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THE LEVEL OF LOCAL DEVELOPMENT AND THE NEED FOR LOCAL GOVERNMENT INVESTMENT INDICATED BY RESIDENTS OF SELECTED COMMUNES IN THE LUBLIN VOIVODESHIP

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Abstract: This paper aimed to identify and analyse the needs for local government investments indicated by respondents from selected communes of the Lublin voivodeship, depending on the level of socio-economic development of the analysed units. Research hypothesis H1, stating that there is a relationship between the level of local development and the need for local government investment indicated by respondents, was corroborated. The research covered 16 communes. The research period was in general the year of 2018 (in the absence of data, the latest available information was used). The surveys showed there was an average correlation between the local development level and the need for local authorities to create green areas, tourist infrastructure and expenditure on the development of investment land. An average negative correlation between the level of local development and the need for investing in roads and pavements was also identified. This indicates a partial confirmation of hypothesis H1.

Keywords: local development, local government investments, commune, investment needs, investment expenditure of communes, Hellwig's development model method.

1. Introduction

Satisfying the needs of the local community, which implies an improved quality of life for residents, is the main focus of local government authorities. Thus the need arises not only for accomplishing administration tasks but also investment tasks. The public administration reform implemented in Poland at the beginning of the 1990s turned communes into units in charge of the administration of a specific area, accountable for all public matters of local significance that are not reserved for other entities. In connection with this, it is worth emphasizing that the present investment activity of communes will determine the future living standard of residents and the terms and conditions of economic activity in a specific area. It should also be noted that local government investment projects are a response to the growing requirements of local communities regarding the offered range of public services (Vuković, 2014). Communes play an auxiliary role in relation to the local community and their activities should focus on providing public services to citizens. This leads to the prerequisite for identifying the needs of residents, including the needs for local government investments. However, the question arises of whether the needs of residents vary depending on the previous level of local development. Thus, this paper aimed to identify and analyse the need for local government investments indicated by the respondents from selected communes of the Lublin voivodeship, depending on the level of socio-economic development of the analysed units. Research hypothesis H1, stating that there is a relationship between the level of local development and the need for local government investment indicated by the respondents, was corroborated.

2. Significance of local government investment for local development

Local development is a multifaceted term defined differently by various authors (Leigh and Blakely, 2017; Rogerson and Rogerson, 2010). For the purposes of this paper, “local development is running an activity for the purposes of socio-economic development of a specific territorial unit, utilizing its resources and taking the needs of residents into account and with their participation” (Kožuch, 2011, p. 9). Local development means economic growth and promoting participation and local dialogue for better employment and creating a quality living environment (Hristova, 2009). The instruments used by local authorities to boost local development are expenditure and income instruments. The latter include the tax rate policy, a system of tax credits and exemptions, as well as deferrals, redemptions, payment by instalments and abandoning tax and charge collection. In the group of expenditure instruments, investments carried out by communes, referred to in literature as: local government, local, commune, municipal, infrastructural or public investments (Hermaszewski, 2006), play a significant role. Commune investments are “measures oriented at increasing the value of the unit’s material resources, connected with

financial expenditure on increasing and modernising the fixed assets in a specific LAU (these are investments from the start connected with building a new fixed asset as well as other forms of increasing the fixed assets of local government)” (Brunka, Kumorek, and Łuczak-Kumorek, 2003, p. 108). A key role among these investments is assigned to investing in technical and social infrastructure thus creating conditions for increasing the competitiveness of a territorial unit (by improving the quantity and quality of provided municipal and social services) and for setting up new economic entities, as well as boosting the attractiveness of the territory as a place to settle to attract new residents (Zawora, 2015). It is worth noting that the magnitude of the effects of public infrastructure investment tend to be substantially higher for less developed countries (Pereira and Andraz, 2013).

Public investment projects have a positive impact on the endogenous growth and economic development of the specific area (Kaplanova, 2016), supplementing the available private capital (as a production factor) and contributing to growth in the productivity of private capital (Cohen and Morrison, 2004; Nazarczuk, 2013, p. 56). The research carried out by both Polish and foreign authors (Tomal and Nalepka, 2018, p. 57) shows that investment expenditure contributes, among other things, to: increasing the number of residents, increasing added value and profit from private production, improving living conditions for the local population, accelerating economic growth of the analysed local government units through a growth of multiple indicators, as well as improving the quality of public services. The research also pointed to a moderate correlation between investment expenditure and the coefficient of entrepreneurship (Marks-Bielska and Opalach, 2019). Local government investment projects, creating conditions for the development of entrepreneurship, also provide options to secure external investors by increasing the investment attractiveness of a specific area (Zheltenkov, Syuzeva, Vasilyeva, and Sapozhnikova, 2017). In this context it is important to prepare a specialised sales offer of investment land adapted to the location requirements for businesses representing desirable industries (Cymerman, Kola-Bezka, Komor, Konieczna, Stawska, and Zapotoczna, 2015, p. 23). In today’s world, innovative industries using high technologies gain special significance as they can generate multiplier effects for the economy. However, it should be noted that there is a need for diversifying the structure of the local economy, thereby strengthening its resistance to demand and supply shocks. This issue becomes even more significant in the context of new conditions in which economies must function due to the pandemic of coronavirus SARS-CoV-2, leading to the necessity to find new solutions in the sanitation procedures and social distancing, both in the business environment and public administration units.

In order to achieve the assumed effects, local government investment should be innovative, contribute to developing the existing resources, improve the quality of goods and services supplied to the local community and stimulate growing entrepreneurship, while reducing the rate of migration of the population (Filipiak,

2008). Vranitzky (1995) noted that public investments should contribute to decreasing people's tendency to emigrate by increasing economic welfare. It can also be observed that public investment increasing the quality of infrastructure contributes to a trend towards 'reverse migration' or 'population turnaround' as a result of the renewed preference for rural living (Atkinson, 2009; Brown and Wardwell, 1980).

The tendency of communes to invest is connected with expanding fixed material resources, and is therefore a benefit to the local community. According to Czempas (2012), this tendency will increase if an expected benefit derived by the community from postponing or abandoning ongoing consumption is greater. The crucial factors determining the level of such a tendency are financial capabilities and the targets set by residents. Surveys suggest that the main factor affecting the tendency of Polish communes to invest is their financial standing, i.e. the wealthier the commune, the more funds it allocates to investment related to infrastructure (Tomal and Nalepka, 2018). An important factor affecting the level of local government investment is the possibility of using external funds, primarily European Union funds (Bury and Nowak, 2017). The statistically significant factor influencing the value of investment projects was the level of the commune's development (Standar, 2018). It is worth noting that maintaining such tendencies will contribute to the further polarization of local development in Poland. Furthermore, the factor connected with administrative status can contribute to higher investment expenditure (Przybyła, Kachniarz, and Ramsey, 2020). Czempas (2013) noted that apart from the availability of funds for financing investment, an intelligent and modern management of financial and investment projects is essential. One of the modern methods of management is intelligent organisation in local administrative units. An intelligent local administrative unit can be deemed to be "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" (Godlewska-Majkowska and Komor, 2019). This issue takes on special importance in the context of the effective management of local administrative units and improving the quality of public services offered in the post-pandemic era.

3. Material and methods

The research covered 16 communes from the Lublin voivodeship. Snowball convenience sampling was used for the purposes of the work. The research period was in general the year of 2018 (in the absence of data, the latest available information was used). The method employed in the work was Hellwig's development model (for the purposes of dividing the analysed communes into four groups according to the level of their development) and the questionnaire survey method (to identify and evaluate the needs for local government investment projects that were most frequently indicated by the respondents). Next, an attempt was made to identify

and analyse the need for local government investment most often indicated by the respondents, depending on the existing level of local development.

In the first stage, a socio-psychological survey method in the form of a questionnaire survey was used to identify and evaluate the need for local government investment most frequently indicated by local residents. The research tool was a paper questionnaire form. The results are presented in the tables below. The data was subject to quantitative analysis using descriptive statistics (tabular description, frequency description) and parametric statistics (Pearson correlation coefficient). In addition, Z-test statistics were applied to evaluate statistically significant differences between the need for local government investment as indicated by the respondents from communes with a different level of development.

The questionnaire survey was carried out in 2018 among residents of selected communes in the Lublin voivodeship (Table 1).

Women accounted for 52.8% and men for 47.2% of the surveyed population. The respondents represented the following age groups: 18-25 years – 23.3%; 26-35 years – 24.8%; 36-45 years – 20.9%; 46-55 years – 18.9%; 56-65 years – 6.6%; above 65 years – 5.5%.

Table 1. List of communes covered by the survey

Commune*	Number of respondents
Biała Podlaska (2)	45
Chełm (2)	40
Firlej (2)	40
Garbów (2)	38
Janów Lubelski (3)	40
Kamionka (2)	40
Lublin (1)	80
Łaszczów (3)	40
Łuków (1)	120
Modliborzyce (3)	40
Ostrów Lubelski (3)	40
Radzyń Podlaski (2)	40
Rejowiec Fabryczny (2)	40
Świdnik (1)	40
Tomaszów Lubelski (2)	40
Zakrzówek (2)	40

*The number in brackets denotes commune type: (1) – urban commune; (2) – rural commune, (3) – urban-rural commune.

Source: own elaboration based on surveys.

As regards their level of education, most people declared secondary education (36.6% respondents). University graduates accounted for 22.2% of the surveyed group, vocational school graduates – 21.4%, respondents with a bachelor's degree – 15.6%, and those with a primary education – 4.2%.

The second stage of the survey used Hellwig's development model for evaluating the level of development of selected communes (Hellwig, 1968). The research procedure was based on literature studies (Adamowicz and Janulewicz, 2012; Bąk, 2007; Kasztelan, 2017; Krawiec and Landmesser, 2007; Ostasiewicz, 1999; Pomianek and Chrzanowska, 2016). The variables characterising the level of local development were selected based on a previous study which analysed the relationships between measures boosting local development preferred by residents of selected communes and the existing level of local develop-

ment (Komor and Janulewicz, 2019). Due to the absence of relevant statistical data, variables X6 and X16 were changed. A new variable, i.e. the rate of migration per 1000 people indirectly determining the attractiveness of the specific area as a place to settle, was also introduced. The research period was in general the year of 2018. In the absence of data, the latest available information was used. Finally, the study adopted 25 features upon which the local development level was determined:

- X1 – own income of the commune *per capita* (PLN),
- X2 – share of residents using the water supply system (%),
- X3 – share of residents using the sewerage system (%),
- X4 – share of residents using the gas supply system (data pertaining to 2016) (%),
- X5 – water consumption *per capita* (m³),
- X6 – income from EU programme and project financing and co-financing *per capita* (PLN),
- X7 – average useful floor area of a dwelling *per capita* (m²),
- X8 – number of dwellings per 1000 residents (pcs),
- X9 – average number of rooms in a dwelling (pcs),
- X10 – average number of persons per room,
- X11 – number of marriages per 1000 population,
- X12 – old-age dependency ratio (persons),
- X13 – live births per 1000 population,
- X14 – birth rate per 1000 population,
- X15 – number of primary and outpatient healthcare consultations per capita,
- X16 – post-working age population per 100 people at pre-working age (person),
- X17 – share of residents living below the income criterion (%),
- X18 – gross enrolment rate – primary schools (%),
- X19 – number of people employed per 1000 population,
- X20 – number of household sewage treatment plants per 1000 population (facilities),
- X21 – size of population per 1 km² (persons),
- X22 – change in the size of population per 1000 inhabitants (persons),
- X23 – rate of migration per 1000 population (persons),
- X24 – total number of economic entities per 10 thousand working-age residents,
- X25 – share of registered unemployed persons in the total working-age population by sex (%).

Features X12, X15, X16, X17, X25 were deemed to be destimulants (the-smaller-the-better characteristics), while others were considered to be stimulants (the-larger-the-better characteristics). The statistical characteristics for all features are presented in Table 2.

In the next stage of the research, using Z-test statistics, statistically significant differences between the need for local government investment indicated by respondents from communes characterised by a different level of development were identified and analysed.

Table 2. Statistical characteristics of diagnostic variables

Variable	Mean	Minimum	Maximum	Standard deviation	Coefficient of variation
X1	1474.21	912.81	3309.10	562.10	0.38
X2	89.29	55.70	100.00	10.14	0.11
X3	39.98	3.90	94.70	29.38	0.73
X4	22.41	0.10	97.70	32.81	1.46
X5	34.92	20.80	57.10	10.03	0.29
X6	365.78	85.23	953.55	247.39	0.68
X7	29.36	24.50	33.20	2.48	0.08
X8	347.98	296.00	456.10	42.53	0.12
X9	3.96	3.38	4.42	0.30	0.08
X10	1.37	1.18	1.61	0.10	0.07
X11	5.08	3.90	5.80	0.58	0.11
X12	0.04	0.032	0.053	0.01	0.16
X13	9.89	8.01	11.58	0.88	0.09
X14	-1.80	-7.25	1.21	2.26	-1.25
X15	0.68	0.05	7.06	1.68	2.45
X16	0.01	0.006	0.013	0.00	0.20
X17	0.33	0.11	0.77	0.19	0.57
X18	90.38	54.03	111.00	14.05	0.16
X19	145.38	50.00	371.00	93.59	0.64
X20	20.39	0.37	68.11	24.48	1.20
X21	364.81	43.00	2303.00	691.93	1.90
X22	-1.90	-11.67	11.65	6.67	-3.52
X23	-0.54	-9.20	10.50	5.18	-9.53
X24	1226.33	611.30	2255.70	435.47	0.36
X25	0.19	0.090	0.385	0.07	0.38

Source: own elaboration based on (Local Data Bank, 2016-2018).

4. Results

The results of the survey showed that the group of communes with the highest level of local development (group I) consisted of two urban communes, Lublin and Łuków (Table 3). The second group comprised four rural communes: Biała Podlaska, Chełm, Garbów and Radzyń Podlaski, and the urban commune (municipality) of Świdnik. The third group consisted of four rural communes – Firlej, Kamionka, Tomaszów Lubelski and Zakrzówek and three urban-rural communes – Janów Lubelski, Łaszczów and Ostrów Lubelski. The group of communes with the lowest

level of local development (group IV) comprised two units: Modliborzyce (urban-rural commune) and Rejowiec Fabryczny (rural commune).

Table 3. The classification of communes according to the value of Hellwig measure (z_i) describing the level of local development of selected communes in the Lublin voivodeship

Group number	Commune*	Value of the measure (Hellwig – z_i)
I	Lublin (1)	0.587
	Łuków (1)	0.450
II	Biała Podlaska (2)	0.376
	Chełm (2)	0.416
	Garbów (2)	0.404
	Radzyń Podlaski (2)	0.349
	Świdnik (1)	0.339
III	Firlej (2)	0.318
	Janów Lubelski (3)	0.306
	Kamionka (2)	0.309
	Łaszczów (3)	0.235
	Ostrów Lubelski (3)	0.245
	Tomaszów Lubelski (2)	0.235
	Zakrzówek (2)	0.243
IV	Modliborzyce (3)	0.215
	Rejowiec Fabryczny (2)	0.124

*The number in brackets denotes commune type (1) – urban commune; (2) – rural commune, (3) – urban-rural commune.

Source: own elaboration based on (Local Data Bank, 2016-2018).

Depending on the value of the Pearson correlation coefficient, the strength of dependency between two characteristics can be defined at three levels: strong correlation (when the modulus of the correlation coefficient is larger than 0.6), average correlation (when this value is larger than 0.3 and smaller than or equal to 0.6) and weak correlation (when the value of the coefficient is smaller than or equal to 0.3) (Czaja and Preweda, 2000). Considering the aforementioned, it should be stated that no strong correlation was identified between the frequency of the need for local government investment indicated by the respondents (determined based on the percentage of responses in each commune) and the level of development of the commune (expressed by the Hellwig measure – z_i). An average correlation was identified between the local development level and the need for local authorities creating green areas (Pearson's correlation coefficient was 0.471) and tourist infrastructure (0.450) as well as expenditure on the development of investment land (0.355) – Table 4. In addition, an average negative correlation was found between

the level of local development and the need for investing in roads and pavements (-0.418). This partially confirmed hypothesis H1 stating that there is a relationship between the level of local development and the need for local government investment indicated by the respondents.

It can therefore be concluded that as the level of local development increased, the respondents would more often mention superior needs connected with spare time and leisure, and increasing the attractiveness of the area for tourists. This is also confirmed by the relatively high coefficient of correlation between the level of local development and the respondents needs for investment in cultural and arts facilities (0.282). The reference literature emphasizes that investment in recreational and sports facilities affects local development by improving the quality of life of local residents, improving the image of the commune and developing local social capital that can provide grounds for creating local collaboration networks (Słocińska, 2016).

It should be also stated that the respondents from communes with a higher level of local development more often mentioned the need for the increased involvement of the local authorities in developing investment land (Table 4). The purpose of such

Table 4. Pearson's coefficient of correlation between the level of local development (z_i) and the needs of the respondents regarding local government investment (percentage of responses)

Investment needs	Pearson's correlation coefficient
Green areas	0.471
Tourist infrastructure	0.45
Development of investment land	0.355
Cultural and artistic activity	0.282
Social welfare	0.269
Car parks and parking lots	0.196
Recreational infrastructure (playgrounds, activity zones)	0.172
Healthcare	0.132
Street lighting	0.034
Land drainage and flood control infrastructure	0.021
Sports facilities/infrastructure (playing fields, tennis courts, other)	0.007
Tourist routes, e.g. cycling routes	-0.013
Educational facilities/infrastructure (schools, nursery schools)	-0.027
Environmental protection infrastructure	-0.07
Residential buildings	-0.097
Social infrastructure (day centres and places to socialise)	-0.17
Municipal infrastructure (sewerage, water supply system)	-0.263
Roads and pavements	-0.418

Source: own elaboration based on surveys.

investment expenditure is to boost the investment attractiveness of the area and thus stimulate the development of enterprise and increase the level of employment and income of residents. Consequently, it will add further dynamics to the local development of these units.

An average negative correlation was also identified between the level of local development and the need for investing in roads and pavements. This may suggest a higher quality of transport infrastructure in communes characterised by a higher level of development, which was certainly connected with past investment in transport infrastructure. This can be also confirmed by the negative coefficient of correlation of -0.263 between the level of development of the commune and its need for investment in municipal infrastructure (sewerage, water supply system).

At the following stage of the research statistically significant differences between the need for local government investment indicated by the respondents from communes characterised by a different level of development were identified and analysed. Using the Z-test statistics comparing column proportions, in most categories of investment no statistically significant differences were identified between the indicated need for local government investment depending on the level of development of the commune. The distribution of responses was similar in all groups of communes.

Statistically significant differences between the categories of communes identified according to their development level were confirmed using Z-test statistics with reference to the need for investing in: roads and pavements, land drainage and flood control infrastructure, healthcare, car parks and parking lots, street lighting, municipal infrastructure (sewerage, water supply network) and developing investment land (Table 5). During the survey it was demonstrated that:

- the respondents from communes showing the highest level of local development more often deemed healthcare investment projects more important than the respondents from groups II and IV did, and found car park and parking lot investment important more often compared to the choices of the respondents from groups II and III;
- the respondents from group II more often mentioned the need for investment in land drainage and flood control infrastructure, street lighting and municipal infrastructure than respondents from group I; they also emphasized the significance of developing investment land more often than respondents from communes with the lowest level of local development (i.e. from group IV);
- the respondents from communes included in group III regarded the following types of investment as important: roads and pavements (more often than group II), healthcare (in comparison to groups II and IV), and municipal infrastructure (more often than groups I and IV);
- the respondents from communes characterised by the lowest level of development mentioned the need for investing in roads and pavements more often than respondents from the groups featuring the highest level of development (i.e. I and II).

Table 5. Investment needs of the respondents and the level of local development – statistically significant differences (% of responses)

Investment needs	Group number according to development level			
	I	II	III	IV
Roads and pavements	38%	29%	47%	59%
			II**	I*, II**
Land drainage and flood control infrastructure	3%	10%	7%	3%
		I*		
Healthcare	39%	21%	35%	19%
	II**, IV****		II**, IV****	
Car parks and parking lots	38%	21%	21%	27%
	II**, III***			
Street lighting	7%	16%	12%	8%
		I*		
Municipal infrastructure (sewerage, water supply system)	2%	7%	14%	3%
		I*	I*, IV****	
Development of investment land	10%	17%	11%	5%
		IV****		

* Statistically significant difference between the responses of respondents from group I – lower percentage of responses in group I. ** Statistically significant difference between the responses of respondents from group II – lower percentage of responses in group II. *** Statistically significant difference between the responses of respondents from group III – lower percentage of responses in group III. **** Statistically significant difference between the responses of respondents from group IV – lower percentage of responses in group.

Source: own elaboration based on surveys.

5. Conclusion

The paper demonstrated that local government investment projects have a positive effect on the endogenous growth and economic development of a specific area as well as the level of its attractiveness in terms of investment and settlement. In addition, factors affecting the communes' tendency to invest were identified, including mainly the financial standing of the commune (including the possibility to obtain EU grants), the targets set by residents and the level of development of the commune. Furthermore, their administrative status, as well as the intelligent and modern management of financial and investment projects in connection with the implementation of modern methods of management (e.g. in the form of intelligent organisation in local administrative units) are very important.

This paper aimed to identify and analyse the need for local government investment indicated by the respondents from selected communes of the Lublin voivodeship,

depending on the level of socio-economic development of the analysed units. The surveys identified that in the surveyed communities an average correlation existed between the local development level and the need for local authorities to create green areas and tourist infrastructure as well as expenditure on the development of investment land. An average negative correlation was also demonstrated between the level of local development and the need for investing in roads and pavements. This partially confirms hypothesis H1 stating that there is a relationship between the level of local development and the need for local government investment indicated by the respondents. In addition, the paper identified and analysed statistically significant differences between the need for local government investment projects indicated by the respondents from communes characterised by a different level of development. Statistically significant differences between categories of communes identified according to their development level were confirmed using Z-test statistics with reference to investment needs in: roads and pavements, land drainage and flood control infrastructure, healthcare, car parks and parking lots, street lighting, municipal infrastructure and developing investment land. The respondents from communes characterised by the highest level of development statistically more often declared investment in healthcare and in car parks and parking lots important, whereas the respondents from communes showing the lowest level of development more often mentioned the need to invest in roads and pavements.

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POZIOM ROZWOJU LOKALNEGO A POTRZEBY W ZAKRESIE INWESTYCJI SAMORZĄDOWYCH W OPINII MIESZKAŃCÓW WYBRANYCH GMIN WOJEWÓDZTWA LUBELSKIEGO

Streszczenie: Celem opracowania była identyfikacja i analiza potrzeb w zakresie inwestycji samorządowych wskazywanych przez respondentów z wybranych gmin województwa lubelskiego w zależności od poziomu rozwoju społeczno-gospodarczego badanych jednostek. Weryfikacji poddano hipotezę badawczą H1, stanowiącą, że jest związek między poziomem rozwoju gminy a potrzebami w zakresie inwestycji samorządowych wskazywanymi przez respondentów. Przedmiotem badań było 16 gmin. Okres badawczy obejmował rok 2018 (w razie braku danych wykorzystano najnowsze dostępne dane). Wykazano występowanie przeciętnej korelacji między poziomem rozwoju gminy a potrzebą tworzenia przez władze gminy terenów zielonych, infrastruktury turystycznej oraz wydatkami na rozwój terenów inwestycyjnych. Zidentyfikowano także występowanie przeciętnej korelacji ujemnej między poziomem rozwoju gminy a potrzebami w zakresie inwestycji w drogi i chodniki. Wskazuje to na częściowe potwierdzenie hipotezy H1.

Słowa kluczowe: rozwój lokalny, inwestycje samorządowe, gmina, potrzeby inwestycyjne, wydatki inwestycyjne gmin, metoda wzorca rozwoju Hellwiga.