

REGIONAL REINDUSTRIALIZATION AND DEINDUSTRIALIZATION ON THE EXAMPLE OF POLAND

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Purpose: The aim of this paper is to assess the diversity of changes in Poland's industrial sector, distinguishing the ICT section, on a regional basis, and to classify the regions according to the value of the location quotient index.

Design/methodology/approach: The article uses the following methods: critical analysis of the literature and analysis of statistical data using selected statistical tools. On the basis of the data, obtained from the Local Data Bank (GUS), the dynamics and share of production and employment in the industrial sector were calculated, also including the ITC sector. The analysis covered 16 provinces from 2000 to 2021.

Findings: Analysis of selected variables in the analyzed years confirmed the existence of regional disparities in Poland, the presence of both reindustrialization and deindustrialization processes and the leading role of the Mazowieckie voivodeship in the ITC sector.

Research limitations/implications: The research conducted in the article represents only one aspect of the assessment of regional disparities. In the course of a broader, more detailed study, it is possible to conduct research at a more local level and to apply additional indicators and methods to evaluate the economic situation of the regions.

Practical implications: Knowledge of the mechanisms and regularities of regional development is the basis for shaping policies that would ensure, on the one hand, high and sustainable development dynamics, and, on the other hand, lead to the reduction of regional inequalities.

Social implications: A situation of excessive inequalities can lead to conflicts and tensions within communities. Therefore, one of the goals of the state's economic and social policies should be to reduce regional disparities, in favor of sustainable development and improving the quality of life in the country.

Originality/value: The article analyzes using the most current statistical data of selected variables and statistical tools. Thus, it can provide another element towards learning about the regularities of regional inequality in the Polish economy.

Keywords: reindustrialisation, deindustrialisation, regional disparities, location quotient.

Category of the paper: Research paper.

1. Introduction

For several decades, there has been a growing interest in the development of regions, both economically, socially and environmentally. Discussions about the concept and definition of a region have been going on since the 1930s. Attempts to define the spatial division, types, role and importance of regions in the national and world economy were made by various researchers such as: Odum and Moore (1938), Dziewoński (1967), Whittlesey (1954), Tinkler (1973), Chojnicki (1988), Barrios et al. (2008), Grzybowska (2013), Czyż (2016). In the 1960s the concept of region developed in geographical sciences and became the basis for the considerations of the new discipline of regional science (Chojnicki, Czyż, 1992). Also on the economic level, both in theory and practice, the region began to form as an important, even crucial 'competitive space' (Bristow, 2010). It has become a site of economic development and a force for competitive advantage in the economy as a whole (Storper, 1997) and should therefore be the most important area of economic policy influence (Lovering, 1999). Regions are characterised by a specific demographic, geographical and economic structure (Chojnicki, 1996). With this statement, one can begin to try to explain the differences between regions, as well as their impact on the performance of the economy as a whole (Barclays, 2002). The issue of regional studies has also been taken up by Polish scholars: Grzybowska (2013), Chojnicki (1996), Czyż (2016), Micek et al., (2022), Malina (2004), Malaga (2004), Łązniewska et al. (2011), Smętkowski (2015), Gorzelak (2010). The authors of these works publish extensive literature studies and empirical analyses in order to explain regional processes in the Polish, European and world economies. The scope and conclusions of the studies are mainly focused on the first decade of the 21st century and confirm the thesis existing also in foreign literature about the existence of a large interregional differentiation. Knowledge of the mechanisms and regularities of regional development is the basis for shaping policies that would ensure, on the one hand, high and sustainable development dynamics, and, on the other hand, lead to the reduction of regional inequalities.

2. Industrialisation, deindustrialisation, and reindustrialisation. Literature review

The issue of the categorisation of industrial processes, the causes and conditions of their emergence and disappearance has a very broad representation in the literature. Various studies have been written on this subject: from the concept of stage development (e.g. List, Buchner, Schmoller or Sombart), cyclical development (Mitchell, Kondratiev), the so-called "three sector theory" (Fisher, Clark, Fourastie), their later follower Kuznets (1955), and many others,

such as Rostow, Schumpeter, Chenery, Hoffman. The subject of changes in economic structures was also of interest to Polish scientists (Karpinski, 1986; Kempny, 1991; Klamut, 1996; Swadźba, 1994). Most studies indicate the occurrence of certain phenomena in the industrial sphere, characteristic and common to most societies. One can mention such processes as industrialisation, deindustrialisation and reindustrialisation. Their distinction is related to specific, observed, universal changes in the share of the industrial structure in total national output. The first wave that changed world production was the process of industrialisation of the economy. Industrialisation is a phenomenon that can be defined as the process of increasing the share of industrial production in national output. The event that started this process, considered by Rostow (1971) as the starting point for industrial society, was the First Industrial Revolution, understood as the totality of technical, economic and social changes. The technological leap that took place in the 18th century was also, according to Kondratiev (1926), the beginning of the recovery stage of the business cycle, as the sudden introduction of a new technology, stimulated investment, industrial development and an increase in production and productivity. Thus, it can be considered that from the end of the 18th century, technical and technological progress began to be considered the main driving force of production, having the strongest impact on the structure of industrial production, in which, over time, a dual process of the appearance of new, with the simultaneous disappearance of old areas of production begins (Karpinski, 1986). It can be stated that as a result of technical progress, quantitative and qualitative changes are made to the factors of production in the production process, which makes it possible to improve existing products, reduce their production costs, increase productivity and create completely new products. The level of industrialisation can be defined as "expressed by a set of appropriate quantitative and qualitative measures, the degree and extent of the impact of industry on the national economy of a country, a group of countries or larger economic systems" (Jaworska, Skowrońska, 2001). One of the methods of measuring the level of industrialisation, is the fulfilment of certain structural conditions for a country to be considered industrialised. These conditions are as follows: the share of industry in national income should be at least 25%, the share of manufacturing in total industry should be no less than 60% and at least 10% of the population should be employed in industry (Sutcliffe, 1971, p. 17). It is estimated that the stabilisation of the share of industry in the national product took place in highly developed countries at the level of 12-15 thousand dollars per capita, and about 6-8 thousand dollars in later developed countries (Swadźba, 1994).

In the 1970s, highly developed countries began to see a decline in industrial employment. This process occurred together with a systematic increase in employment level in services. This phenomenon was called deindustrialisation or servitisation (Swadźba, 1994). Deindustrialisation is defined by many researchers as a decreasing share of the industrial sector in total production, in favour of an increasing share of the service sector (Bryson and Taylor, 2008; Baumol, 1967; Fuchs, 1968). Caincross (1982) and Lever (1991) define the process of deindustrialisation as characterised by a reduction in output and/or employment in

the industrial sector and a reduction in the share of industrial products in foreign trade, independent of changes in the agricultural or services sector. According to Crafts (1992), in a deindustrialisation situation, industrial production grows relatively slowly, industrial employment declines and the trade balance becomes decline. Singh (1977) takes a negative view of the process of deindustrialisation, describing it as a pathological state, i.e. a state of inability and limitation of the economy to achieve its full potential for economic growth, employment and resources. Alderson (1999) considers and extends the concepts of positive and negative deindustrialisation introduced earlier by Rowthorne and Wells (1987). Alderson (1999) points out that positive deindustrialisation is the result of economic development and labour productivity growth. Negative deindustrialisation, on the other hand, occurs as a result of structural constraints in the economy and causes income stagnation and increased unemployment. Priewe (1993) and Dasgupta and Singh (2009) introduced the term premature deindustrialisation occurring in situations where the economy has not reached a high level of industrial production. This was attributed to such organisational and technological innovations that led to an increase in industrial labour productivity (Rowthorn and Ramaswamy, 1999). Moreover, Rowthorn and Coutts (2004) point out that productivity growth is responsible for more than 60 % of the decline in the share of workers in industry. Some authors believed that deindustrialisation was due to the extinction of already all the cultural and technological forces that had pushed industrialism (Lisikiewicz et al., 1990; Bluestone, Harrison, 1982). In the late 19th and early 20th centuries, the service sector steadily increased its share of national income generation at the expense of the declining share of the manufacturing sector. It should be noted, however, that in the economic development of countries (Karpinski, 1986) deindustrialisation of the economy will only occur when countries pass the stage of industrialisation (Karpinski, 1986). Such beliefs point to the importance of the industrial sector in economic development. Despite the decline in its share in the creation of national income, service activities alone cannot replace industry.

Until recently, in many theories, the adoption of the service model was the preferred path of economic development. Whether in the three sector theories or the theories of stage development, the service sector economy was the latter, the culmination of economic development. This path of structural change was also the most common assessment of the competitiveness of economies. Countries that, from the 1970s onwards, were characterised by an increasing share of the service sector in the economic structure were called highly developed countries. One of the first authors to present a different view was Naisbitt (1997), who considered the late 1950s to be a phase of reindustrialisation, involving the production and distribution of information (Klamut, 1998). The use of new resources and information, as a new phenomenon in economic development, was also referred to by the American futurologist A. Toffler (2003). Being a proponent of the concept of stadial social development, he believed that since the end of the 20th century, the economy is already in the next, third wave of industrialisation using information. Recent studies of industrial development trends indicate

that the concept of industrialisation, born in the 19th century, has taken on a new meaning today. It is often referred to in the literature as post-industrial (Bell, 1999) super-industrial (Valakati, 1999), third wave (Toffler, 2003), reindustrialisation and information society (Naisbitt, 1997). A significant date in the perception and description of contemporary economic change was 2016, when Schwab published his book entitled, *The 4th Industrial Revolution* (Schwab, 2018). The fourth revolution using the achievements of the previous phase will involve blurring the boundaries between the real, digital and biological spheres of human beings. The similarity to the previous ones is the emergence of an impetus in the form of technical and technological advances in specific industries, making the most of digitisation and robotisation processes. Thus, a new phase of industrial presence in economic development, reindustrialisation, is taking place, involving the growth of more intellectually intensive industries, also known as Industry 4.0.

This raises the question about what changes in the industrial sector are taking place in Poland today, in the 21st century. Can these changes in Polish economy be considered as de-industrialisation or reindustrialisation, and can these changes described above be differentiated regionally. Therefore, the aim of this paper is to assess the diversity of changes in Poland's industrial sector, distinguishing the ICT (Information and Communications Technology) section, on a regional basis, and to classify the regions according to the value of the concentration quotient index. The changes faced by Poland in the last two decades may have had a significant impact on the dynamics of changes in the industrial sector and its structure in individual regions. This issue is also in line with the 158th article of the Treaty of the European Union, which formulates the Union's aim, in the implementation of regional policy, to: "to reduce disparities between levels of development in the various regions".

3. Methods

The research in this article is based on annual indicators of the level, dynamics and share of production and employment of industry sector in total production and employment and the ICT industry to production and employment in the whole Polish economy. The ICT sector or Information and Communications Technology according to the Polish Central Statistical Office (GUS) provides products and services of information processing systems for scientific, economic, financial, administrative and social applications, which include the manufacture, sale and service of digital equipment, magnetic-optical media and the production and provision of software, as well as the following services: consulting, data processing, telecommunications, internet and similar services. Based on these indicators, an analysis of deindustrialisation and reindustrialisation processes will be carried out. An assessment of the scale of disparities in industrial processes will be made by using Florence's location quotient (Florence, 1929).

This is an index used by researchers mainly in studies in socio-economic geography to reflect the degree of concentration of a phenomenon in particular regions in relation to a reference area (Czyż, 2016; Antonowicz, 2014; Mądry, 2021). The location quotient (LQ), also called the regional specialisation index for a given spatial unit (region), is the ratio of the value of the index of a specific economic or social activity S in spatial unit (region) to the value of that index A in a higher spatial unit (country) (Czyż, 2016). The location quotient formula is as follows: $LQ = S/A$.

The authors provide different interpretations of the LQ results. Czyż (2016) proposes that regions where $LQ > 1$, have an 'over-representation' of an activity, and a relative 'shortage' when $LQ < 1$. The 'over-representation' could be interpreted positively as regional specialisation. Mądry (2021), on the other hand, gives a slightly more detailed interpretation by class:

Class A – high concentration ($LQ > 1.5$),

Class B – medium concentration ($1.5 > LQ > 1.0$),

Class C – low medium concentration ($1.0 > LQ > 0.5$),

Class D – very low medium concentration ($0.5 > LQ > 0.25$),

Class E – trace occurrence ($0.25 > LQ$).

The statistics, presented according to the NUTS-2 classification, come from 16 Polish voivodships (also called regions): Dolnośląskie, Kujawsko-Pomorskie, Lubelskie, Lubuskie, Łódzkie, Małopolskie, Mazowieckie, Opolskie, Podkarpackie, Podlaskie, Pomorskie, Śląskie, Świętokrzyskie, Warmińsko-Mazurskie, Wielkopolskie and Zachodniopomorskie. The main source of data is the Local Data Bank of the Central Statistical Office in Poland (GUS-Local Data Bank). In order to analyse changes in the above-mentioned indicators, statistical data from a period of more than twenty years, from 2000 to 2021, was collected. Only statistics for the employment in ICT industry cover the period from 2011-2021, due to the lack of availability of data from earlier years. These measures will be used to present and interpret changes in selected indicators, on a regional basis. All figures and tables are presented in the Appendix.

4. Results and Discussion

Analysing the growth of the industrial sector production and employment in the years 2000-2021, one can see a regular increase in the volume of industrial production and employment in all voivodeships (Figure 1 and Figure 2). Figure 3 illustrates changes in the share of the industrial production sector in Poland and the 16 voivodeships in 2020-2021. On its basis, it can be concluded that in the period studied, a slow reindustrialisation, is characteristic of all countries. Reindustrialisation because industrialisation in Poland took place in the 20th century. Considering the conditions which must be met for a country to be considered industrialised, in almost the entire analysed period the share of industrial production in total production of

more than 25% is recorded in Poland and the following voivodships: Dolnośląskie, Kujawsko-Pomorskie, Lubuskie, Łódzkie, Opolskie, Podkarpackie, Pomorskie Śląskie, Świętokrzyskie, Warmińsko-Mazurskie and Wielkopolskie. Only the Lubelskie, Małopolskie, Mazowieckie, Podlaskie and Zachodniopomorskie voivodships are characterised by the share of the industrial sector in total production below 25% throughout the analysed period. According to the definition given earlier, these regions cannot be considered industrialised. As Figure 3 also shows, at the beginning of the analysed period, the highest share of the industry sector is characteristic for the Śląskie voivodship (32.8%), while at the end of the analysed period the Opolskie voivodship (34.3%), which also records the highest increase in this value. The lowest values of growth are characteristic for the Śląskie and Lubelskie voivodeships. In the analysed period there is an increase in all voivodeships, except for Małopolskie. An upward trend in the share of industry in added value is also visible for Poland. The statistics presented show that in 2016 or 2015 the maximum value of the share of industrial production is reached in Poland and the following voivodeships: Kujawsko-Pomorskie, Lubelskie, Lubuskie, Łódzkie, Mazowieckie, Podkarpackie, Pomorskie, Warmińsko-Mazurskie, Wielkopolskie, Zachodniopomorskie. On the other hand, Śląskie reached the maximum level of this share earliest, in 2004.

The dynamics of change in the share of employment in the total employment between 2000 and 2021 (Figure 4) is positive for the following provinces: Dolnośląskie, Lubuskie, Łódzkie, Małopolskie, Podkarpackie, Podlaskie, Pomorskie, Warmińsko-Mazurskie, Wielkopolskie. The remaining voivodeships and Poland record a decrease in the size of employment in industry in total employment. Figure 4 shows that the largest increase in the share of employment in industry in total employment is recorded in the Wielkopolskie Voivodeship (19.8%), and the largest decrease in Śląskie (-13.6%). However, in all the voivodeships and in Poland there is a decrease in the share of employment in industry in total employment. At the beginning of the analysed period, the highest share is in Śląskie (48.37%), together with Wielkopolskie (43.39) and Pomorskie (42.88%). The Silesian Voivodeship also has the highest share at the end of the period (29.07%), despite the highest decrease in this share. The lowest values of this share characterise the Mazowieckie (13.87%), Małopolskie (18.99%) and Podlaskie (18.74%) voivodeships. On the other hand, in all regions in the analysed period the share of employment in industry to total employment was greater than 10%.

As can be seen in Figure 5 the dynamics of change in the share of the ICT industry's output between 2000 and 2021 is highest in Małopolskie (9.46%), Dolnośląskie (7.91%), Wielkopolskie (6.35%) and Pomorskie (5.33%). The remaining voivodeships have a growth rate lower than the value for Poland (4.35%). When analysing changes in the share of the ICT industry sector in added value in the years 2000-2021, one can see a systematic growth in all the voivodeships analysed, except for Opolskie. The highest share at the beginning of the period is in the Mazowieckie voivodeship (6.64%). For Poland, the share is 3% in 2011, and in the remaining voivodeships its value is lower. At the end of the analysed period,

Mazowieckie also has the largest share (8.51), while the Małopolskie (6.36%) and Pomorskie (5.12%) voivodeships already have a larger share than Poland (4.64%). The presented statistical data indicate that at the end of the analysed reach the maximum value of the share of industrial production in Poland and the following voivodeships: Dolnośląskie, Kujawsko-Pomorskie, Łódzkie, Małopolskie, Podlaskie, Pomorskie, Śląskie, Wielkopolskie, Zachodniopomorskie. On the other hand, Lubelskie, Lubuskie, Świętokrzyskie and Warmińsko-Mazurskie reached the maximum level of this share earliest in 2002, while Mazowieckie in 2004 and Podkarpackie in 2008. The above analysis indicates a territorial diversification of the ICT sector's production, while there is a systematic increase.

Figure 6 shows, that the dynamics of change in employment in the ICT sector between 2011 and 2021 is positive in all voivodeships, except for Podkarpackie, which records a decrease. The highest growth is characteristic for Kujawsko-Pomorskie voivodeship (189.63%), Małopolskie voivodeship (166.51%) and Pomorskie voivodeship (117.76%). As can be seen in Figure 6, at the beginning of the analysed period, the highest share of employees in ITC to total industry was recorded in the voivodeships of Mazowieckie (4.80%), Pomorskie (1.43%) and Małopolskie (1.42%). The remaining voivodeships have share figures lower than for Poland, for which the figure is 1.48%. An increase in the share of employment in the ITC industry occurs only in the voivodeships: Dolnośląskie, Kujawsko-Pomorskie, Lubelskie, Małopolskie. At the end of the period, Małopolskie voivodeship has the largest share (2.08%) among the analysed voivodeships. The lowest share at the beginning of the period is characteristic for Opolskie voivodeship (0.30%) and Świętokrzyskie voivodeship (0.30%), and at the end for Podkarpackie voivodeship (0.05%). The analysed period shows large differences between regions in both the dynamics of production and employment and their shares in total production and employment respectively.

The calculated employment and production location quotients are presented in two tables. Table 1 shows the classification of the provinces according to the calculated location quotients of employment and production in the industrial sector. More than half of the voivodeships are characterised by an average concentration in both production and employment in the total industry sector. Among them, the highest growth in industrial production in the analysed years takes place in the following voivodeships: Dolnośląskie Wielkopolskie and Lubuskie. In addition the following voivodeships: Dolnośląskie, Lubuskie, Łódzkie, Kujawsko-Pomorskie. Podkarpackie and Warmińsko-Mazurskie, Opolskie are characterised by the highest increases in the location quotient in the analysed period (Figure 7 and Figure 8). They can be called growth voivodeships, as they are also characterised by increases in both production dynamics and employment in industry (here the only exception is Opolskie, where the coefficient was lower). The Śląskie voivodeship, despite a high quotient, is characterised by a low growth of industrial production together with a decrease in the dynamics of employment (Figure 7 and Figure 8). It can be called a stagnant voivodeship. Low concentration, both at the level of production and employment, is characterised by the following voivodeships: Lubelskie,

Małopolskie, Mazowieckie. Zachodniopomorskie, Lubelskie and Świętokrzyskie voivodeships, have growth, albeit small, in industrial production, with low spatial saturation. They can therefore be considered as emerging regions. The classification of voivodeships in the ICT sector in Table 2 is slightly different. The unquestionable leader is the Mazowieckie voivodeship, which can be described as a Class A voivodeship, with high concentration of the ICT sector. The voivodeships with medium concentration, Dolnośląskie, Małopolskie, and Pomorskie are at the same time characterised by high increases in this quotient, together with high growth rates of production and employment in the ICT sector, which may be conducive to achieving an even better position. The low level of the location quotient of Lubelskie, Lubuskie, Łódzkie, Podlaskie, Świętokrzyskie and Wielkopolskie voivodships, together with the growth of production dynamics and employment in the ICT sector (Figure 9 and Figure 10), means that these voivodships can be considered only emerging. The situation in Kujawsko-Pomorskie, Opolskie, Podkarpackie, Śląskie and Zachodniopomorskie Warmińsko-Mazurskie voivodships, characterised by a low level of concentration quotient, together with its decreasing tendency in the analysed period, can be considered unfavourable due to a decrease in the share of high-tech production.

5. Summary

The paper attempts to assess the diversity of changes in Poland's industrial sector, distinguishing the ICT section, at the regional level and classifying the regions according to the value of the concentration quotient indicator at the NUTS-2 classification level. The collected data from the first two decades of the 21st century allow for the formulation of several conclusions. As can be seen from the presented results of the calculations, in the Polish economy some similarities and differences can be observed in changes in the dynamics and share of production and employment of total industry and the ICT sector at the regional level. The analysis of these variables allows us to conclude that in most voivodeships a systematic reindustrialisation is taking place. However, there are also voivodeships that are characterised by a low (below 25%) share of industrial production in total production. As regards the share of employment in industry, in all voivodeships the value is high and exceeds 10% of the share in total employment, which is characteristic for industrialised countries. The highest industrialised regions are Dolnośląskie and Śląskie. At the end of the analysed period, many voivodeships are experiencing a phenomenon of some slight deindustrialisation: Dolnośląskie, Lubuskie, Łódzkie, Wielkopolskie, Śląskie, which could be considered as positive one. A slightly opposite situation occurred in the share of employment in the industry sector in total employment, where almost all voivodeships, after an initial decline in this share, experienced an increase by the end of the analysed period. The analysis of the ITC sector indicates

Mazowieckie as the leader both in terms of the share of production in this sector and employment. However, it is worth emphasising that all voivodeships record an average increase in the share of production and ITC in total production, as well as in the share of employment in ITC in total industry employment. Disparities between voivodeships also occur in the value of the location quotient. The value of this indicator for production and employment in industry divides the voivodeships into two groups. None of the voivodeships belongs to the group of high concentration. Voivodeships as: Dolnośląskie, Lubuskie, Łódzkie, Kujawsko-Pomorskie, Podkarpackie, Opolskie, Śląskie, Warmińsko-Mazurskie and Wielkopolskie are characterised by medium concentration, while the others were characterised by low concentration. More varied results concerned the classification of voivodeships by production and employment in the ICT sector. In this respect, Mazowieckie is a voivodeship with high concentration, Małopolskie, Pomorskie and Dolnośląskie can be considered a voivodeship with medium concentration, while Kujawsko-Pomorskie, Lubelskie, Lubuskie, Łódzkie, Podkarpackie, Podlaskie, Śląskie, Wielkopolskie and Zachodniopomorskie are characterised by low or very low concentration and traces even in Opolskie and Świętokrzyskie. The results of the analysis indicate the existence of both reindustrialisation and low deindustrialisation in the analysed regions. Moreover, they prove the existence of regional diversification. In the course of a broader, more detailed study, it is possible to conduct research at a more local level and to apply additional indicators and methods to evaluate the economic situation of the regions.

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Appendix

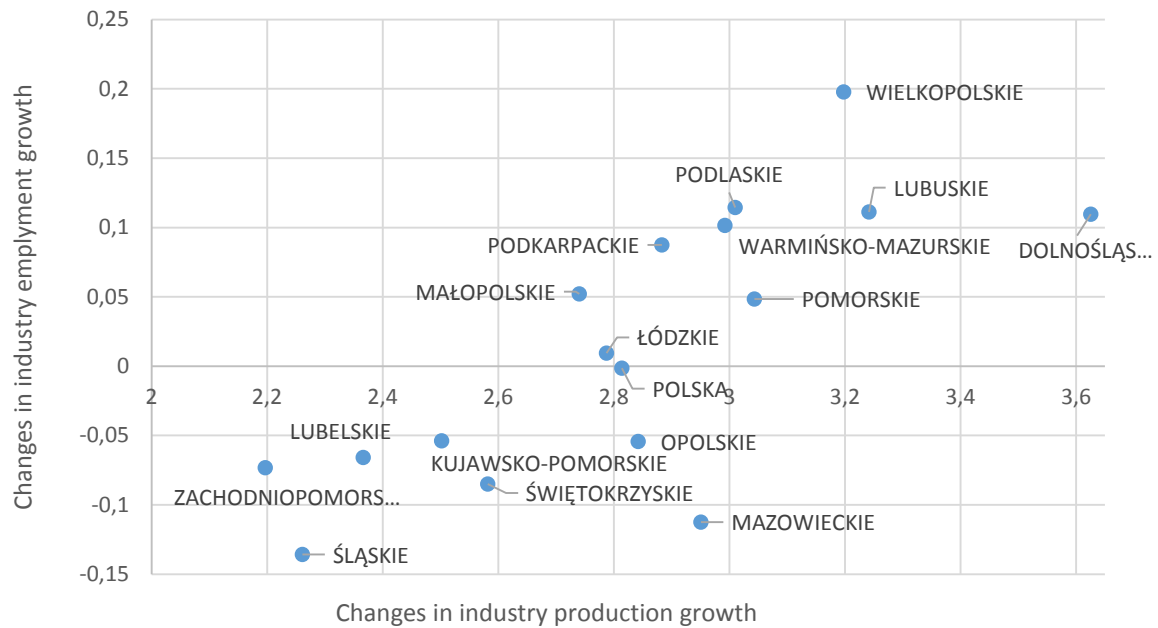


Figure 1. Changes in industry production and employment growth in 2000-2021.

Source: Own elaboration.

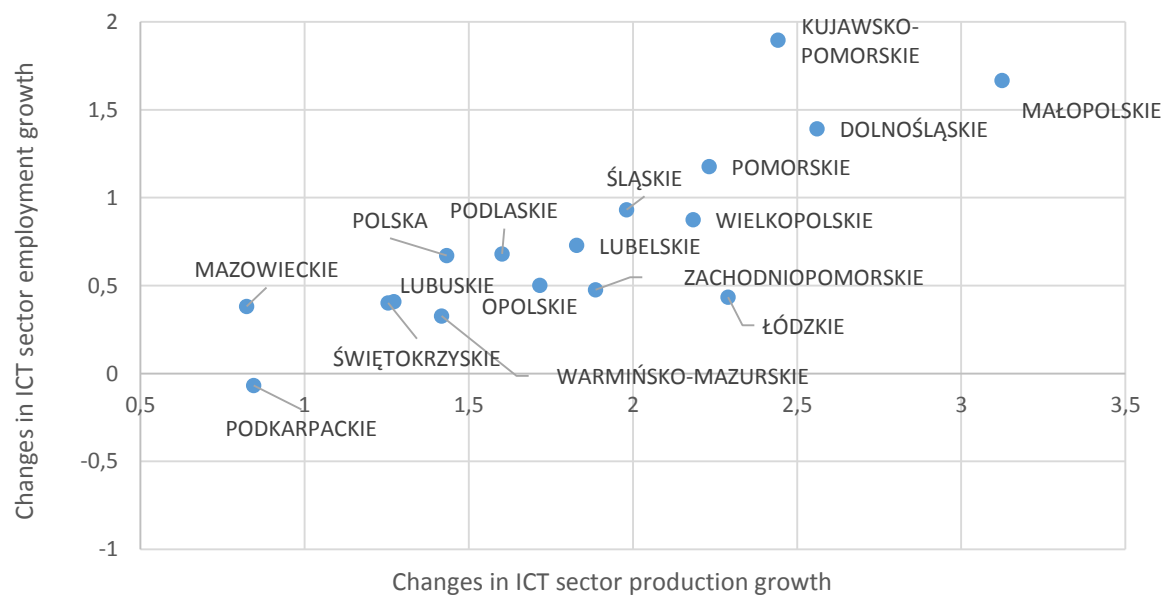


Figure 2. Changes in production and employment of ICT sector in 2000-2021.

Source: Own elaboration.

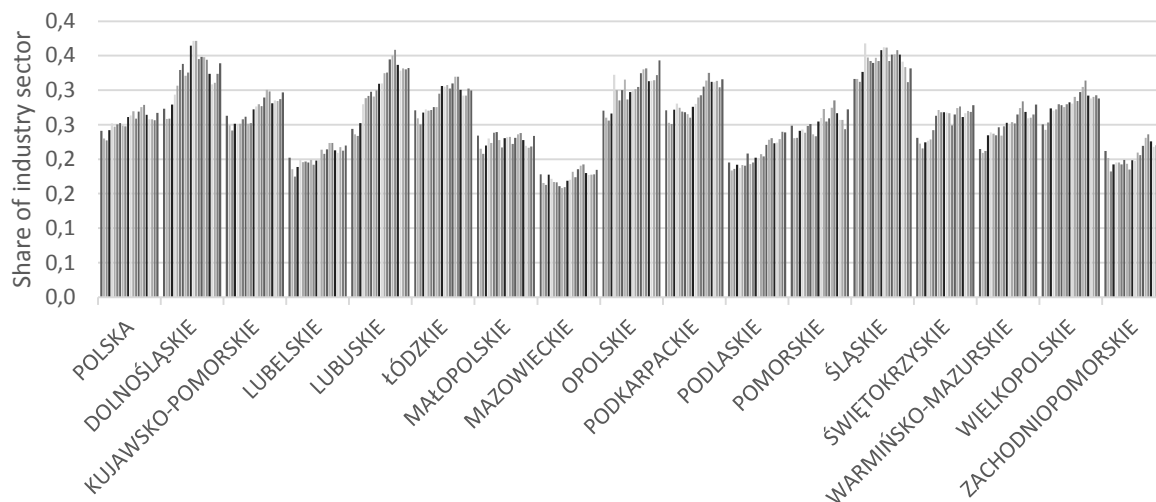


Figure 3. Changes in share of industry sector in value added in 2000-2021.

Source: Own elaboration.

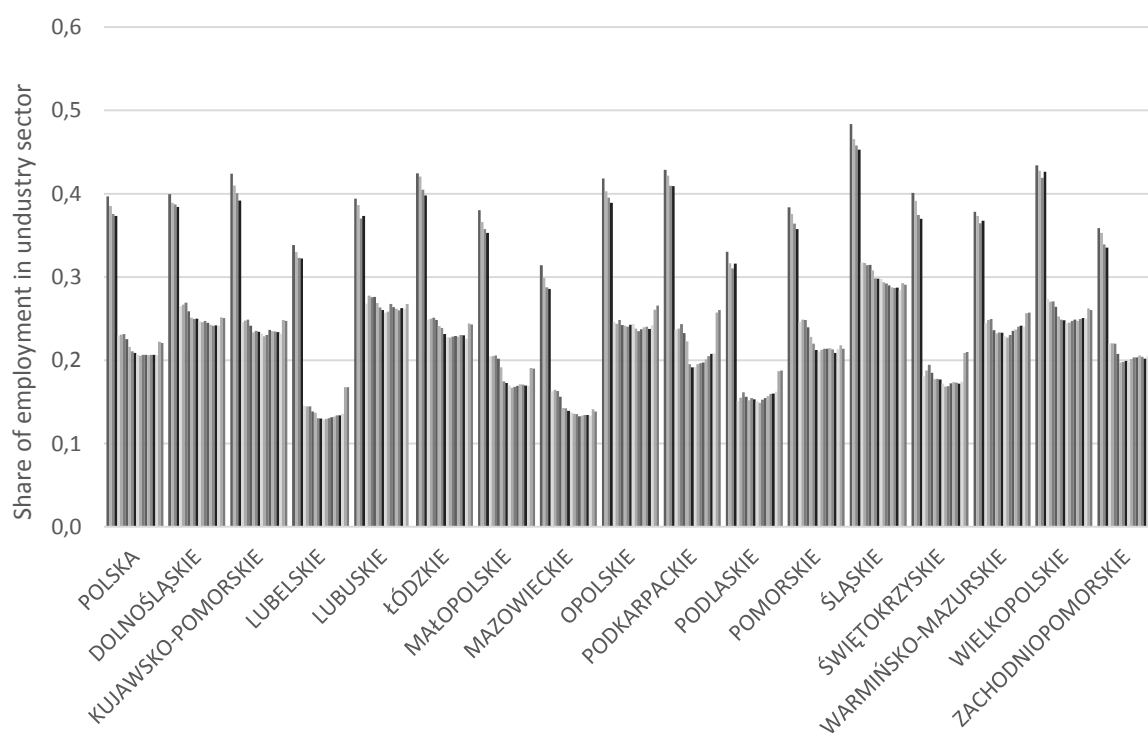


Figure 4. Changes in share of employment in industry sector in total employment in 2000-2021.

Source: Own elaboration.

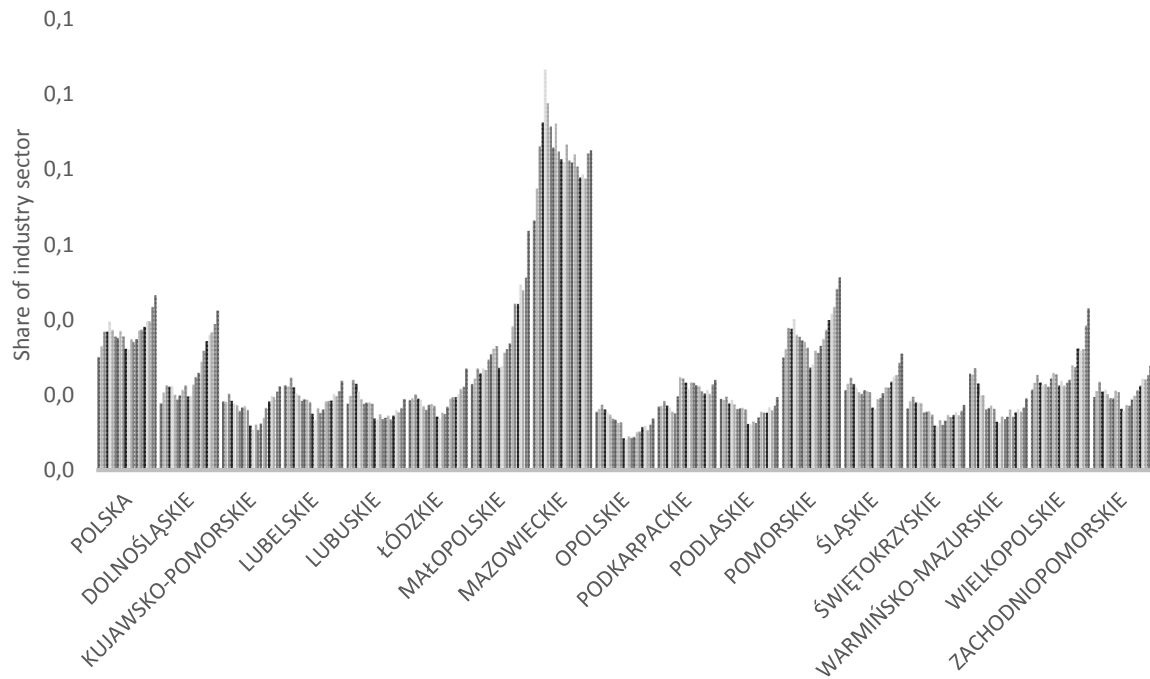


Figure 5. Changes in share of ICT sector in value added in 2000-2021.

Source: Own elaboration.

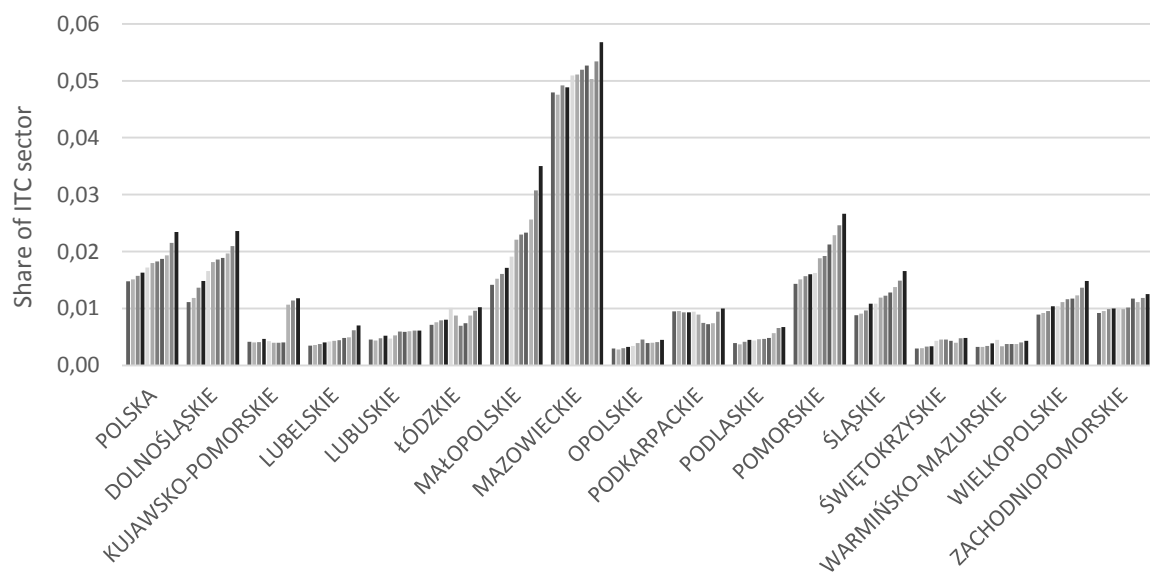


Figure 6. Changes in share of employment in ICT sector in total employment in 2011-2021.

Source: Own elaboration.

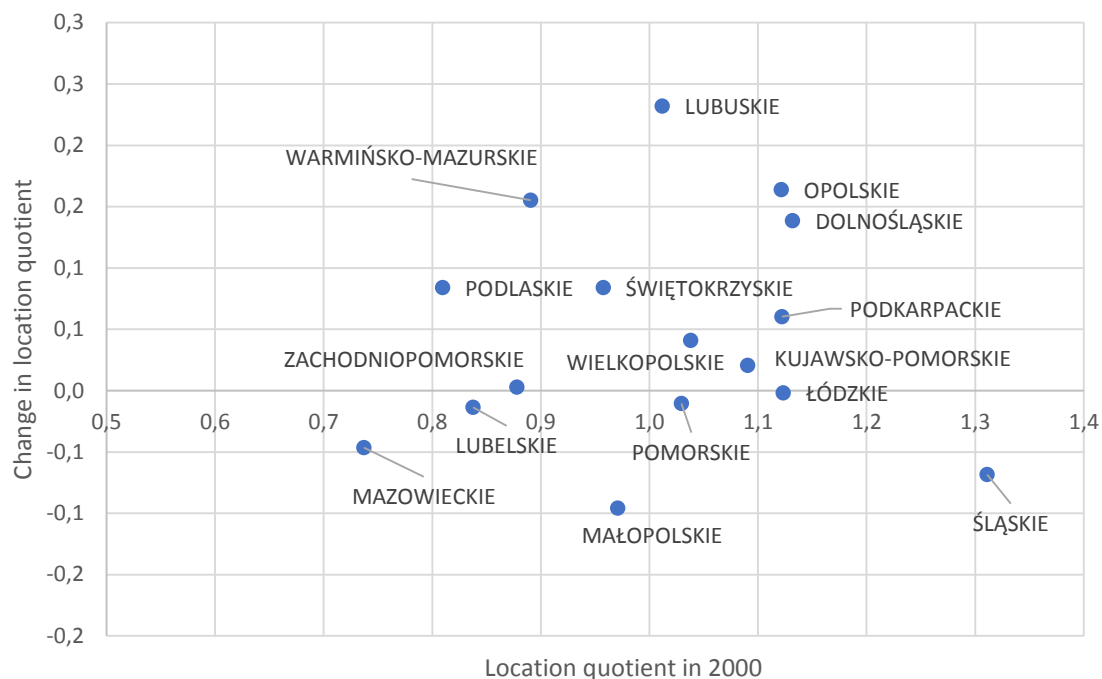


Figure 7. Location quotient in 2000 and its change between 2000- 2021 for industry sector production.

Source: Own elaboration.

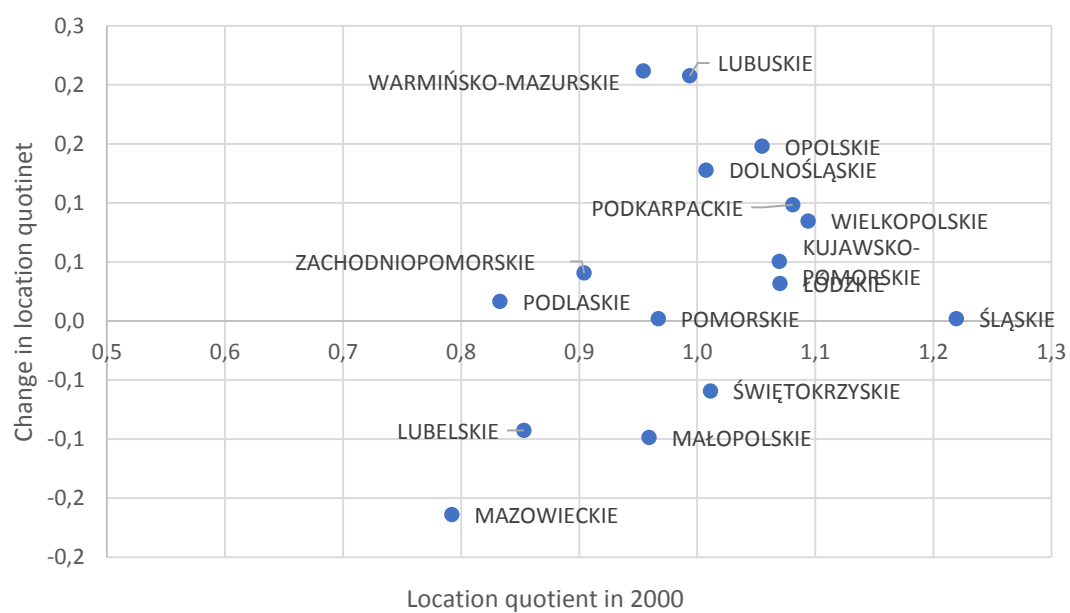


Figure 8. Location quotient in 2000 and its change between 2000- 2021 for employment in industry sector.

Source: Own elaboration.

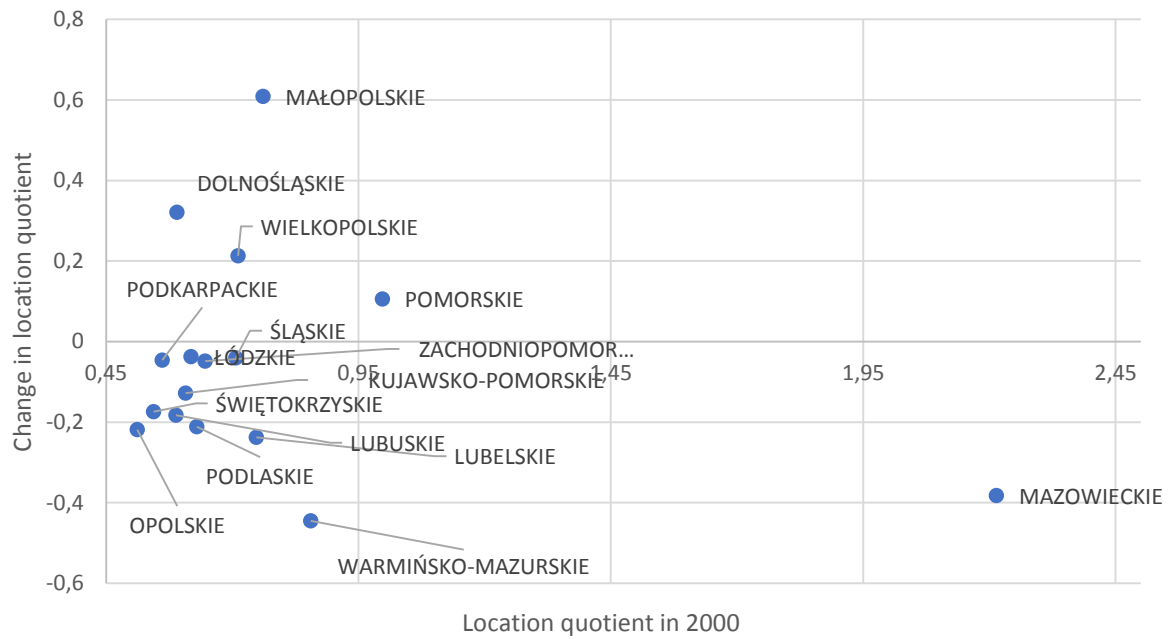


Figure 9. Location quotient in 2000 and its change between 2000- 2021 in production of ICT sector.
Source: Own elaboration.

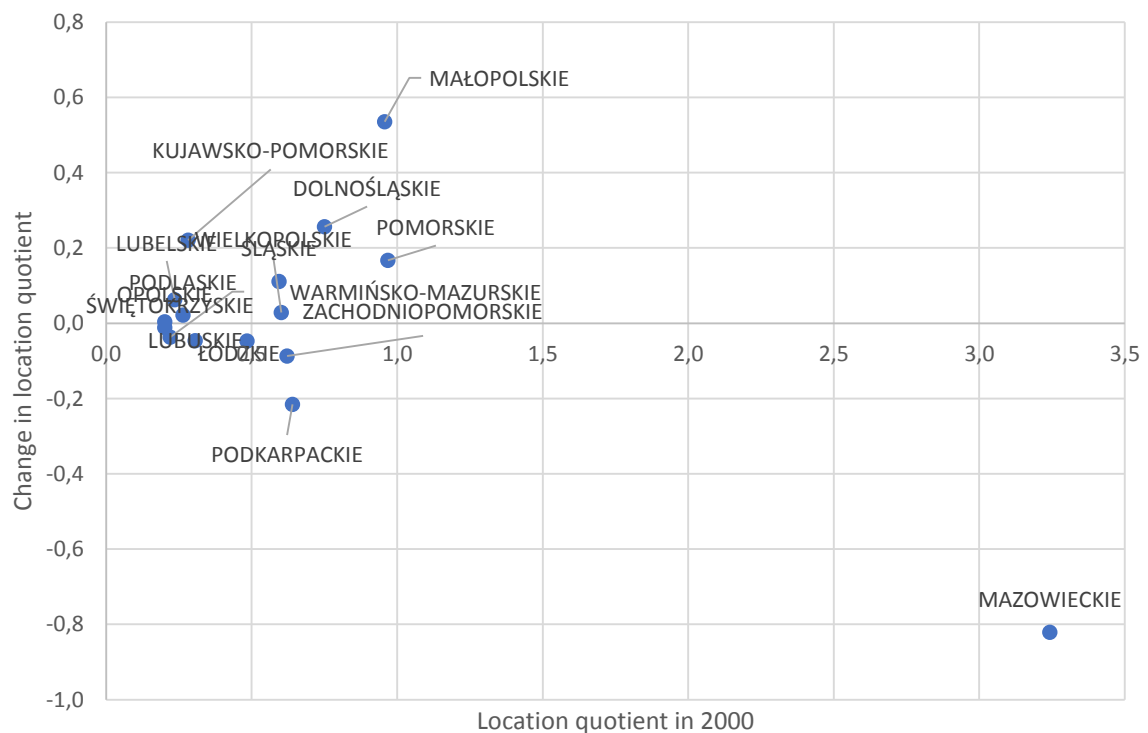


Figure 10. Location quotient in 2000 and its change between 2000- 2021 in production of ICT sector.
Source: Own elaboration.

Table 1.*Classification of regions in Poland in terms of industrialization intensity in 2021*

		Location quotient of employment in industry				
		> 1.5	1.0-1.5	0.5-1.0	0.25-0.5	< 0.25
Location quotient of industry production	> 1,5					
	1.0-1.5		Dolnośląskie Kujawsko-Pomorskie Lubuskie Łódzkie Opolskie Podkarpackie Śląskie Warmińsko-Mazurskie Wielkopolskie	Pomorskie Świętokrzyskie		
	0.5-1.0			Lubelskie Małopolskie Mazowieckie Podlaskie Zachodniopomorskie		
	0.25-0.5					
	< 0.25					

Source: Own elaboration.

Table 2.*Classification of regions in Poland in terms of industrialization intensity in ICT sector 2021*

		Location quotient of employment in ITC industry				
		> 1.5	1.0-1.5	0.5-1.0	0.25-0.5	< 0.25
Location quotient of ITC production	> 1,5	Mazowieckie				
	1.0-1.5		Małopolskie Pomorskie			
	0.5-1.0		Dolnośląskie	Podkarpackie Śląskie Wielkopolskie Zachodniopomorskie	Lubelskie Łódzkie	Warmińsko-Mazurskie
	0.25-0.5			Kujawsko-Pomorskie	Lubuskie Podlaskie	Opolskie Świętokrzyskie
	< 0.25					

Source: Own elaboration.