

Digital entrepreneurs and Industry 4.0.

The key mechanism of the new path creation in the industrial regions?

1. Objective of the project

The main objective of the project is to contribute conceptually and empirically to the ongoing debate in the socio-economic geography on the mechanisms of formation of new development paths for industrial regions in the face of profound technological changes called Industry 4.0 or even the fourth industrial revolution. The authors of the research particularly aim to determine whether the so-called 'digital entrepreneurs', i.e. innovative companies offering services and products included in the Industry 4.0 solutions, can become a force capable of breaking the existing economic specificity of industrial regions in Central Europe, which are often stuck in the so-called 'medium development trap' and 'dependent development', competing in the European and global economy with low costs rather than innovations. Meanwhile, without shifting the economic structure towards highly productive activities, the 'catching up' countries and regions will not be able to join the group of the most developed regions that produce innovations and bring together economic activities of high added value.

2. What research will be carried out within the project?

The research will involve a variety of sources of information, including statistical data, bigdata collections, company reports, surveys, in-depth interviews with various stakeholders forming the components of the regional innovation system, focused group interviews. The analysis will be conducted on the basis of quantitative and qualitative methods. The research will be conducted on two spatial scales: national and regional. On a national scale, the scale of activity, distribution and specificity of digital entrepreneurs will be identified. The in-depth research covering industrial companies, digital entrepreneurs, business environment institutions, including universities, will be carried out in three provinces in Poland, where the role of industry is significant and at the same time the sectoral specificity, spatial organisation of economic activities and the paths of transformation after 1990 are different.

3. What is the reason behind this research topic?

Nowadays, omnipresent digitisation processes change the functioning of entire economic sectors and the labour market, as well as cause great social, economic and spatial transformations. The technologies of industry digitisation, including cyber-physical systems, collaborative robots, artificial intelligence algorithms revolutionise the organisation of production ('how it is produced') and shape its new spatial organisation ('where it is produced'). The labour costs in modern 'intelligent factories' are much less significant, which changes the factors of competitiveness, affecting especially the position of countries with a medium level of development (so-called 'catching up countries'), which in the last two decades have attracted significant investments in industry from other countries by offering a favourable combination of labour costs and investment incentives. This may lead to a reduction in their industrial potential (pessimistic scenario). However, another scenario is possible – the emergence of clusters of advanced industry and the so-called 'digital entrepreneurs' in the industrial regions of medium-developed countries. The latter are, in particular, IT companies with domestic capital, which, as a result of the existence of a regional market showing demand for the solutions they offer and with the support of public institutions, can become a new, significant element of the regional economy. How and where this process may occur has been very poorly recognised so far, but it is of great theoretical and practical relevance.

4. Expected results of the project

The project will provide new knowledge in the field of economic geography and regional studies in one of their main areas of interest, i.e. formation of core–periphery dynamics and conditions for the emergence of new economic activities during periods of rapid technological changes as well as shock events (the project will consider the impact of the COVID-19 pandemic). In particular, it will reveal the mechanisms and factors shaping the origin and development of the mutually dependent economic pathways in industrial regions, taking into account the active role of companies and their institutional environment.