
Intelligent Organization in a Local Administrative Unit: From Theoretical Design to Reality

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Abstract:

Purpose: The theoretical purpose of this paper is determining the essence of an intelligent organization (IO) in a local administrative unit (LAU) including identification of benefits and risks for local development connected with the development of IO in LAU. The practical purpose is presenting a concept of methods to identify the development level of IO in LAU.

Design/Methodology/Approach: The work method is literature studies. In addition, two methods of evaluating the level of development of IO in LAU are proposed. The article makes use of statistical methods based on the vector of standardized sums.

Findings: It is found that literature lacks a generally accepted definition of IO in LAU and many features characteristic of the development of IO in LAU are identified. The development of IO in LAU is a source of many benefits to local development, but it is also connected with the occurrence of some risks. The study proposes a set of features describing IO including their scoring. The paper also propose an indicator of the level of development of IO in LAU2 in Poland (municipality) in 2018 based on a set of variables (IO LAU2). Research has shown a positive correlation between the level of development of IO in LAU and the level of urbanization, investment attractiveness and economic growth.

Practical Implications: The results of studies can be used by LAU for designing the strategy of developing an intelligent organization. They can provide valuable practical guidance about the type of activities to be implemented to ensure that LAU can evolve into IO.

Originality/Value: The work proposes a definition of IO in LAU. Two methods of evaluating the level of development of IO in LAU are put forward. The first method allows pre-selection of LAU in terms the level of development of IO based on data available in public statistics. The next stage of the study can use the criteria of summary evaluation of the level of development of IO in the LAU, proposed in this work, according to a percentage scale. The presented methodological concept is universal – it can be used to evaluate the level of development of IO in taxonomic units at different levels and in different countries.

Keywords: Intelligent organization (IO), local administrative unit (LAU), local development.

JEL codes: H70, O10, O43.

Paper type : Research Paper.

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1. Introduction

As a result of the public administration reform carried out in Poland at the beginning of the 1990s, municipalities (LAU2) – as the fundamental units of local administration - became entities governing the specific territory. Municipalities are in charge of all local public affairs that are not reserved for other entities and they are competent to decide about the matters of the specific local community, represent its interests before state authorities and perform tasks imposed by legislative acts and concluded agreements. They play an auxiliary role in relation to the local community and their activities should focus on providing public services to citizens. Thus, municipalities are obliged to seek and choose efficient methods of performance of public tasks (Kožuch and Książek, 2013) which requires implementation of modern methods of management. One of such methods can be an intelligent organization (IO).

Literature offers numerous scientific studies concerning intelligent organizations in businesses, but this issue is relatively rarely described with reference to public administration or local administrative units. However, this is a concept meeting the needs of the present-day economy and society. Local administrative units must face new challenges (e.g. variability of the environment, transformation towards knowledge-based economy, establishment of the information society, fast growth in the amount of information or dynamic development of information and communication technologies) that the conventional models of governance find it difficult or even impossible to meet. A response to such challenges may be the concept of an intelligent organization in a local administrative unit. The concept can be successfully applied in LAU, likewise in the case of other management concepts originally developed and used in the context of business operation. Thus, the theoretical purpose of this paper was determining the essence of an intelligent organization in a local administrative unit including identification of benefits and risks for local development connected with the development of an intelligent organization in LAU. The practical purpose was presenting a concept of methods to identify the development level of an intelligent organization in LAU.

In the process of implementation of the above-mentioned purposes, the following research hypotheses were verified:

1. *Intelligent organization in a local administrative unit is a relatively new term having multiple aspects, which results in the absence of its unanimous definition (H1).*
2. *The development of IO in a local administrative unit is a source of both benefits and risks to local development (H2).*
3. *A positive correlation exists between the level of development of an intelligent organization in local administrative units and the level of urbanization, investment attractiveness and economic growth (H3).*

The research problem was formulated as the following research questions:

1. *What should the distinguishing features of a local administrative unit as an intelligent organization?*
2. *What are the benefits and risks related to the development of IO in local administrative units?*
3. *How can we evaluate the level of development of an intelligent organization in local administrative units?*

2. The Essence of an Intelligent Organization (IO) in the Public Sphere

The concept of IO was popularized at the beginning of the 1990s as a result of the publication by Pinchot and Pinchot (1990) and Quinn (1992a, 1992b). Thus, it is a relatively new concept of modern management that emerged in response to the processes of transformation of the then economy into knowledge-based economy. The origins of the development of the IO concept must be sought in the changing business operation conditions including the dynamically growing competition, fast development of technology and continuously changing management conditions.

Transformation towards an intelligent organization requires that all workers must upgrade their skills and acquire knowledge and use such knowledge for the good of the organization for development and effectiveness stimulation purposes. An intelligent organization utilizes the effects of learning for the needs of its own development and for winning and maintaining a position of a market leader, which testifies to its advantage over a learning organization (Łobejko, 2009). Smart growth, that is, development based on knowledge and innovation, is also one of the priorities of the Europe 2020 Strategy (Communication, 2010). It should refer both to business entities and other organizations, including local administrative units.

Literature offers various definitions of intelligent organization³, whereas relatively often emphasis is put on its features related to management of human capital, learning and acquiring new knowledge as well as achieving and maintaining competitive advantage. According to the definition, an intelligent organization is an organization that is able to obtain, to process and utilize information better than other organizations (Godlewska-Majkowska, 2013). The main features of intelligent organizations include, among other things: fast and flexible action, environment observation skills, ability to diagnose market signals early and respond to changes in the environment, ability to implement new knowledge-based solutions quickly in order to derive economic benefits (Adamczewski, 2016).

³See for example: Choo (2002), Dayyani (2009), Matheson and Matheson (1998), Schwaninger (2006), Sydänmaanlakka (2002) Thannhube (2005), Waltz (2003).

The distinguishing features of an intelligent organization include (Wereda *et al.*, 2016):

- *recognition of the key role of education, improvement of the skills of employees and preparation of their individual career paths in order to release their creative potential in individual and collective activities;*
- *increasing the efficiency of processes, measures and communication, fostered by reducing controls and offering great latitude to employees;*
- *continuing implementation of fast learning process and the capacity to transform information into knowledge, update, renew and create new knowledge resources;*
- *excelling the skill of effective adaptation to changing internal and external conditions thanks to knowledge management;*
- *ability to achieve results outrivaling the competitors and to maintain specific market position over a long period of time.*

It must be noted that intelligent organization in local administrative units is an issue that is relatively rarely undertaken in literature. However, it can be stated that in order to implement modern concepts of an organization in local administrative units on the one hand it is necessary to focus on internal relations while on the other hand - on building long-term relations with external partners. Whereby, it is important that employees participate in the process of individual and organizational learning and adequate conditions are created to share knowledge and upgrade their skills, along with a broad treatment of external partners (Czerniachowicz, 2011). Smart municipalities can be defined as *"units creating value through nurturing and managing relations with their partners"* (Wereda, 2010). It is worth emphasizing that developing an image of an intelligent local administrative unit as an entity creating correct and permanent relations with selected stakeholders is very important (Kokotek, 2019). Thus, the basis for recognizing a LAU as an intelligent unit is mainly the bonds it creates with other entities. Partners of a local administrative unit include, but are not limited to: residents, tourists, businesses operating within the territory of the LAU, suppliers of products or providers of services for the LAU (e.g. banks), other LAUs, units at higher levels of taxonomy (home poviat and voivodeship) as well as future residents, businesses intending to be located in the territory of the LAU, schools, institutions and governmental and non-governmental organizations (e.g. business environment institutions or research and development institutions). The main barriers in defining a local administrative unit as an intelligent organization result from legislative requirements and from the impact of internal and external stakeholders such as, for instance, the local community, local council members, local organizations and associations, on the operation of the LAU (Kokotek, 2019).

A smart municipality has the following characteristics distinguishing it from other units (Wereda, 2010):

1. It implements the fundamental tasks determined by legislative acts.
2. It manages finance in order to accomplish the above-mentioned goals, searching for effective and innovative sources of finance (e.g. using capital market instruments and EU funds).
3. It provides its employees with education and skills improvement opportunities, with a particular emphasis on studying foreign languages.
4. It is open and implements changes connected with market megatrends (e.g. development of modern communication methods or new technologies of various applications).
5. It is characterized by attractiveness to investors, encourages new entities to settle in its territory using activities based among other things on enhancement of the brand and image of the municipality, creation of a virtual local government office, reduction of business operating costs (tax credits), acceleration of procedures connected with the completion of investments.
6. It provides information points to residents supplying latest data on the municipality, region and global economic trends.
7. It uses the tools of promotion in order to create the brand and image of the municipality.
8. It reinforces the relations between the municipality and the local community by improving the quality of primary education services, supporting talented children, providing opportunities to use Internet services throughout the municipality.
9. It has a leader with adequate educational background, capable of effective utilization of strengths of the municipality.
10. It provides residents with access to technical and social facilities and is capable of sharing experience with other LAUs as well as using them effectively.
11. It relies on relations with other entities.

The lack of a commonly accepted definition of an intelligent organization in a local administrative unit and the multitude of characteristic features point suggest that the analysed issue is complex and has multiple aspects, which confirms hypothesis H1.

It is worth noting that the existing organizational structures in public administration are inefficient in terms of communication - with regard to developed bureaucratic procedures, information management is a problem and the main barrier preventing smooth information flow is the form in which it is stored (mainly as paperwork). Continuing, efficient and intentional information flow is the basis of the contemporary society in which public administration plays an important role (Sasak, 2007). With regard to contemporary trends connected with a vast amount of information and dynamically increasing number of changes (Ball, 2000; Mazur, 2008; Spira, 2011), as well as changes in methods of communication, it is necessary to seek new concepts of managing public organizations that will match the needs of the information society. Thus, building an intelligent organization in a LAU is important, which implies using IT systems for obtaining, processing and transmitting information. In local administrative units it is connected with the need to use modern

technological solutions for providing public services. However, it is worth emphasizing that transformation towards an intelligent local government is possible thanks to ICT, but it does not only mean increasing the number of services offered online. Modern technology should not be the exclusive goal or the sole means of transformation of public services. Its task is bringing measurable benefits to residents, businesspeople and public officials (Mauher and Smokvina, 2006). An intelligent organization should be created for the purposes of increasing its operating effectiveness (Stenvall and Virtanen, 2015) but also improving the ability to respond to changes in the environment or strengthening partnership and cooperation with other entities (Hovland, 2003). The application of modern information and communication technologies in public administration should bring measurable benefits such as, for instance: time and capital savings, increase in the functionality of provided services, increase in the scope of information and transparency of administrative procedures, elimination of errors and integration of Internet resources, improvement of access to and flexibility of officials, approach oriented at citizens and business owners (Pyplacz and Kowal, 2014). Therefore, it can be stated that the development of IO in a local administrative unit is the source of benefits for local development, which is a partial confirmation of hypothesis H2.

An important characteristic of intelligent public administration – with LAU as one of its elements – is the ability to manage knowledge, including to generate knowledge and use it in practice with reference to human resources and tools used in order to carry out public tasks (for instance advanced information and telecommunications technologies used both for providing services to external customers and for organizing the work of the office). In addition, such administration is characterized by innovative and creative activity, problem solving skills (both own and customers' problems), flexible response to social needs (also forecasted future needs) referring to availability of services (Sikora-Fernandez, 2013). The ability to anticipate the needs and discover their new combinations, as well as use existing or seek new material resources is referred to as the efficiency of a rational system of innovation (Sasinowski, 2015).

Operating in an unstable, rapidly changing environment, public organizations must use knowledge in a way leading to correct decisions. It is even more difficult in connection with the fact that these decisions require adaptation to dense social networks in which LAUs operate. Increasing the efficiency of operation in such difficult external conditions requires continuous learning (i.e. obtaining, selecting and processing external data as well as making conclusions from its own activities), which contributes to increasing the effectiveness of pursuing the mission of public organizations and makes it possible to improve the quality of managed processes as well as facilitates the growth in innovativeness and efficiency of responding to the needs and behaviours of partners (Olejniczak and Śliwowski, 2014).

The ability to manage information, communication and knowledge and gather intellectual capital characteristic of intelligent organizations at the same time

determines their competitiveness to other entities. Information as a strategic resource of a modern local administrative unit has various functions, including reduction of uncertainty and risk of decisions made with regard to supplying new knowledge about surrounding reality. It facilitates bonding with entities present in the environment, supports change processes, and as a consequence facilitates achievement and maintenance of a competitive advantage (Dziekański and Pawlik, 2017). On the one hand, it is a necessary characteristic of an intelligent organization in local administrative units, including in the municipality. On the other hand, it partially confirms hypothesis H2 that the development of IO in a LAU is a source of benefits in terms of local development.

The development of an intelligent organization in local administrative units requires increasing research capacity supporting learning processes as well as the ability to utilize the results of research based on own workers and the potential of solutions based on cooperation with external environment (Sanderson *et al.*, 2001). In addition, economic and financial factors play a significant role with regard to the need for considerable financial expenditure aiming at the ultimate improvement in the quality of life of the residents, among other things through solving problems related to infrastructure, including those connected with the development of modern information and information-communication technologies (Jonek-Kowalska, 2018). In the Polish reality, increasing the level of digitalization of the local government sector is connected with obtaining EU funds allocated for that purpose (Drgas, 2019).

In the light of reference literature fundamental principles governing the smart governance models for public administration, can be identified, i.e. subsidiarity, public value and deliberative governance. The subsidiarity principle emphasizes the significance of increased participation of citizens in decision-making processes along with the implementation of e-democracy and e-participation concepts. The public value management model assumes that corporate governance is implemented in public services, which results in improved effectiveness and efficiency as well as integrity and fairness in providing services, and in introducing new programmes and services. Modern smart governance models for public administration are based on deliberative governance putting pressure on continuing improvement and innovation based on market response. Such models emphasize that citizens are more than consumers and they should influence the design and provision of services by public administration. Thus, the dialogue between managers of local administrative units and citizens is very important, for instance in the context of determining goals that the society really appreciates (Radu, 2008).

This work, based on literature research, proposed the author's definition of an intelligent organization in local administrative units. An intelligent local administrative unit can be deemed a unit that effectively manages information, knowledge, communication and relations with partners and makes use of innovative

technological solutions in order to complete public tasks and add dynamics to local development processes, as well as to achieve and maintain a competitive advantage.

3. Risks in Developing Intelligent Organizations in Local Administrative Units

Risks emerging in an intelligent organization can be external, internal or mixed, which partially confirms hypothesis H2. An internal risk is a risk of losing leaders who are the source of innovative solutions in a local administrative unit in the area of offered services or a marketing product, the organization of office work or cooperation with other stakeholders, applied technical and technological solutions or, finally, social responsibility – analogously to business. Similarly, the force driving the development of an intelligent organization can be strained for reasons of technology safety, in connection with a failure or incorrect use of highly advanced hardware or software. All of this can lead to a situation in which decision makers at a LAU will not be able to make quick decisions but also the risk of failed decisions will increase.

In addition, the growth of the surface area of a local administrative unit as a result of absorbing the neighbouring territories prevents the formation of intelligent organizations since territorial division adjustments are often accompanied by local conflicts, especially those on the account of the loss of independence by the absorbed other territorial units. The flow of knowledge is often based on confidence and readiness to share information and knowledge. The larger the organization, the more difficult the flow of knowledge with regard to the significant multiplication of the number of potential information flows between employees of the given LAU. Things are additionally complicated by cyclic elections of local government authorities and the risk of political barriers in connection with both relations inside a local administrative unit and the impact of external factors.

Another barrier is numerous procedural difficulties that extend the duration of decision-making processes. In intelligent organizations, quick response to new information making it possible to improve the decision-making process is a fundamental competitive advantage. In local administrative units it is difficult with regard to administrative procedures and continuing low pay (also regulated by administration), which makes it difficult to find high-skilled knowledge workers, and especially IT specialists. Both, the burdensome and complicated procedures and payroll policy are dependent on the decisions of local government decision makers. To a large extent they are an effect of the impact of institutional and economic environment.

Thus, changes occurring in their environment can be a source of risk for the development of intelligent organizations. Particularly important are fast changes in technology resulting in the acceleration of learning processes or rapid economic wear of hardware or software. Local administrative units, in their capacity as public

benefit organizations in charge of many services based on procedures agreed at higher levels of the separation of powers, are not able to implement many changes in the equipment of offices or to flexibly develop employment policy. A large difficulty is also public procurement where minimum price is commonly the main or the sole criterion.

In addition, local administrative units are exposed to technological paralysis connected with a cyber attack, particularly dangerous with regard to the presence of large amounts of sensitive data in connection with the wide scope of services provided as their own tasks.

Another obstacle is the growing number of tasks that local administrative units must face as a result of extending the scope of public services. As a result, activities connected with self-development, discussion about strategic issues, or seeking new public services can encounter a barrier being the lack of time that is to a large extent devoted to performance of the current duties of officials. Another problem is an increasing wave of information, including a lot of false, unreliable information or information the suitability of which is difficult to evaluate.

The source of external risk is also unexpected reduction in tax revenues or worse predictability thereof, as well as sudden imposition of additional own tasks without allocating a budget. Such events are triggered by decisions made at the central level. Poland lacks sufficient funds for the performance of own or outsourced tasks of municipalities, which hinders the financing and organization of activities supporting learning processes. The financial barrier connected with the lack of sufficient funds for purchasing modern information and communication technologies and related equipment for the needs of a local administrative unit, as well as funds allocated to its employees for upgrading their skills and acquiring knowledge.

4. Municipalities as Intelligent Organizations at Different Development Level: Proposed Methods

With regard to the fact that municipality as an intelligent organization may be characterized by a different set of features reflecting such intelligence, it can be concluded that respective municipalities achieve a different level of development of intelligent organizations. However, a question arises how the level of development of an intelligent organization in a municipality can be identified and determined. With regard to the fact that intelligent organizations are characterized by specific feature, the simplest solution is adopting a set of features describing an intelligent organization and using a questionnaire perform an evaluation according to criteria referring to the above-indicated features. Examples of the necessary features may be:

1. Having a development strategy according to which decisions are made in connection with the choice of direction for acquiring development-oriented investments.

2. Applying innovative solutions to raise capital for the needs of development using capital market instruments, public-private partnership, public-public partnership and EU funds.
3. Using modern forms of risk insurance.
4. Sharing knowledge inside the municipality and with other stakeholders.
5. High level of education and professional competences of clerks and systematic upgrading of skills of workers of the municipal office.
6. Applying project methods in solving governance problems or generating new public services.
7. Applying modern technologies in marketing, communication with stakeholders and introducing BI solutions (Business Intelligence).
8. Cooperating with other local or regional, national or foreign administrative units.
9. Fast responses to the influx of information and ability to quickly create and disseminate information or knowledge.
10. Gathering knowledge in the organization, e.g. thanks to preventing excessive employment fluctuation, knowledge archiving and maintaining secure flow of information and knowledge.

Based on the indicated criteria and their scoring on a scale from zero to five, it may be assumed that the summary index will reach values from zero to fifty, which will makes it possible to reflect the level of development of an intelligent organization in the specific municipality by means of a percentage scale and to identify its strengths and weaknesses (profile). The minimum score required to be recognized an intelligent organization may be, for example, 25 points (Table 1).

Table 1. *Criteria of evaluation of the level of development of an intelligent organization in the municipality*

Level of development of IO in LAU	Minimum	Maximum
Poorly developed IO	25	30
Quite well developed IO	31	35
Well developed IO	36	40
Very well developed IO	41	45
Excellently developed IO	46	50

Source: *Own elaboration.*

This proposal can be also used for evaluating higher level local administrative units (poviat, voivodeship). The use of this method requires field studies, local interviews and/or audit of websites. Therefore, pre-selection of local administrative units based on statistical analysis of a specific population of local administrative units can be recommended. The evaluation of the level of development of intelligent organization of municipalities can be supported by valorisation of features directly or indirectly reflecting respective key characteristics of intelligent organizations in local administrative units. With regard to the fact that the most useful data is sourced from

national statistical offices, in order to propose a quantitative method supporting recognition of intelligent organizations among local administrative units it was proposed that an aggregate based on statistics for LAU2 should be created based on the following variables:

- share of council members with tertiary education in the total number of the council members in the municipality – this ratio makes direct reference to the intellectual capital of decision makers in the municipality;
- 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 – this ratio indirectly reflects the decision makers' attitude to corporate social responsibility and the importance of modern methods of ensuring the clean environment;
- share of grants from the European Union allocated to financing EU programmes and projects in the total income of municipalities – based on this variable we can evaluate active utilization of information concerning completion of own tasks using foreign capital;
- 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) – this variable indirectly illustrates the level of development of the civil society that is strongly connected with the activity of local leaders and their ability to engage residents in local affairs. This factor indirectly reflects readiness to create an intelligent organization in the municipality since it is the activity of residents that determines the quality and rate of information workflow;
- level of development of services connected with access to knowledge by means of innovative information techniques measured as the arithmetic mean 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 and the number of libraries having access to broadband Internet per 100 thousand residents;
- share of the area of applicable local spatial development plans⁴ drawn as vectors with geo-references in the total area of plans – this variable points to applicability of modern technologies in compulsory graphics at the municipality level;
- share of area covered by applicable local spatial development plans in the total area – this ratio can indirectly indicate the rate of making location-related decisions - if the real property of interest to the investor is not included in the local spatial development plan and its purpose is not indicated, then, the so-called land development and management decision must be issued, which

⁴*In Poland, a local spatial development plan is an important act of local law underlying spatial planning in the municipality and determining the purpose, terms of land development, and the location of public purpose investments.*

means that the communication of information to stakeholders will be considerably delayed.

Based on the standardized sums vector, an indicator of the level of development of intelligent organizations in municipalities and higher level administrative units was proposed. The variables are standardized as follows:

- For positive variables:

$$x'_{ij} = \frac{x_{ij} - x_{\min j}}{x_{\max j} - x_{\min j}} \times 100$$
- For negative variables:

$$x'_{ij} = \frac{x_{\max j} - x_{ij}}{x_{\max j} - x_{\min j}} \times 100$$

where:

i variable;

J spatial unit;

x'_{ij} normalized i -variable in j -spatial unit;

x_{ij} value of i -variable in j -spatial unit;

$x_{\min j}$ minimum of j -variable;

$x_{\max j}$ maximum of j -variable.

Standardization was based on a formula referring to the span of values of indicators in the denominator and to the difference between the value of a partial indicator and its minimum value in the whole analysed set due to the fact that all partial variables were larger-the-better characteristics. This indicator in relation to various types of municipalities is presented in Table 2.

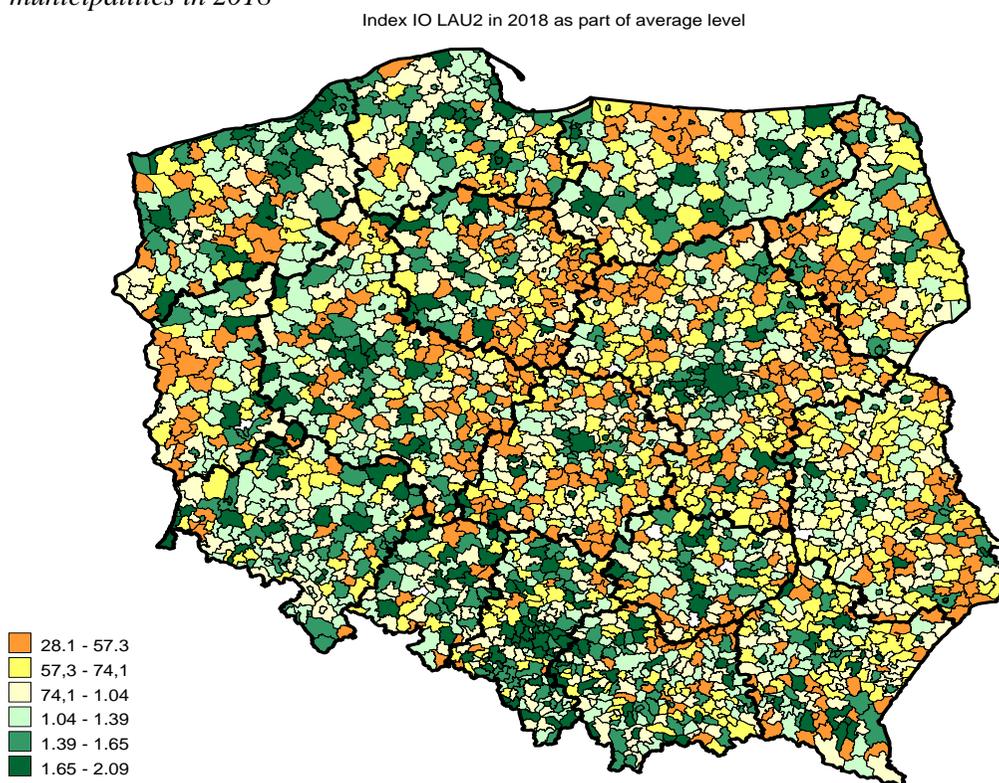
Table 2. *Intelligent organizations development level indicator in local administrative units (LAU 2) in Poland according to the urbanization criterion*

Specification	IO index	LAU2 Index span within the group (from min. to max.)	
Poland	0.315	0.089	0.658
Poland – urban municipalities	0.459	0.175	0.658
Poland – urban-rural municipalities	0.339	0.096	0.632
Poland – rural municipalities	0.277	0.089	0.632

Source: Own elaboration.

The presented aggregates show that the most developed intelligent organizations are characteristic of urban municipalities, while the higher the level of urbanization, the higher the minimum values of the indicator, which is a partial confirmation of hypothesis H3. However, there is no difference between the maximum values of the indicator for urban-rural and rural municipalities. This conclusion is also confirmed by the cartographic analysis of the distribution of variability of the intelligent organizations development level index (Fig.1).

Figure 1: Spatial differentiation of the IO development level index in Polish municipalities in 2018



Note: data on the choropleth map refer to a multiple of the average LAU2 index for the total LAU2 in Poland (2471), the division into classes is based on Jenks' Natural Breaks.

Source: own elaboration based on surveys.

It can also be noted that a higher level of development of intelligent organizations in LAU is characteristic of areas with a higher level of economic development and high investment attractiveness (the Pearson index calculated for the indicator of potential attractiveness of municipalities (Godlewska-Majkowska, 2018) and the IO LAU2 index in 2018 amounted to 0.575). This confirms hypothesis H3. Geographical proximity of urban areas and the EU border is also significant.

As regards rural municipalities, it can be stated that a lower level of implementation of IT solutions in smaller, peripheral local units as well as the lack of need to use complex IT systems and the agricultural nature of the economy imply a lower need for employing knowledge workers. At the same time, a smaller scale of economic activity and its dispersed character may result in unprofitable application of capital-intensive solutions in the field of municipal management in such LAU.

Another pattern is also visible – this time spatial. Namely, LAU in western Poland have a higher index of organizational intelligence. This may be explained by the direction of diffusion of innovation characteristic of whole Europe, which in Poland also takes the west-east direction, maintaining a hierarchical nature of diffusion in highly urbanized territories. Highly urbanized areas, especially the Upper Silesian, Warsaw, Łódź, Wrocław and Poznań Conurbations are characterized by a higher index.

It is noteworthy that the use of any methods for valorisation of intelligent organizations in municipalities faces difficulties related to different scale of local administrative units, even at the same level. It is difficult, for example, to compare the legitimacy of introducing modern technological solutions in a small rural municipality with a municipality created by a large city. The larger the municipality is, the greater the mass of information flows and the complexity of information flows is, the more justified it is to use tools typical of intelligent organizations, and the higher the requirement of high skilled employees ready to upgrade and adapt their skills to the changing organization in the municipality. Therefore, a smaller municipality cannot be interested in applying a whole spectrum of solutions typical of intelligent organizations with regard to the lack of economic or organizational reasons for introducing certain solutions.

It should be noted that the proposed method is based on a relatively narrow set of variables, which results from low availability of nationwide data on the organization of work of local government authorities. However, even such a relatively poor indicator makes it possible to notice some characteristic patterns confirming a relationship between the level of development of intelligent organizations in local administrative units and the level of urbanization.

5. Conclusions

The theoretical purpose of this paper was determining the essence of an intelligent organization in a local administrative unit including identification of benefits and risks for local development connected with the development of an intelligent organization in LAU. Literature studies have shown that a generally accepted definition of an intelligent organization in LAU does not exist. The concept derives from issues related to business management which quite recently has been considered in the context of analyses of local administrative units. In addition, many features characteristic of developing IO in a local administrative unit have been

identified, which testifies to the existence of multiple aspects of the analysed term. Thus, it must be considered that the first hypothesis (H1) has been confirmed.

The features distinguishing a local administrative unit as an intelligent organization include, among other things: effective information, knowledge and communication management, use of modern technological solutions (including information and communication technologies), establishing and maintaining relations with partners of LAU, implementation of continuous learning processes, growth in the importance of citizens in decision-making processes, implementation of corporate governance principles and deliberative management in local administrative units - based on continuous improvement and innovativeness.

In the course of study it was demonstrated that the development of IO in LAU is a source of many benefits to local development, but it is also connected with the occurrence of some risks, which confirms the second hypothesis (H2). The most important benefits related to the development of an intelligent organization in LAU include: increased effectiveness and efficiency of public tasks performance, increased innovativeness and creativity in action, ability to anticipate the needs of the municipality's partners and strengthen cooperation with them, as well as increased flexibility of actions in response to the changing environment and social needs. As a consequence, the municipality is able to achieve and maintain a competitive advantage in relation to other local administrative units. It is worth noting that risks arising in an intelligent organization can be external, internal or mixed. Internal risks include, for instance: the risk of losing leaders who are the source of innovative solutions, loss of technological security (e.g. due to failure or incorrect use of hardware or software), expanding the area of the municipality, which may disturb the flow of information. External risks include but are not limited to: rapid technological changes, growing amount of information, relatively low flexibility of the policy governing employment of officials, risk of cyber-attack, and a growing number of tasks delegated by the central administration to local government units. A financial barrier, low salaries of officials, administrative procedures prolonging the decision-making process, as well as cyclic elections of local government authorities and political risks are mixed risks.

Considering the aforementioned, an intelligent local administrative unit can be deemed as *“a unit that effectively manages information, knowledge, communication and relations with partners and makes use of innovative technological solutions in order to complete public tasks and add dynamics to local development processes, as well as to achieve and maintain a competitive advantage”*.

The practical intention of the authors was presenting a concept of methods to identify the development level of an intelligent organization in local administrative units. Therefore, the study proposes a set of features describing an intelligent organization including their scoring. It provided a possibility of determining the criteria of summary evaluation of the level of intelligent organization in the

municipality using percentage scale. The paper also proposed an indicator of the level of development of intelligent organizations in local administrative units (LAU2) in Poland based on a set of variables. Research has shown a positive correlation between the level of development of IO in LAU and the level of urbanization, investment attractiveness and economic growth, which confirms hypothesis H3. Hence, the highest level of development of IO in LAU was observed in urban municipalities, followed by urban-rural municipalities, and finally in rural municipalities. In addition, it must be noted that the level of development of IO in LAU in western Poland is higher than in eastern Poland, which is consistent with the direction of diffusion of innovation. It is worth emphasizing that the presented methodological concept is universal – it can be used to evaluate the level of development of IO in taxonomic units at different levels and in different countries. At the same time, it is also worth emphasizing that, especially in smaller, peripheral local administrative units characterized by the agricultural economy, it may be economically or organizationally unreasonable to introduce the whole spectrum of solutions related to intelligent organizations.

Further research should attempt to identify and evaluate the level of development of intelligent organizations in higher taxonomy units in Poland, as well as in local administrative units in the European Union.

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