Covid 19 pandemic [2].

The transition towards a circular economy offers an opportunity to reduce Europe's environmental footprint through measures of diminishing raw material consumption and reducing waste generation [3, 4]. The textile ecosystem has a strong regional character. Traditional producers from Western countries such as Italy, France, Germany or Spain have their headquarters in these countries. In Central and Eastern Europe, many producers benefit primarily

from high labour productivity, and many Western European companies also have branches in these countries (figure 1).

Companies in the developed markets prefer the manufacturing of their products in the developing markets for cost-saving [5]. This creates a kind of assumption of localization and cooperation, which is necessary for the emergence of regional specialization and the creation of clusters and industrial groupings. More than 81% of workers in textile production and 75% of workers in trade are women, of which approximately 30–40% are low-skilled and 50-60% are considered medium-skilled workers. This fact is again a prerequisite for local specialization since such workers are more "attached" to the locality.

The European textile and clothing industry has traditionally been regionally grouped, usually under the influence of available raw materials, processing aids as well as human resources or relevant end markets [6]. Production in the field of textiles, as can be seen from table 1, is different in different countries. Every country has at least a minimum of its producers due to the specific, regionally and culturally determined needs of the population. Of course, many countries are not primarily focused on textile production (e.g. Malta, Cyprus or Estonia), but table 1 shows that many are dominated by several sectors and are traditionally known for their textile production (born Italy, France). Awareness of this fact, production that is similar or complementary in several countries, already provides the initial prerequisite for cooperation and the creation of cooperative partnerships and clusters.

In these countries, production has historically been organized around clusters and industrial areas where know-how is passed down from generation to generation and where the co-location of firms, suppliers and users creates a fertile environment for innovation and productivity. The entire regional community is involved in these activities, often through family businesses. This is at the same time an added value, because the knowledge remains in that given place, and at the same time it is also a responsibility for the community, i.e. local community. This leads to a natural grouping of activities and the development of regions, i.e. to the formation of clusters.

Clusters are a term [7] that first appeared in the literature at the beginning of the last century [8], although

<div align="right">Table 1</div>

| TEXTILE AND CLOTHING INDUSTRY IN INDIVIDUAL COUNTRIES OF THE EU		
Country	Number of employees	Specialization
Belgium	14190	Artificial fibres and home textile
Bulgaria	11823	Yarn, home textile
Czech Republic	22850	Textile clothing and accessories and home textile
Croatia	3662	Luggage, handbags, saddlery, harnesses
Cyprus	535	Leather and clothing
Denmark	3361	Fabrics, yarn, artificial fibres
Estonia	1058	Production of machines for textile and clothing
Finland	5650	Sustainable fashion and materials production
France	40392	Retail, leather products, accessories
Greece	7544	Footwear and fur products
Netherland	13010	Home textiles, artificial fibres
Ireland	1982	Work clothes
Lithuania	9541	Fabric and clothing production, eco production
Latvia	3790	Linen, hemp, underwear
Luxembourg	748	Sustainable fashion, eco production
Hungary	8880	Completion of production
Malta	269	Sustainable fashion, eco production
Germany	80174	Home textile
Poland	59337	More subsectors
Portugal	45514	Textile production, acrylic
Austria	7820	Artificial fibres
Romania	27031	Footwear, yarn and fur production
Slovakia	6415	Artificial fibres
Slovenia	3150	Yarn, product completion
Spain	49312	Sustainable fashion, eco production
Sweden	1840	Sustainable fashion, eco production
Italy	108086	All subsectors, leather and furs, fabrics, artificial fibres
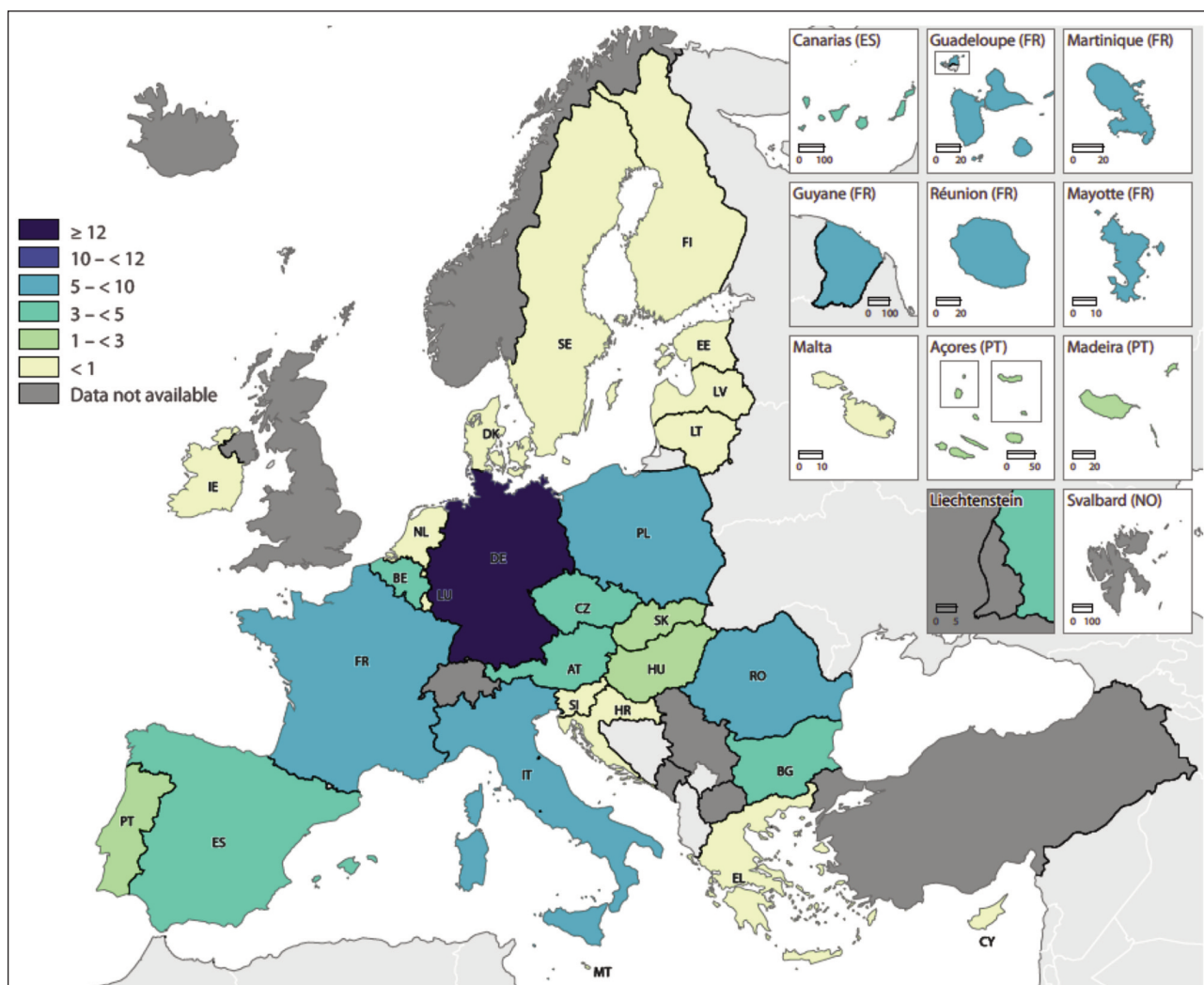
Fig. 1. Number of textile and clothing clusters in EU countries

the creation of natural groupings of companies and the benefits of such connections were recorded long before [9]. The European Cluster Observatory measures and maps the size, specialization, focus and performance of clusters. An estimated 2,950 clusters operate across Europe in 51 sectors, providing 1 in 4 jobs (61.8 million jobs in total) [10]. Large regional differences can be seen between the clusters, the top 200 clusters show productivity above 140% of the average [11].

Of course, the clusters in Western Europe have a somewhat longer history, many authors consider them to be more efficient and therefore better functioning than the clusters in the Eastern part of Europe, this fact puts them in the position of the socalled spill-overs in the field of knowledge, which can be seen in the textile and clothing industry. Conversely, clusters within Eastern Europe can attract foreign investors precisely because of low costs. Western European clusters are also considered initiators of innovation and foreign cooperation. As soon as a large textile company introduces an innovative product or an innovation in the process, this spill-over effect very quickly affects small companies especially in the clusters of Eastern Europe [12].

In the textile and clothing industry within the European Union, there are currently 67 clusters operating primarily in countries traditionally associated with the textile and clothing industry, such as Germany, Italy, France, Romania, but also Poland, Belgium, Bulgaria, the Czech Republic, Austria, Spain, Portugal, Hungary and Slovakia [8]. As we can see in figure 1, the majority of these clusters could be observed in Germany (15), Italy (9), Romania (6), France (6) or Poland (5). What seems to be curious, is that more than half of EU countries (14 from 27) have no textile or clothing type of cluster, although there is production, employment, education (in universities) and enterprises in this area that could lead to the concentration in this area of activity.

METHODOLOGY

This research has been done to set determinants which have an impact on the textile and clothing industry within the area of EU counties and which could be seen as a precondition of enhanced competitiveness thanks to the creation of clusters in this area of activity. When processing the contribution, we used available data from statistical databases, primarily Eurostat, ILO, OECD and regional data. For

the evaluation, we used both data comparison and correlation analysis in which we compared the sensitivity of data such as the number of companies operating in the textile industry (especially the share of small and medium-sized companies in individual countries), the number of patents and innovations in the monitored period, the number of universities and of research workplaces in the field of the clothing industry and design to the number of existing clusters in this area. For individual countries, we also calculated the localization coefficient as a prerequisite for specialization in the researched area, which we subsequently subjected to a sensitivity analysis within the monitored data.

RESULTS

The localization coefficient (1), even though it is attributed to a non-systematic approach, is one of the most used and simplest tools for determining the potential of a region for the formation of a cluster of a certain industry. The localization coefficient (LQ) expresses how many times the sector's share of employment in the region is higher than the national average [12]:

$$LQ = (x/X) / (y/Y) \qquad (1)$$

where LQ is employment localization coefficient in the region; x – number of employees working in the industry in the given region; X – total number of employees in the region; y – number of employees working in the given industry in the country; Y – total number of employees in the country.

If the LQ is greater than one, it means that the industry in question is overrepresented in the region. Coefficients of localization exceeding the value of 1.2 are subsequently perceived as initial evidence of regional specialization in a given industry [13].

For the successful operation of the cluster, we consider it essential that it includes not only the companies themselves but also representatives of the local government and universities or research institutes. This so-called concentration [14, 15] brings to the cluster the necessary prerequisite for development (through local self-government), innovation (secured by research) and the necessary cooperation as well as competition (through the enterprises themselves). The influence of a university on the development of a region depends on many factors, including the focus and strategy of the university itself. The influence of universities on the development of regions and the business environment can be found in the works of several authors such as Adams [16], Stankeviciute [17], Shattock [18], Rehák [19], Sapsed [20], Hánová [21] and Marshal [14]. Universities generally find their application in education, research and development and services to society, which bring skills, and innovation to the region and influence the culture and cohesion of the community, including environmental sustainability [22]. The mere existence of universities in a locality is not a guarantee of effective stimulation of the creation and dynamics of an innovative cluster or regional development. However, its presence can

play a significant role in the development of the cluster. At the same time, local businesses around the university cannot wait for their role as an "innovation engine" that will lead to the growth and strengthening of their region. Innovation is the key to success for textile companies, just as in another economic fields [23].

From the results we have presented in table 2, it is possible to determine the potential of the regions of the European Union, in terms of countries (member states), for the creation of clusters in the field of textile and clothing industry. At first glance, it can be seen that the LQ is very high in Portugal and Lithuania, where it reaches very high values. Significant specialization, i.e. this sector is also highly represented in other countries such as Italy, the Czech Republic, Bulgaria, Latvia, Poland, Romania and Slovenia. Lithuania, Latvia and Slovenia are countries with no clusters, now. This is the reason why we have included LQ in the analysis of sensitivity, too.

Based on the subsequently performed sensitivity analysis (table 3), we found that the number of innovations and patents has the highest impact (very high correlation) on the existing clusters. The number of workers in the textile industry has only three hundredths less influence. A moderately high correlation can be seen between the number of enterprises in the textile industry and the number of universities and research institutes in the field of textiles and design. From the point of view of innovation, a moderately significant correlation can be seen in the number of universities and also in the number of companies in the textile industry. Correlation analysis also confirmed that there is a high dependence between the total number of enterprises in the textile industry and the number of small and medium-sized enterprises, that SMEs are employers in this area, their share in the formation of clusters is significant, and a moderate correlation was also manifested in the number of research workplaces and innovations in this area. The localization coefficient and its sensitivity, within individual countries, on the other hand, showed only a very low correlation with the state of existing clusters and the number of companies in the textile industry, a somewhat larger but still low correlation is only manifested in the number of workers in the textile industry, and it starts to take on a negative value in patents and innovations (although very low).

CONCLUSIONS

The textile industry constitutes a significant sector of the economy of many countries due to its participation in the GDP and the generation of jobs [24]. In the European textile and clothing industry 99% of enterprises are small or medium (SMEs) [25]. Compared to large enterprises, SMEs have very specific environmental threats, such as limited material, financial, informational, human and managerial resources, lower negotiation power, higher interest rates available etc. Even though they are permanently ready to

Table 2

TEXTILE AND CLOTHING INDUSTRY INDICATORS						
Country	No. of enterprises	No. of enterprises in TI	No. of SME in TI	Innovations, patents	No. of universities and research institutions in TI and design	No. of clusters	LQ
Belgium	13027	1024	1016	235	2	4	1.08
Bulgaria	20136	712	707	8	6	4	1.54
Czech Republic	20271	2202	2186	192	5	3	1.76
Croatia	3549	660	559	4	2	0	0.87
Cyprus	1949	92	92	2	6	0	0.32
Denmark	4770	325	325	111	1	0	0.44
Estonia	1573	346	343	5	4	0	0.59
Finland	3781	1228	1228	66	9	0	0.82
France	65517	8970	8953	611	13	6	0.52
Greece	28520	1500	1500	9	2	0	0.66
Netherland	22223	2873	2865	219	0	0	0.54
Ireland	4247	466	466	18	1	0	0.30
Lithuania	6770	1241	1233	2	4	0	2.58
Latvia	3559	547	546	4	2	0	1.60
Luxembourg	606	15	14	5	1	0	0.91
Hungary	14163	1498	1494	10	2	1	0.73
Malta	556	0	0	2	2	0	0.38
Germany	47871	4707	4657	2931	12	15	0.74
Poland	59101	6794	6768	177	2	5	1.31
Portugal	32140	3523	3499	54	9	2	3.52
Austria	6318	786	783	187	5	3	0.67
Romania	18448	1727	1707	44	5	6	1.33
Slovakia	6726	1810	1807	15	3	1	0.93
Slovenia	2318	334	332	44	3	0	1.21
Spain	90752	6400	6388	324	13	3	0.85
Sweden	11800	1882	1882	173	12	0	0.13
Italy	163016	15790	12630	1240	10	9	1.73
Total	**655886**	**67452**	**63980**	**6692**	**136**	**-**	**-**

Table 3

TEXTILE AND CLOTHING INDUSTRY INDICATORS						
Indicator	No. of enterprises	No. of enterprises in TI	No. of SME in TI	Innovations, patents	No. of universities and research institutions in TI and design	No. of clusters	LQ
No. of enterprises	1.00	0.90	0.72	0.56	0.84	0.89	0.33
No. of enterprises in TI	0.90	1.00	0.51	0.55	064	0.99	0.20
No. of SME in TI	0.72	0.51	1.00	0.52	0.88	0.52	−0.04
Innovations, patents	0.56	0.55	0.52	1.00	0.56	0.58	0.10
No. of universities and research institutions in TI and design	0.84	0.64	0.88	0.56	1.00	0.65	0.13
No. of clusters	0.89	0.99	0.52	0.58	0.65	1.00	0.19
LQ	0.33	0.20	−0.04	0.10	0.13	0.19	1.00

change to grow, usually SMEs have little information about the way to approach change effectively [26]. A cluster is a means that, in addition to strengthening the position of small and medium-sized enterprises, contributes to the growth of the specialization of the region or municipality, and encourages governments to invest in the industry and the respective region at the same time. This naturally results in such a positive effect as the development of regions and municipalities. Clusters are thus unquestionably considered an important microeconomic factor by many experts in theory and practice. A prerequisite for the creation of clusters is also the fact that, unlike large ones, small and medium-sized enterprises are not able to use, for example, economies of scale, they do not have sufficient capacities and resources for research, education of their employees, obtaining information, etc. For that reason, it is appropriate for them to create clusters as a potential for their development within the region [27]. The adequacy and possible use of regions for the creation and existence of clusters is the subject of many studies and analyses. As part of our study, we focused on examining the textile and clothing industry. As part of the localization coefficient, which can identify the region's potential based on a comparison of employment within the relevant field, we determined the coefficient itself for the respective country within the EU. The limit in our investigation is the fact that we considered individual member countries as regions, while regional specialization would be appropriate within a different regional division (need for natural division). In many cases, it makes sense to create clusters by connecting several sectors that can support and influence each other. There are several industries/sectors in the textile industry (automotive, housing, etc.) This is the reason why, in our opinion, further research in this area is particularly necessary.

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