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The Role of Intelligent Organisations in Creating Favourable Conditions for the Development of Entrepreneurship

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Abstract:

Purpose: *The theoretical purpose of this study was to determine the essence of smart specialisation in local administrative units, together with the identification of its impact on the level of entrepreneurship and socio-economic development of spatial units. The empirical purpose was to indicate the relationship between the level of development of intelligent organisations (IO) in counties and the degree of entrepreneurship intensity.*
Design/Methodology/Approach: *The paper uses the method of literature studies, the standardised sums method, the weighted correlation method and cartographic analysis.*
Findings: *Intelligent specialisation in a local administrative unit (LAU) can contribute to the development of entrepreneurship and accelerate the socio-economic development of the area. Investment attractiveness is more important for stimulating the development of entrepreneurship than intelligent organisation in local administrative units at the county level in Poland.*
Practical Implications: *Results of the research can be used by local administrative units to shape the development strategy of an intelligent organization as well as of a smart specialisation. They can provide valuable practical guidance and synergies.*
Originality/Value: *The paper identifies key features of the smart specialization strategy. The paper defines the intelligent organizations development level index in local administrative units of the county level in Poland in 2018 based on a set of variables. A method of constructing typologies of local administrative units is based on indices determining the level of intelligent organization, investment attractiveness and entrepreneurship. The methodological concept can be used to assess the level of development of IOs in taxonomic units of different levels in different countries.*

Keywords: *Smart specialisation, intelligent organisation, entrepreneurship, local administrative unit, local development, regional development.*

JEL codes: *H70, O10, O18, O43.*

Paper type: *Research Paper.*

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1. Introduction

The creation of favourable social, economic and natural conditions, which can be described as the investment attractiveness of a given area, is of fundamental importance for the development of entrepreneurship. Taking into account the specificity of modern development processes - related, among others, to the globalisation of economic processes, transformation towards a knowledge-based economy, dynamic and turbulent changes in the environment - intelligent organisations, both in business and in local administrative units, become an important prerequisite for achieving the assumed objectives. In order to create favourable conditions for the development of entrepreneurship, taking into account the specificity of different industries and contemporary challenges, the investment profile and structure should be adapted to the specificity of the region and innovation requirements. In shaping favourable conditions for the development of entrepreneurship, it is important to base the development of enterprises on smart specialisations, which are supported by intelligent organizations in business and local administrative units (LAUs).[3]

Therefore, in order to explain the role of intelligent organisation in LAUs in creating favourable conditions for the development of entrepreneurship, this article compares the level of entrepreneurship with the author's own intelligent organisation development level indices in LAU (IO) and the author's own potential investment attractiveness indices (PAI). Potential investment attractiveness indices describe social, economic and natural environment conditions for the development of entrepreneurship. It is assumed that the existence of favourable conditions for the development of entrepreneurship should stimulate the development of entrepreneurship. However, this development is, on the one hand, dependent on the particular sector, and on the other hand, is dependent on the structures existing in enterprises and LAUs. Hence the article’s interest in smart specialisations (they are particularly important due to the possibility of achieving competitive advantages) and also in smart organisation that is their carrier in LAUs.

It is nowadays emphasized that the increase in the level of innovation is a key factor in the development of spatial units, as well as in achieving and maintaining a competitive advantage by economic entities. Local administrative units can actively support innovation processes on their territory - one of the most important support tools are regional innovation strategies based on the development of smart

[3]*This paper is a more in-depth study on an intelligent organisation (IO) in local administrative units (LAUs), which was initiated in the article entitled „Intelligent Organization in a Local Administrative Unit: From Theoretical Design to Reality”. The subject of the research in this article were spatial units of the lower taxonomic level, i.e. communes in Poland. Whereas, this article presents the importance of an intelligent organisation in creating favourable conditions for the development of entrepreneurship on the example of counties in Poland.*

specialisations. Thus, the theoretical purpose of this article was to determine the essence of smart specialisation in local administrative units, together with the identification of its impact on the level of entrepreneurship and socio-economic development of spatial units.

Entrepreneurship can be understood in different ways depending on whether we put emphasis on pro-entrepreneurial attitudes or their externalization in the form of taking up business activity. For the purposes of this study, the approach to entrepreneurship will be adopted as an act of registration of business activity by private individuals, as this form of activity directly refers to the externalization of pro-entrepreneurial attitudes typical of individual, not corporate, entrepreneurship. Therefore, the presence in a given local administrative unit of private entities considered per 100 inhabitants in productive age will be considered a manifestation of entrepreneurship in this study. The higher this index is, the more the pro-entrepreneurial attitudes of the population creating labour resources in a given place are manifested, disregarding the population's movements.

In the processes of entrepreneurship development, an important role is played by active shaping of favourable conditions for setting up companies as well as strengthening of pro-entrepreneurial attitudes by local administrative units. Because the development of entrepreneurship is not explicitly listed as one of the tasks of local administrative units, often the entrepreneurship development process is not properly supported in the direct local environment of people who are interested in running their own business.

Until 1989, Poland had been considered as belonging to the group of communist countries. The date ending this period of Poland's history is 4 June 1989 - after more than four decades of living in a communist country, Poles chose - in partially free elections - the Contract Sejm. A period of political and economic transition began. Compared to countries that have been guided by market economy principles for many years, Poland can be considered to belong to the group of developing market economy countries. The changes in Poland also included the change of the system of governance. In Poland, in 1999, the Act on the implementation of the three-tier territorial division of the state (Act of 24 July 1998), i.e. into voivodeships, counties and communes, came into force. Thus, there was a move away from a centralised and hierarchical system of state governance. This was accompanied by the rearrangement of the territorial system through the creation of self-governing counties and voivodeships, equipped with hierarchically defined own and commissioned tasks.

A county consists of a few or a dozen or so neighbouring communes (the so-called rural county) - as of 2019 there are 314 such units in Poland. A county may also be a spatial unit consisting of one city (urban commune) with county rights, i.e. a commune performing the tasks of a county - in Poland there are currently 66 cities with county rights (so-called urban counties) (Central Statistical Office, 2020). The

competence of counties includes the performance of public tasks of a supra-commune nature as defined by law, among which one can mention tasks affecting the level of entrepreneurship, i.e. tasks within the scope (Act of 5 June 1998):

- public education;
- public transport and public roads;
- real property management;
- public order and security of citizens;
- counteracting unemployment and activating the local labour market.

Particularly important for creating conditions for the development of entrepreneurship are the counties' own tasks in the field of shaping the labour market and secondary level education. Counties should look for new ways to perform these tasks, which will respond to contemporary market challenges and entrepreneurs' needs. One of the most important challenges is to increase the level of innovativeness of enterprises. The answer to these challenges may be an intelligent organisation (IO) in local administrative units (LAU). Therefore, the empirical purpose of this study was to indicate the relationship between the level of development of intelligent organisations in counties and the level of entrepreneurship intensity.

The following research hypotheses were verified in the process of execution of the above mentioned purposes:

1. Smart specialisation in a local administrative unit can contribute to the development of entrepreneurship and accelerate the socio-economic development of the area (H1).
2. Investment attractiveness is more important for stimulating the development of entrepreneurship than intelligent organisation in local administrative units at the county level in Poland (H2).

The research problem was encapsulated in the following research questions:

1. What is the importance of identifying and supporting smart specialisations for the development of entrepreneurship?
2. What is the level of development of intelligent organization in local administrative units at the county level in Poland?
3. Is there a dependency between the intelligent organisation development level index in LAU and individual components of this index and the entrepreneurship level?
4. Is there a dependency between the investment attractiveness and individual components of this index and the entrepreneurship level?

Empirical analyses were based on the indices of the level of intelligent organisations development in local administrative units (LAUs) created at the Enterprise Institute under the direction of H. Godlewska-Majkowska as part of the statutory research carried out at the Collegium of Business Administration in 2019, as well as indices

of potential investment attractiveness of local administrative units for the national economy based on the methodology developed by the team led by H. Godlewska-Majkowska as part of the statutory research carried out at the Collegium of Business Administration of the Warsaw School of Economics (SGH). All data is based on the year 2018. The research methods used for the purposes of this article are the standardized sum method, cartographic analysis and weighted correlation method.

2. The Role of Smart Specialisation in Stimulating Entrepreneurship and Socio-Economic Development of Territorial Units

The design and implementation of industrial innovation policies (e.g. smart specialisation) depends on site-specific prerequisites, especially the diversity of the regional innovation and entrepreneurship system, and the degree of current industrial diversification (Grillitsch and Asheim, 2018). Smart specialisation is one of the instruments that support the achievement of the objectives of regional innovation strategies as part of the pursuit of knowledge and innovation-based development. Smart specialisation is a location-based policy, taking into account available resources and local specificities, aimed at getting involved different stakeholder groups in the selection of priority business areas with high transformational potential for the economy.

The external focus of regional innovation policies and strategies to strengthen interregional cooperation that can better support innovation in a global network context is also important. Its intensification is conditioned by active support from national governments for inter-regional and cross-border R&D activities, consolidation of mutual learning platforms and communities of practice, actions to exchange experts who can act as mentors in other regions, business support taking into account real innovation areas and entrepreneurial discovery processes rather than administrative borders (Uyarra *et al.*, 2018). Identification of smart specialisations allows for more effective, focused financing of selected scientific fields that support local entrepreneurship (Hilarowicz, 2016). The development strategy emphasizing the importance of innovation, focused on the competitive advantage of the region and its strengths resulting from its assets and learning skills, provide opportunities to achieve smart specialisation (Foray and van Ark, 2007). Regions should select their areas of R&D and innovation in which they will specialise. These should be innovative projects complementing the existing productive assets of the region or strengthening the position of those industries that provide an opportunity to make the best use of existing potential.

One of the main principles of smart specialisation strategy is entrepreneurial discovery. It consists in indicating priority support areas and concentration of resources in those areas in which entrepreneurs discover technological possibilities and will be able to use this potential. It should be stressed that it is entrepreneurs (in a very broad sense, i.e. innovative companies, research leaders in higher education institutions, independent inventors and innovators) who are predestined to discover

those areas of R&D and innovation in which the region can stand out, taking into account its existing capacities and production advantages. At the same time, it should be stressed that entrepreneurial discovery is understood more broadly than innovation. "The entrepreneurial discovery that drives the process of smart specialisation is not simply the advent of an innovation but the deployment and variation of innovative ideas in a specialised area that generate knowledge about the future economic value of a possible direction of change" (Foray and Goenaga, 2013).

The smart specialisation strategy is based on two elements. Firstly, it indicates the need for concentration and specialisation of the region's knowledge resources (mainly experience-based knowledge, which is complementary to other of the region's resources). Secondly, although the principle of entrepreneurial discovery plays an important role, public policy at different stages is also of significance: identification, evaluation and targeted support for new regional specialisations. At the same time, it is worth noting that smart specialisation is about discovering an original and unique local knowledge base. Hence the emphasis on diverse knowledge, often of a specialist nature, which can increase the resilience of the local economy to both supply and demand shocks (Foray *et al.*, 2011). The goal of the smart specialization strategy (S3) is economic, investment and employment growth through finding by every European region of their own competitive advantages and fields of economic specialisation.

According to Finnish researchers, the industrial structure of the region should be diversified in order to remain resistant to external shocks (Haukioja *et al.*, 2018). Confirmation of the importance of diversification of specialisation in several types of activity are the studies conducted in Polish cities. They show that an increase in concentration of enterprises with foreign capital participation occurs in cities with diversified specialisation in several types of activity. This can be associated with lower business risks and availability of specialised staff (Budzyńska, 2019). Moreover, it is worth noting that the resilience of the economy to shocks is nowadays gaining new significance in the face of the coronavirus (Covid-19) threat and the resulting need to change the way enterprises operate in the post-pandemic era. All innovative solutions that use information and communication technologies and enable companies to operate while maintaining social distance and sanitary regime are becoming increasingly important. Nowadays, innovative solutions ensuring security of interpersonal contacts in economic processes, but also in social contacts and the sphere of public services, are gaining particular importance. The need to maintain social distance and even isolation has highlighted the role of information and communication technologies in various spheres of life in the face of the need to maintain the health security of the population.

Smart specialisations contribute to accelerating growth by re-modelling and redirecting the economy, which improves its added value and competitiveness. By building on the regions' endogenous potential and on existing knowledge and R&D

activities adapted to local social and economic conditions, regions will be able to lead in a specific field and achieve a "critical mass", allowing them to compete internationally in the future (Kogut-Jaworska, 2015). The ability to enter and remain on international markets depends on the companies' specific characteristics, including their size. Small and medium-sized enterprises face multiple obstacles in the development of their export activities, which include mainly informational (lack of information on available markets, trade requirements and legal provisions) and financial (high transaction costs for international activities and compliance) obstacles, as well as poor access to financing for international trade (ECA, 2018). However, surveys carried out among small and medium-sized software companies in Malta showed that the island status and size of the company did not present an obstacle for companies wishing to discover new areas of specialisation or production and seeking international expansion. This is despite the fact that Malta is not a leader in R&D, it lacks research capacity but has more opportunities to exploit (or imitate) innovation (Borg and Middup, 2016).

The aim of smart specialisation (S3) is to mobilise innovation and entrepreneurial capacity, increase the number of jobs and consequently accelerate economic growth through interregional cooperation. Hence, facilitation and coordination of activities on interregional value chains play a key role. Managing such chains requires business leadership, activity of regional authorities and innovative companies (Todeva and Ketikidis, 2017). Result of the research indicate that there is a positive correlation between the intensity of cooperation between innovative companies and the effectiveness of innovation activities measured e.g. by the number of EPO patent applications per billion regional GDP, share of SMEs introducing innovations (product, process, marketing or organizational), and the sales of new-to-market and new-to-firm innovations as a percentage of total turnover. This indicates the important role of cooperation in innovation processes, and thus the need to create favourable conditions for animating and intensifying cooperation processes. It should be noted that regional authorities should play a key role in this respect by using appropriate regional and innovation policy mechanisms and instruments to facilitate networking (Matras-Bolibok *et al.,* 2018).

Triple Helix relationships - involving the three main regional stakeholder groups, i.e. universities, businesses and the government - are at the centre of the process of entrepreneurial discovery. Improving connectivity between regional stakeholders can contribute to the development of the regional economy, including - among others - through better targeting of regional policy interventions to support entrepreneurial discovery. It is worth noting that the level of regional connectivity may be associated with specific features of the area, e.g. peripheral areas may require more intra- and inter-regional connectivity (Virkkala *et al.,* 2017). As regions differ in their development path and in their capacity to create and absorb innovation, specific actions to identify smart specialisation need to be adapted to their specificities (Markowska and Jefmański, 2013; Jucevicius and Galbuogienė, 2014). It is worth noting that most of the regions in Poland are characterised by a

relatively low level of development, as evidenced by the fact that in the years 2007-2020 the whole territory of Poland was covered by public aid of different intensity (Komor, 2020).

It is particularly important to support innovative processes in the peripheral regions with a relatively low level of social and economic development. This raises the question whether the development of smart specialisations can help to boost the development of such areas? The example of a peripheral region of a post-industrial nature, i.e. South West Wales in the United Kingdom, shows the importance of links between technology sectors in the region in the form of the Life Sciences & Health cluster (Davies *et al.,* 2018). The research carried out in the poorest region of Romania, i.e. North-East region in Romania, analysed the use of innovative technical solutions to stimulate entrepreneurship and create added value. The focus was on assessing the impact of Augmented Reality technology on the development of one of the traditional industries, the furniture industry. It was proven that the implementation of this solution could contribute to the development of entrepreneurship by increasing customer satisfaction with the products purchased being compliant with the customers' needs and thus reducing the amount of product returns.

The risks for entrepreneurs include lack of necessary technological information and high costs of implementation of such solutions, which can be minimized by providing information on technology and proposing new sources of funding (including public funding) (Gusul, 2019). Studies carried out in five sparsely populated European regions (Aragon - Spain, Lapland - Finland, Nordland - Norway, Highlands & Islands - Scotland and Västerbotten - Sweden) show that extra-regional links based not only on physical but also on digital links play an important role in implementing a regional innovation strategy. New forms of proximity relationships based on institutional, cognitive and organisational proximity, and not just on geographical grouping, come to the forefront. Regions of this type also take action to involve regional knowledge actors (including universities) in transnational knowledge networks, as well as to create common knowledge bases, both near and far away (Dubois, 2017).

Based on literature studies, the key features of smart specialisation strategies can be identified:

- basing the processes on endogenous potential and specificity of the location,
- ability to learn and basing development processes on knowledge and innovation,
- concentration and specialisation of resources,
- entrepreneurial discovery, while preserving the diversity of economic structure,
- recognising the role of intra- and interregional cooperation
- targeted institutional support from local, regional and national authorities.

It is worth noting that the aim of the smart specialisation strategy is to create innovative social and economic solutions, increase the added value of the economy and increase its competitiveness in the international arena. As a consequence, this implies the development of entrepreneurship. In this context, it is particularly important to create competitive advantages resulting from specialisation, which contributes to:

- the increase in the ability to achieve economies of scale,
- the reduction of the production factors dispersion and improvement of the efficiency of their use,
- the reduction of market entry barriers through increasing the capacity to create specialised infrastructure for entrepreneurs in a given sector,
- a better market position of the region or the entrepreneur compared to the lack of specialisation,
- the increase in the ability to create strategic alliances for enterprises in new markets requiring advanced knowledge flows,
- a better ability of local administrative units of a given region to compete based on an integrated marketing product,
- the increase in real possibilities to manage investment risk.

Based on a review of the literature, it can be concluded that smart specialisations can positively influence the level of entrepreneurship and the dynamics of development processes in spatial units, including the economically underdeveloped regions. This confirms the H1 hypothesis. At the same time, it is worth noticing that smart specialisations and intelligent organisation in LAUs share certain common features, which may cause positive synergy effects in terms of support for the entrepreneurship level and social and economic development in a given territory.

These are, among others learning to learn, knowledge and information management and building long-term relationships with external partners. Hence, the implementation of the principles of an intelligent organisation in an LAU, in which the smart specialisation strategy is implemented at the same time, may contribute to achieving the synergy effect of activities, due to, among others:

- use of modern information and communication technologies by LAUs in order to establish interregional cooperation as well as to build relations with partners in order to correctly identify, assess and target support for smart regional specialisations,
- use by LAUs of innovative sources of financing in order to offer effective and targeted support for industries fitting in with smart specialisations,
- animation by LAUs of cooperation between enterprises from the smart specialisation sectors and knowledge institutions (universities, R&D units),
- support for entrepreneurship from the smart specialisation sectors through the offer of business-related institutions connected to LAU activity (science and technology parks, industrial parks, science and technology incubators, clusters),

- improving the quality of educational services in order to prepare employees to meet the needs of enterprises from smart specialisation sectors,
- use of modern technological solutions to provide public services by LAUs (e.g. to speed up investment procedures, deal with formalities), as well as to promote the local administrative unit in order to, among others, attract investors from smart specialisation sectors.

3. Entrepreneurship as a Spatial Phenomenon - County Level in Poland

The local environment of a potential new entrepreneur has a significant impact on pro-entrepreneurial attitudes and starting of a new business activity. Often, the business activity is registered by a local communal office and the services provided by this office can support the beginner entrepreneur in choosing the right form of taxation, or the right mode of settlement with the Social Insurance Institution.

The way in which local self-government units carry out their tasks determines the conditions for conducting business activity. In Poland, self-government's tasks related to creating foundations for the development of enterprises are clearly assigned, as it is the local level of self-government structure that shapes the local infrastructure, creates local law regulations affecting the costs of conducting business activity in a given place, and has an impact on access to graduates of post-middle school level education. Considering the tasks regarding various forms of childcare for children under 7 years of age, it also has an impact on the capabilities of economic activation of women. Moreover, organisational solutions are important, created in order to support entrepreneurship in a given area, in the form of e.g. organised consultations to support the beginner entrepreneurs, activity of local business councils, or creation of pro-entrepreneurial places like local economic activation zones, e.g. technology parks and business incubators. The pro-enterprise attitude is also supported by outsourcing the tasks in a public-private partnership model.

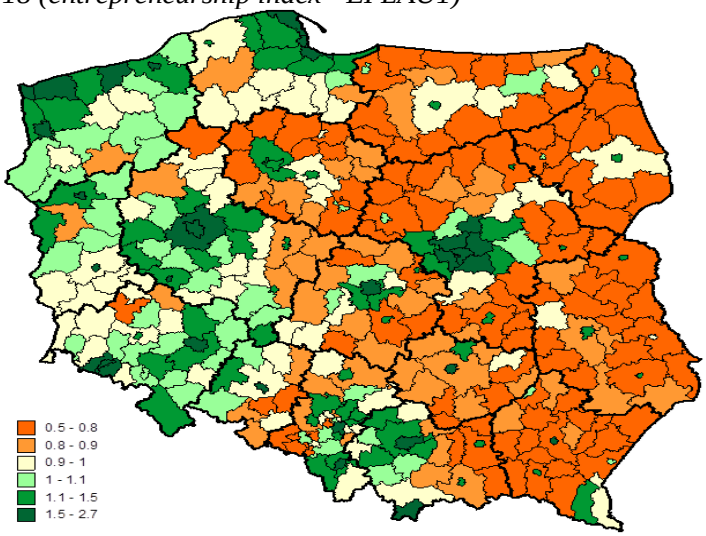
In Poland, on the county level, active policy of counteracting unemployment affects professional activation of the unemployed who, after retraining, can undertake economic activity in an individual or cooperative form.

All of this results in a significant increase in the presence of entrepreneurship in large cities - see Figure 1.

The highest entrepreneurship indices are achieved by cities with county rights including their functional areas (Figure 1). Depending on the scale of a given city these areas may exceed the range of a rural county or the closest cities with county rights. This is particularly evident in the case of the Warsaw agglomeration, which creates a very clear concentration of counties that are strongly distinguished in terms of entrepreneurship. The second cluster consists of Tricity and Pucki county together with the counties surrounding it, from Lęborski and Wejherowski counties, through

Kartuski county, including Gdański and Nowodworski counties. A similar concentration is also visible in other regions of Pomerania and the Slovincian Coast, from Szczecin to Koszalin, as well as around Poznań, Wrocław, Kraków and the cities mentioned. On the other hand, concentrations of counties with above-average entrepreneurship levels are significantly smaller in the case of such cities as Bydgoszcz, Toruń and Łódź. Smaller voivodeship capitals are usually single centres with above-average entrepreneurship levels (e.g. Białystok, Lublin, Rzeszów and Kielce). The above-average entrepreneurship level is also specific to counties of high tourist value, such as the Tarzański, Kołobrzeski, Jeleniogórski and Leski counties.

Figure 1: *Private entities per 1000 people in productive age according per Polish counties in 2018 (entrepreneurship index - EI LAU1)*



Source: *Own study based on the data from the Local Data Bank of the Central Statistical Office [GUS].*

A very low intensity of entrepreneurship can be observed in Eastern Poland, especially in the Podkarpackie, Lubelskie and Podlaskie voivodeships (Figure 1). Their high concentration is also visible in counties peripheral to voivodeship capital cities (Mazowieckie and Kujawsko-Pomorskie voivodeships) or areas of high tourist values (Warmińsko-Mazurskie). Such spatial diversification of entrepreneurship indicates a well-established course of diffusion phenomena in Poland, which is related to historical conditions and polarities of the European space. Hence, the intensity of entrepreneurship decreases eastward. The exception to this are large agglomerations, such as Warsaw and Łódź.

The figure also shows an above-average intensification of entrepreneurship in cities that are currently or were in the past the seats of voivodeships, i.e. in cities with county rights and cities that are part of formed urban complexes. Therefore, it can be

concluded that the higher the level of urbanisation of a given region and the closer it is to the location of the historically shaped centres of Poland's economic space the higher intensity of entrepreneurship it enjoys.

There are many phenomena that influence the entrepreneurial attitudes of the population. Among them, there are factors stimulating these processes as well as limiting them. In order to capture certain general mechanisms of shaping the development of local entrepreneurship, it is worth pointing out some features of the local environment that have an impact on entrepreneurship. The mechanisms that determine the flow of business information and the possibilities of supporting beginner entrepreneurs are of particular importance. These mechanisms are an inseparable feature of shaping intelligent organisations. They can be created not only in business organisations, but also in local administrative units.

4. The Essence of Intelligent Organisations in a County

Local administrative units, like companies, can create organisations with the characteristics of intelligent organisations. This is related to the need to manage information streams more and more effectively, to use the accumulated knowledge in the unit's IT resources or to use new and increasingly popular information channels in contacts with its stakeholders. This requires not only a rapid response to the stimuli and information coming from the environment, but also the creation of long-term relationships with partners, especially in regard to the creation and implementation of local development strategies (Godlewska-Majkowska, 2019). It is also important to support employees in the process of gaining and updating their knowledge, and to facilitate the flow of knowledge within the organisation (Czerniachowicz, 2011).

There are different definitions of intelligent communes in the literature, but by analogy these definitions can be applied to the county level, all the more so because in both cases we are dealing with the local level (Wereda, 2010; Kokotek, 2019). Due to the fact that the problem of defining an intelligent organisation in a county capital city requires capturing some universal features of county-level units, this study assumes that an entity which effectively manages information, knowledge, communication and relations with partners and uses modern technological solutions to perform public tasks and dynamise local development processes and to achieve and maintain an advantage over competitors, can be considered an intelligent administrative unit (Godlewska-Majkowska and Komor, 2019). These features of a county are the result of the development of its organisations in a way analogous to intelligent business organisations.

Identification of the level of development of intelligent organisations in local administrative units may be very useful from the point of view of recognizing the impact of maturity of intelligent organisations in local administrative units on the entrepreneurship development process and support for pro-entrepreneurial attitudes.

If we assume that an intelligent organisation in a local administrative unit manifests itself in high development of relational capital, efficient information flow management as well as knowledge management, thanks to which decisions are made faster and more accurately, this should have an impact on possibilities to support pro-enterprise attitudes and commencing a business activity. In Poland, in the case of cities with county rights, one should also note the need to synchronise the performance of tasks belonging to the commune level and tasks assigned to the county level. Therefore, such units are characterised by multiplied information flows, greater diversity of operational processes in offices, as well as the need to synchronise more diverse tasks in comparison with rural counties or communes that are not simultaneously cities with county rights.

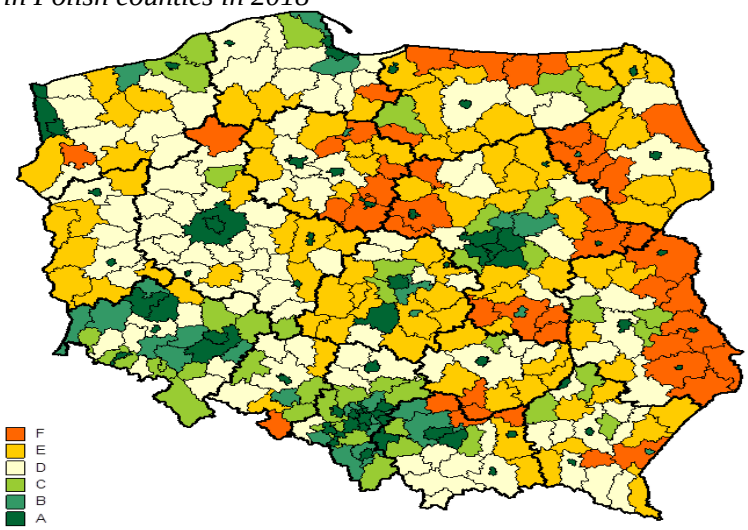
5. Spatial Diversification of the Intelligent Organisations Development Level Index in Counties

The paper uses the method of evaluation of the level of development of intelligent organisations in local administrative units, which was proposed in the previous article on the development of intelligent organisations in self-government units. The intelligent organisations development level index in local administrative units at the county level in Poland was constructed on the basis of the standardised sums method. As data from national statistical offices is the most useful, the aggregated index was based on data derived from official statistics and consisted of the following variables (Godlewska-Majkowska and Komor, 2019):

1. share of council members with tertiary education in the total number of the council members in the municipality,
2. share of enhanced nutrient removal wastewater treatment plants in the total number of wastewater treatment plants and the share of enhanced nutrient removal wastewater treatment plants and biological wastewater treatment plants in the total capacity of wastewater treatment plants in the municipality,
3. share of grants from the European Union allocated to financing EU programmes and projects in the total income of municipalities,
4. average voter turnout at the elections of LAU governors (i.e. in Poland local governors, mayors and presidents of cities in the first and second round of elections),
5. Arithmetic average of the following three variables:
   - the number of libraries making it possible to connect the user's PC (mobile device) to an electric socket per 100 thousand residents
   - the number of libraries making it possible to use wireless Internet per 100 thousand residents
   - the number of libraries having access to broadband Internet per 100 thousand residents
6. share of the area of applicable local spatial development plans drawn as vectors with geo-references in the total area of plans,
7. share of area covered by applicable local spatial development plans in the total area.

On the basis of the analysis of the intelligent organisations development level index in all counties in Poland, it can be concluded that the most developed intelligent organisations are in cities with county rights. This conclusion is also confirmed by a cartographic analysis of the distribution of variability of the intelligent organisations development level index - Figure 2. In this Figure, the highest index can be seen in counties classified in class A, while class F contains counties with the least developed intelligent organisation.

Figure 2: *Spatial diversification of the intelligent organisation development index (IO LAU1) in Polish counties in 2018*



Source: *Own research.*

A higher level of development of intelligent organisations in local administrative units can be seen in areas with higher economic development and high investment attractiveness for the national economy (the Pearson index calculated for the index of potential attractiveness of counties for the national economy and the IO index in counties in 2018 was 0,70. The geographical proximity to urbanised areas and the EU border is also important.

The highly urbanised areas, especially the Upper Silesian, Warsaw, Łódź, Wrocław and Poznań agglomerations, are characterised by a particularly high intelligent organisation development index (Figure 2). On the other hand, the counties located in the eastern part of Poland feature the lowest intelligent organisations development indices. The lower level of computerisation of smaller, peripherally located local units, as well as the lack of need to use extensive IT systems, implies less need to hire knowledge workers. At the same time, a smaller scale of business activity and its dispersed nature may make the use of capital-intensive municipal management solutions unprofitable in such local administrative units. Therefore, a smaller county may not be interested in using the whole spectrum of solutions typical for intelligent organisations due to the lack of economic or organisational rationale for introducing

certain solutions. In turn, the larger the county is, and thus the greater number and complexity of information flows, the more justified is the use of tools typical of intelligent organisations, and the more needed are highly qualified employees ready to raise their qualifications and adapt them to the changing organisation in the county.

6. Intelligent Organisations in Counties vs Intensification of Entrepreneurship - what Stimulates and what Slows down Entrepreneurship in Counties of Different Types?

Intelligent organisations influence the intensity of entrepreneurship in counties to varying degrees. This conclusion can be drawn by analysing correlation between the entrepreneurship index and the intelligent organisations development level index in counties. For all counties the Pearson correlation coefficient was 0.51. In the case of individual components of the intelligent organisation development assessment index, only for the variable in the form of the share of council members with higher education in the total number of council members in a commune this index reached a fairly high level, equal to 0.68. This indicates quite a significant influence of the level of education of council members regardless of the type of county, taking into account its urban or rural nature.

For the remaining components of the index of an intelligent organisation these indices are irrelevant. It is surprising that the fact of equipping libraries with an Internet link even shows a weak negative dependence - see Table 1.

This is probably related to a stronger influence of general investment attractiveness of counties, which is confirmed by a higher coefficient of correlation between the entrepreneurship index (EI LAU1) and the potential investment attractiveness index (PAI LAU1), amounting to 0.75 (Table 4). Among the components of the potential investment attractiveness index, market values (Pearson correlation coefficient equal to 0.705) and technical infrastructure (0.65 respectively) are particularly important.[4] This confirms the H2 hypothesis that Investment attractiveness is more important for stimulating the development of entrepreneurship than intelligent organisation in local administrative units at the county level in Poland.

It follows that entrepreneurship is more strongly influenced by the location of a given county than an intelligent organisation established on its basis. Similar conclusions are drawn from the analysis of spatial diversification of the potential investment attractiveness index (PAI LAU1) - see Figure 3.

[4]*Indices of potential investment attractiveness of local administrative units in Poland for 2018 are calculated based on the weighted correlation method, which allows to perform multi-criteria analyses based on sets of multiple variables. The list of variables is set out in the Appendix to the article. More on that in: Godlewska-Majkowska 2018a, Godlewska-Majkowska 2018b.*

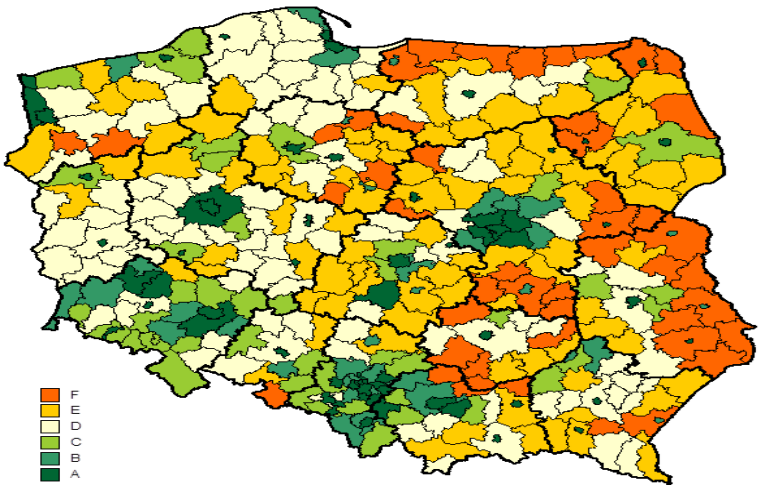
Table 1: *Correlation coefficients for the entrepreneurship index (EI LAU1) and the intelligent organisations development level index (IO LAU1), taking into account the components, for counties in 2018*

Variable	Pearson's coeff
Intelligent organisation development level index in Polish counties in 2018	0.51
share of council members with tertiary education in the total number of the council members in the commune	0.68
share of enhanced nutrient removal wastewater treatment plants in the total capacity of wastewater treatment plants	0.41
share of enhanced nutrient removal wastewater treatment plants in the total number of wastewater treatment plants	0.37
share of the area of valid zoning plans available in a georeferenced vector form in the total zoning plan area	0.25
share of the area covered by the zoning plans in total area	0.21
voter turnout in local government elections	0.11
total earnings related to EU funding in the total earnings of communes	-0.07
libraries with access to broadband internet per 100,000 inhabitants	-0.29
libraries that allow the user's computer (mobile device) to be connected to an electrical outlet per 100,000 inhabitants	-0.35
libraries that offer Wi-Fi per 100,000 inhabitants	-0.41

Source: *Own research.*

In the figure, the highest index can be seen in counties classified in class A, whereas class F contains counties with the lowest level of investement attractiveness. However, the question arises whether there are other forces that shape the influence of intelligent organisations on the development of entrepreneurship, and especially whether a county's intelligent organisation acts as a catalyst of entrepreneurial processes; so whether there is a synergy of pro-investment activities and organisational behaviour indicating the development of intelligent organisations?

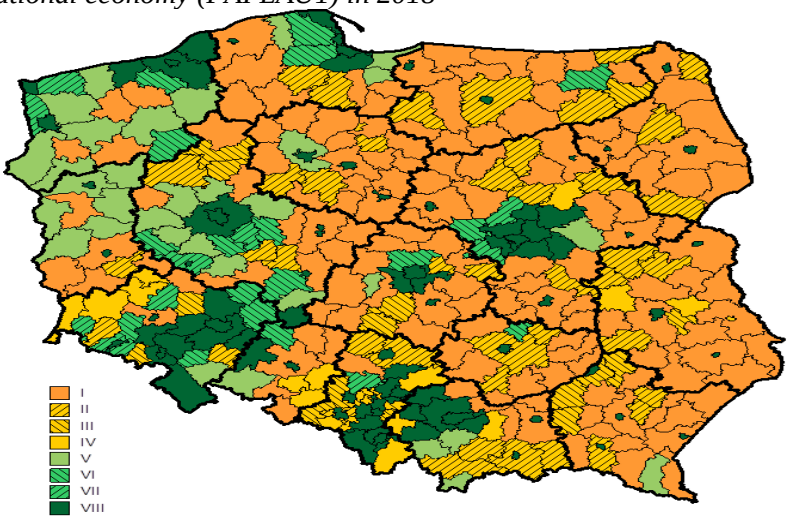
Figure 3: *Spatial diversification of the potential investment attractiveness index for the national economy (PAI LAU1) in Polish counties in 2018*



Source: *Own research.*

To answer this question, the indices of intelligent organisations were compared with those of investment and entrepreneurship attractiveness. The results of typology based on these three indices are shown in Figure 4 and Table 2.

Figure 4: *Types of counties in Poland, taking into account the level of entrepreneurship (entrepreneurship index - EI LAU1), the level of development of intelligent organisations (IO LAU1) and potential investment attractiveness index for the national economy (PAI LAU1) in 2018*



Source: *Own research.*

Table 2: *Criteria for distinguishing county classes*

County type	Entrepreneurship index (EI LAU1)	Index of the level of development of intelligent organisations in the county (IO LAU1)	Potential investment attractiveness index (PAI LAU1)
I	Below average	Below average	Below average
II	Below average	Above average	Below average
III	Below average	Below average	Above average
IV	Below average	Above average	Above average
V	Above average	Below average	Below average
VI	Above average	Above average	Below average
VII	Above average	Below average	Above average
VIII	Above average	Above average	Above average

Source: *Own research.*

When searching for an answer to the question what makes intelligent organisations support the development of entrepreneurship so effectively, one can note - based on the results of the typology of counties - that intelligent organisations and, at the same time, the above-average level of entrepreneurship in regions with above-average location values are characteristic for large agglomerations.

These include the capital city of Warsaw with its surrounding counties, i.e. with the functional area of Warsaw. In addition, Łódź with the southern part of the agglomeration (eastern Łódzki county and Pabianicki county), Poznań with Poznański county, Tricity with Gdański and Wejherowski counties stand out. Based on their urban and touristic functions, the city of Kraków together with Krakowski, Wielicki, Wadowicki counties, as well as the city of Koszalin with county rights, Koszaliński county, and Sławieński and Kołobrzeski counties also deserve attention. The Upper Silesian conurbation also stands out, although not in its entirety (counties: Katowice, Gliwice, Sosnowiec, Rybnik and the following rural counties: Myszkowski, Będziński). Particular attention should be given to Wrocław with a group of counties that extend beyond the functional area of Wrocław (counties: Wrocławski, Trzebnicki, Średzki, Jaworski, Świdnicki, Oławski up to the Wałbrzyski rural county). Among the remaining counties which are classified in the most standing out class VIII (above average values for all of the analysed features) one may find individual city counties which serve as subregional or, less frequently, regional centres (Rzeszów, Toruń, Kielce, Lublin, Białystok, Olsztyn, Opole) where in suburban areas there is unused potential for development of intelligent organisations and entrepreneurship despite relatively low potential investment attractiveness (below average).

It can be seen so far that in majority of the Polish counties there is a convergence of assessments of the level of development of intelligent organisations and the class of location values. Almost all county capital cities received the highest marks in all three represented categories. The only exceptions are cities with county rights: Wałbrzych and Skierniewice (class VII), as well as a group of cities belonging to the Upper Silesian conurbation (Bytom, Piekary Śląskie County, Zabrze, Mysłowice, Ruda Śląska, Siemianowice Śląskie and Jastrzębie-Zdrój), and also Żory, Jaworzno, Grudziądz and Chełm.

The way of grouping the counties made it possible to check the correlation between individual elements included in the index of intelligent organisations for particular types of counties. The result of the analysis is presented in Table 3 and Table 4.

According to the analysis of Pearson correlation indices, the development of entrepreneurship is influenced by the creation of intelligent organisations (r=0.51). However, it is the conditions for doing business in a given location (i.e. location values) that are more important, which is reflected in the high Pearson correlation index for the investment attractiveness index (PAI LAU1) and the entrepreneurship index (r=0.75). This influence increases with the rank and size of the city, which becomes evident especially when comparing this index for voivodeship capital cities and rural counties (0.78 and 0.61, respectively). Also, when analysing data by county type, one can see a much greater importance of location values for entrepreneurship in the case of group VIII counties which group units with above-average indices. The important role of the technical infrastructure (for all counties in

Poland) and the outlet (this is most evident in the case of voivodeship capital cities) is visible.

Table 3: *Pearson correlation coefficient values for the entrepreneurship index (EI LAU1) and the intelligent organisations index (IO LAU1) including components, by county and county type in 2018*

	Index of the level of development of an intelligent organisation	share of council members with tertiary education in the total number of the council members in the commune	share of enhanced nutrient removal wastewater treatment plants in the total number of wastewater treatment plants	total earnings related to EU funding in the total earnings of communes	voter turnout in local government elections	libraries that allow the user's computer (mobile device) to be connected to an electrical outlet per 100 thousand inhabitants	libraries that offer Wi-Fi per 100,000 inhabitants	libraries with access to broadband internet per 100,000 inhabitants	share of the area covered by the zoning plans in total area	share of the area of valid zoning plans available in a georeferenced vector form in the total zoning plan area	share of enhanced nutrient removal wastewater treatment plants in the total capacity of wastewater treatment plants
All counties, inc. class:	0.51	**0.68**	0.37	-0.07	0.11	-0.35	-0.41	-0.29	0.21	0.25	0.41
VIII	0.12	0.39	-0.06	-0.20	0.45	-0.10	-0.15	-0.14	-0.15	0.04	0.26
VII	0.16	0.15	0.40	-0.34	-0.33	0.48	0.44	0.32	-0.16	0.49	-0.03
VI	-0.40	-0.20	0.21	-0.29	0.63	-0.26	-0.12	-0.43	-0.44	-0.42	0.18
V	0.04	0.41	-0.05	-0.04	0.04	0.21	0.28	-0.18	-0.07	0.08	-0.12
IV	-0.11	0.06	-0.16	-0.02	0.08	-0.11	-0.17	-0.37	-0.19	0.02	0.37
III	0.24	-0.08	0.17	-0.01	0.17	0.41	0.52	0.62	0.17	-0.29	-0.03
II	0.04	0.25	-0.03	0.10	0.12	-0.35	-0.11	0.09	-0.13	0.16	-0.20
I	0.10	0.41	0.27	-0.25	-0.20	-0.19	-0.30	-0.07	-0.05	0.05	0.19
Cities with county rights	-0.03	0.39	-0.18	-0.05	0.51	0.12	0.27	0.20	-0.16	-0.12	0.08
Cities with voivodeship functions	-0.23	0.42	-0.32	-0.59	0.59	0.12	0.10	0.00	0.07	-0.05	-0.31
Rural counties	0.30	0.56	0.27	-0.09	-0.02	-0.25	-0.25	-0.21	0.19	0.09	0.28

Source: *Own research.*

The data collected in this study does not confirm the high impact of intelligent organisations on the development of entrepreneurship. The study only shows a fairly high importance of the level of education of council members, which is logical given the important role of council members in enacting local laws and approving strategic decisions for the development of the county. Educating of (especially) decision-makers has an impact on knowledge management and the tools used to support the development of intellectual capital in local administrative units. However, it was not possible to confirm this dependence for any group of the analysed counties, but only for the whole set of counties in Poland. However, a greater role of this factor can be observed in rural counties than in highly developed voivodeship capital cities - this factor was pointed out by Wojtyra (2018). This may be due to the initial stages of development of intelligent organisation in counties in Poland and the stronger impact of political and financial factors on decision-making processes in local administrative units.

Table 4: *Pearson correlation coefficient values for the entrepreneurship index (EI LAU1) and the potential investment attractiveneess index (PAI LAU1) including components, by county and county type in 2018*

Specification	Microclimate - Labour resources	Microclimate - Technical Infrastructure	Microclimate - Social infrastructure	Microclimate - Market	Microclimate - Administration	PAI LAU1 synthetic index
All counties, inc. class:	0.23	0.65	0.43	0.70	0.48	0.75
VIII	0.10	0.46	0.34	0.59	0.29	0.66
VII	-0.05	-0.01	0.28	-0.36	0.08	-0.16
VI	0.41	0.06	-0.10	0.38	-0.60	-0.16
V	0.08	-0.23	0.19	0.20	0.19	0.25
IV	-0.44	0.00	0.00	0.26	-0.14	0.05
III	-0.26	0.16	0.45	-0.07	-0.18	-0.02
II	0.35	0.16	-0.23	0.42	0.20	0.43
I	0.12	0.32	0.04	0.40	0.09	0.42
Cities with county rights	0.17	0.42	0.04	0.56	0.44	0.60
Cities with voivodeship functions	0.44	0.46	0.34	0.77	0.29	0.78
Rural counties	0.20	0.40	0.01	0.59	0.43	0.61

Source: *Own research.*

In some groups of counties, i.e. cities with voivodeship functions and type VI counties (with above-average entrepreneurship and level of development of intelligent organisations, but lower location values), a relatively more significant

influence of civil society on entrepreneurial attitudes can be observed. Election turnout indicates indirectly the involvement of the population in public affairs, as well as a greater willingness to make decisions, which is important in the process of setting up a company).

7. Conclusions

The theoretical purpose of this study was to determine the essence of smart specialisation in local administrative units, together with the identification of its impact on the level of entrepreneurship and socio-economic development of spatial units. The literature studies have shown that intelligent specialisations can positively influence the level of entrepreneurship and the dynamics of development processes in spatial units, which confirms the H1 hypothesis. It is worth noting that this also applies to development processes in economically underdeveloped regions, while specific measures to identify and support smart specialisation need to be adapted to the specificity of the regions.

The most important features of the smart specialisation strategy include: basing the processes on endogenous potential and the specificity of the location, the ability to learn and basing development processes on knowledge and innovation, concentration and specialisation of resources, entrepreneurial discovery (while preserving the diversity of the economic structure), recognition of the role of intra- and inter-regional cooperation, targeted institutional support from local, regional and national authorities. This strategy contributes to the creation of competitive advantages resulting from specialisation, i.e. economies of scale, reduction of dispersion of production factors and increase in the efficiency of their use, reduction of market entry barriers (by increasing the ability to create specialised infrastructure for a given sector), better market position of a region or an entrepreneur compared to the lack of specialisation, greater ability to form strategic alliances for enterprises on new markets requiring advanced knowledge flows, better ability of local administrative units of a given region to compete on the basis of an integrated marketing product and better real possibilities to manage investment risk.

The study showed that smart specialisations and intelligent organisation in LAUs share certain common features, i.e.: learning to learn, knowledge and information management and building long-term relations with external partners. Hence, the implementation of the principles of an intelligent organisation in an LAU, in which the smart specialisation strategy is implemented at the same time, may contribute to achieving the synergy effect of activities supporting the level of entrepreneurship and the social and economic development in a given territory. This synergy may result from the following actions undertaken by LAUs:

– use of modern information and communication technologies to establish interregional cooperation and build relationships with partners to identify and support smart specialisation,

- use of innovative and effective sources of funding to support smart specialisation,
- animation of cooperation between enterprises from the smart specialisation sectors and knowledge institutions (universities, R&D units),
- support for entrepreneurship from the smart specialisation sectors through the offer of park and incubator institutions and clusters,
- improving the quality of educational services to meet the needs of enterprises from smart specialisation sectors,
- use of modern technological solutions to provide public services for entrepreneurs and investors, as well as for promotion aimed, among others, at attracting investors from smart specialisation sectors.

In Poland, the basis of local development are local administrative units of the county level due to the scope of their own tasks, which directly affect the conditions for the development of entrepreneurship in connection with the tasks of shaping the labour market and post-middle school education. County capital cities usually face very unfavourable demographic phenomena, which are caused by the disruption of generational interchangeability and the outflow of population often to their functional areas. This is due to the fact that available residential areas are conducive to the settlement of the population beyond the administrative borders of the main city, but still within the existing metropolitan region. There is also a noticeable phenomenon of companies being registered mostly in large cities, where due to higher standards of service by tax offices they are less burdened with time-consuming control procedures. Therefore, the statistics indicating the level of entrepreneurship are always subject to a certain error.

The empirical purpose of this paper was to indicate the relationship between the level of development of intelligent organisations in counties and the degree of entrepreneurship intensity. The study failed to confirm that intelligent organisations have an impact on the entrepreneurship process considered on a county level in Poland. This may be due to the initial stages of development of this type of structures. However, it can already be observed that entrepreneurship can be influenced by the behaviour typical of a civil society that actively participates in public life in its local environment. The education of council members, especially in rural areas, is not without significance, too. Considering the legal empowerment of council members and the competences assigned in local administrative units to the county council and the Staroste, this is an important element influencing the ability to create intelligent organisations in local government, and thus creating favourable conditions for the development of entrepreneurship and attracting investments with a sufficiently high investment multiplier.

The study shows that investment attractiveness is more important in stimulating the development of entrepreneurship than intelligent organisation in local administrative units at the county level in Poland, which confirms the H2 hypothesis. These units

can be an example of regions in a developing market economy. Entrepreneurship is highly dependent on the attractiveness of markets and the development of technical infrastructure, which not only affects the cost of doing business in a given location, but also determines the range of commuting and supply chains. Therefore, these factors have been particularly prominent as elements influencing local entrepreneurship. In order to increase the effectiveness of influencing the entrepreneurial attitudes of the population, the most important element is to increase the investment attractiveness, in terms of own tasks not only at the county level but at the commune level, as well. Counties include communes, and an investor takes advantage of the location advantages created as a result of imposing the activities of all the local administrative units existing within the area and managing it in accordance with the adopted legal acts and individual decisions of residents and entrepreneurs, and sometimes other stakeholders such as tourists.

The analysis of these phenomena is always connected with the choice of statistical data and source information. Therefore, further research on the role of intelligent organisations in counties should be based on further attempts to develop the proposed synthetic index and on the search for best practices in local government creating a catalogue of local governments that successfully creating intelligent organisations competing effectively for human, intellectual and investment capital. In the further research, an attempt should be made to identify and assess the level of development of intelligent organisations in local administrative units in the European Union, including other European regions of the developing market economy, taking into account their diversity.

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Appendix 1: *A set of diagnostic variables used for valorization of potential investment attractiveness for the national economy (PAI LAU1)*

Microclimate - Labour resources	
Percentage of the population in non-productive age per 100 people in productive age	D
Labour force participation rate	S
Internal permanent migration rate per 1000 inhabitants	S
Foreign migration rate	S
Population in post-productive age per 100 people in pre-productive age	D
Share of population in productive age	S
Expenditure on education and upbringing per capita	S
Expenditure on culture and heritage conservation per capita	S
Microclimate - Technical infrastructure	
% share of the population covered by the water supply system	S
% share of dwellings connected to the gas pipeline	S
% share of the population covered by the sewage system	S
Density of the water supply network in km per 100 km^2	S
Density of the gas pipeline network in km per 100 km^2	S
Density of the sewage network in km per 100 km^2	S
Sludge previously stored (accumulated) on the premises of the treatment plant - as of 31.12 [tons of dry matter] per 1000 inhabitants	D
Waste generated during the year - disposed of / waste generated during the year	S
Share of treated wastewater in wastewater requiring treatment	S
Expenditure on transport and communications per capita	S
Expenditure on housing management per capita	S

Microclimate - Social infrastructure	
Medical practices in the countryside and in the city per 100,000 inhabitants	S
Number of health care facilities per 100 thousand inhabitants	S
Number of pharmacies per 100 thousand inhabitants	S
Usable floor area of apartments per capita	S
Book collection size per 1000 inhabitants	S
External lending of the book collection per 1000 inhabitants	S
Number of inhabitants per 1 stationary cinema	D
The number of viewers in stationary cinemas per 100 inhabitants	S
Number of inhabitants per 1 museum with branches	D
Number of visitors to museums with branches per 1000 inhabitants	S
Length of bicycle paths per 1000 inhabitants	S
Microclimate - Market	
Population density per km^2	S
Revenue of commune budgets from PIT per 1000 inhabitants	S
Revenue of commune budgets from CIT per 1000 working inhabitants	S
Share of agricultural tax revenue in tax revenues	D
Share of social welfare expenditure in commune budget expenditure	D
Revenue of commune budgets from CIT per 1000 entities from section C	S
Microclimate - Administration	
The area of the commune covered by valid zoning plans vs total area of the commune	S
Funds for financing own tasks obtained from other sources per capita	S
Share of own revenues in total revenues	S
Total property expenditure in total current expenditure	S
Expenditure on education and upbringing per capita	S
Expenditure on culture and heritage conservation per capita	S
Expenditure on healthcare per capita	S
Expenditure on transport and communications per capita	S
Expenditure on housing management per capita	S
Expenditure on social welfare per capita	S
Expenditure on municipal management and environmental protection per capita	S
Expenditure on physical culture per capita	S
Expenditure on public administration per capita	S
Expenditure on public safety and fire protection per capita	S
Expenditure on municipal management and environmental protection and on safety and fire protection per capita	S

Note: *D- Destimulant, S- Stimulant*
Source: *Own Elaboration.*