TERRITORIAL COMMUNITIES OF UKRAINE IN THE CONTEXT OF DECENTRALIZATION

Ruslana Sodoma[1], Oksana Sadura[2], Kristina Kudak[3], Nataliya Kotys[4], Olena Panukhnyk[5], Kateryna Blishchuk[6]

[1] *Assoc. Prof., Lviv State University of Life Safety, Kleparivska, Str., 35 Lviv, Ukraine, E-mail address: sodomaruslana@gmail.com*

[2] *Assoc. Prof., Lviv Polytechnic National University, Horbachevskoho, Str., 18 Lviv, Ukraine, E-mail address: oksana.b.sadura@lpnu.ua*

[3] *Candidate of Economic Sciences, Research Fellow, Transcarpathian Regional Center of Socio-Economic and Humanitarian Research of NAS of Ukraine, University, Str., 21 Uzhhorod, Ukraine, E-mail address: kristina.kudak@gmail.com*

[4] *Assoc. Prof., West Ukrainian National University, Lvivska, Str., 11 Ternopil, Ukraine, E-mail address: natakotys@gmail.com*

[7] *Dr.Sc., Prof., Ternopil Ivan Puluj National Technical University, Ruska, Str., 56 Ternopil, Ukraine, E-mail address: panukhnyk@gmail.com*

[6] *Assoc. Prof., Lviv Polytechnic National University, Stepan Bandera, Str., 12 Lviv, Ukraine E-mail address: kateryna.m.blishchuk@lpnu.ua*

Abstract

Scientific and applied aspects of decentralization are considered, analyzing the stimulating determinants and outlines methodological approaches to assessing the development of territorial communities in the modern period. Emphasis is placed on the need to study foresight as a technology for forecasting the development of the territorial community. Important aspects are outlined, and the advantages and disadvantages of the impact of financial decentralization on the processes of effective development at the local level are systematized. The economic activity of territorial communities in the regions of Ukraine is analyzed, and the attention is focused on the Lviv region in terms of groups formed by the population in the communities. In the process of economic and mathematical modeling, it is proposed to maximize the economic efficiency of territorial communities. The calculations showed a statistically significant impact of decentralization on the welfare of the population of the territorial community and the formation of a positive investment climate. The scientific novelty of the obtained results is represented by a set of practical aspects of the study, namely proposals for modern innovative development of local communities using digitalization.

Keywords: management of territories, people, local government, territorial communities, decentralization.
JEL Codes: JEL O18, O21, R11.

Introduction

The success and scale of the introduction of innovative technologies in the practice management of territorial communities largely depend on the detection of changes and the ability to respond to them in a timely manner. Just with the help of decentralization are protected interests of civil society and state development by involving territorial communities in local development management. Thus, in turn, can lead to the formation and development of the territorial community as a basic subject of local government, where local sources of budget revenues, human and infrastructural resources may be sufficient for local governments to make a decision on local meaning, provided by law, in the interests of community residents.

The processes of decentralization of authorities in Ukraine are in some way aimed at accelerating public services to the consumer. Today, decentralization has created a strong local government capable of resisting even military aggression. Therefore, the issues of territorial communities in the context of decentralization remain relevant and need to be considered in more detail.

Literature review

The presence of a significant quantity of research related to the development and functioning of territorial communities in the context of decentralization indicates not only the scientific interest in the topic but also the significant need to use the results in practice to improve the economic situation of territorial communities.

In the opinion of O. Batanov (2008), a territorial community is a difficult "cumulative" form of social organization, a set of people (locals) related on a public basis within the territory and united by diverse features of a systemic character (including compatriot, legal and political, economic and professional, social -cultural connection). I. M. Lysenko (2009) interprets the category of "territorial community" as a community of people united by relationships, living in a certain area, engaged in self - government through local referendums, general meetings, local representative authorities (village, city councils, etc.), authorities of the self-organization of the population and other union in order to realize their interests. V. E. Vorotin and O. M. Koval (2019) is considered that the process of voluntary union of communities is clearly defined, the purpose of which is the formation and improvement of the financial and organizational capacity of the united territorial communities Reform should not be based on algorithms or methods and, first of all, must take into account the experience of European states. After analyzing the different definitions of "territorial community", we tend to consider that, although there is some difference in definition, there is a general agreement on the following features of the community: social interaction, territory and general relationship.

An important study of the formation and development of territorial communities in Ukraine are the works of P. Zhuk (2018), B. Danylyshyn (2022, 2023), L. Simkiv (2022) and A. Valyukh (2020). In particular, the authors analyze the period of the process of origin of the idea of decentralization and the stages of formation of the idea of administrative-territorial reform. The work is devoted to the adaptation of modern forms of territorial associations to the existing territorial system in the country. The authors of this work are based on the idea of improving the efficiency of administrative-territorial reform by assessing the first stages of reform in Ukraine.

Demonstration development of territorial public organizations in the work of V. Bonadrenko and others (2020), where the authors explore the use of natural resources of the community to fill the local budget need for authors developed a methodology for analyzing the effectiveness of the formation of natural resource potential of territorial communities in the context of decentralization.

K. Patytska (2020) and Y. Maksymiv (2021) and others in their research pay attention to the formation of local budgets of the territorial community, in particular, the budget potential analyzed, the key aspect of which is the tax component. The authors also propose a method of analyzing the budget potential of the territorial community in terms of for determining the effectiveness of use of budget potential by income. This approach allows determining the features of filling the local budget of communities.

The study of investment opportunities of territorial communities in the conditions of decentralization leaves out the attention of domestic scientists. Thus, Z. Siryk (2020) sought a thorough analysis of investment processes and opportunities of the community, as well as identified directions and proposed mechanisms for improving the financial and investment support of territorial communities.

Another direction of this study has by H. Voznyak and others (2020, 2021), where the

authors study the latest models of the irrational behaviour of financial and economic relations in the practice of governance at the level of territorial communities, thus revealing the postulates of behavioral economics. Problems of economic development of territorial communities, researched such as Yu. Radetsky (2019), A. Was (2020). Many authors have assessed and analyzed the sustainability of socio - economic development of the united territorial communities of the Lviv region (Sodoma, 2021).

Important in the process of decentralization was the direction of strategic planning and its capabilities for the management component of territorial communities. Such a study was conducted by Yu. I. Danko et al. (2020) described the quality process of reforming the administrative-territorial system and local self - government in Ukraine and identify many problems, the main of which was low communication with government and community and lack of planning. In this study, the authors propose to improve the scientific and methodological platform for training professional officials for local governments.

The issues of decentralization of power, development of local self-government, and formation of capable united territorial communities have been revealed in many works of scientists. However, considering the importance of the problem in modern conditions, the effectiveness of the united territorial communities depending on the population remains insufficiently analyzed.

Methodical approach

General scientific, theoretical and empirical research methods were using to solve the set tasks. The empirical approach base on prognostic methods (a generalization of independent characteristics and modelling). Within the economic-mathematical method, the methods of correlation-regression analysis and modelling use.

Calculations were made to build a regression model of the dependence of revenues to the general fund of the budget (Y) on the number of territorial communities (X1), population (X2) and area (X3), according to statistical data on regions of Ukraine in 2021:

$$y = a + bx1 + cx2 + dx3 + \varepsilon.$$

Data for calculations are shown in table 1.

Table 1. **Statistical data on the construction of the regression equation by regions of Ukraine for 2021**

Region	Total revenues to the general fund, (billion UAH) (Y)	Number of territorial communities (X1)	Population (million people) (X2)	Area a thousand sq. Km. (X3)
Vinnytsia	9.75	63	1.54	26.54
Volyn	5.44	54	1.03	20.29
Dnipropetrovsk	29.09	86	3.21	31.9
Donetsk	12.41	66	2.32	18.05
Zhytomyr	7.47	66	1.2	29.69
Zakarpattia	5.41	64	1.25	12.91
Zaporizhzhia	12.8	67	1.72	27.19
Ivano-Frankivsk	6.55	62	1.36	14.07
Kyiv	17.42	69	1.85	25.57
Kirovohrad	6.22	49	0.92	24.56
Luhansk	3.73	37	0.93	18.40
Lviv	17.55	73	2.51	22.03
Mykolaiv	7.39	52	1.12	24.01
Odesa	18.17	91	2.41	33.36
Poltava	12.02	60	1.39	28.70
Rivne	6.02	64	1.15	20.15

Sumy	6.96	51	1.06	23.83
Ternopil	5.13	55	1.03	13.91
Kharkiv	21.88	56	2.75	31.45
Kherson	5.55	49	1.03	26.46
Khmelnytskyi	7.56	60	1.25	20.71
Cherkasy	7.93	66	1.19	20.93
Chernivtsi	3.71	52	0.89	8.15
Chernihiv	6.7	57	0.98	31.88

*Source: Calculated according to the State Statistics Service of Ukraine (2022) and Decentralization (2022).

The algorithm of application of the regression model for the statement of task predicts estimation of the regression equation, calculation of partial correlation coefficients, matrix of pair correlation coefficients. We will perform calculations using MS Excel software (Table 2, Table 3).

Based on the proposed method using the initial data of Table 1, we obtained the reliability of the constructed multiple linear regression verified using the correlation and determination coefficients, standard error and Fisher's test. The multiple coefficient of determination is greater than the coefficients of determination, $R^2 yx_1x_2 > R^2$ (0.97 > 0.94). That indicates the feasibility of including factors X1, X2 and X3 in the model. The adjusted coefficient of multiple determination (0.93) determines the closeness of the relationship, taking into account the degrees of freedom of total and residual variance. Both coefficients indicate a high determinism of the final result Y in the model with factors X1, X2 and X3. It is establish by the coefficient of determination that the regression equation approximates the empirical data by 94%.

Table 2. Data analysis tool "Regression" (regression statistics and analysis of variance)

Regression statistics					
Plural R				0.97	
R-square				0.94	
Normalized R-square				0.93	
Standard error				1.67	
Observation				24	
Analysis of variance					
	df	SS	MS	F	Significance F
Regression	3	896.72	298.91	108.75	1.48119E-12
Remainder	20	54.97	2.75		
Together	23	951.69			

The obtained value of Fisher's criterion F = 108.75 > Ftable = 1.48 allows us to conclude that the hypothesis H0 should be rejected and confirms the statistical significance of the regression equation in general and the value of Ryx1x2 because they are formed under the influence of non-random factors that are statistically reliable.

Table 3. Data analysis "Regression"

	Coefficients	Standard error	t-statistics	P-Value
Y-section	-7.55	2.14	-3.53	0.0021183
X1	0.01	0.04	0.23	0.8234812
X2	8.30	0.79	10.53	0.0000000
X3	0.20	0.06	3.41	0.0027571

The value of t - Student's statistics - for the parameters of the equation: $t_c = 10.53$; $t_d = 3.41 > t_{cr} = 2.07$, and for the parameters $t_a = -3.53$; $t_b = 0.23 < t_{cr} = 2.07$ (df = 22; $\alpha = 0.05$).

Accordingly, all the parameters of the equation were formed under the influence of non-random components, are statistically significant and reliable.

$$Y = -7.55 + 0.01x_1 + 8.30x_2 + 0.20x_3.$$

For a more accurate analysis of the degree of influence of various factors on revenues to the general budget, build a matrix of paired correlation coefficients R Use the data analysis tool "correlation" and get the following results (Table 4).
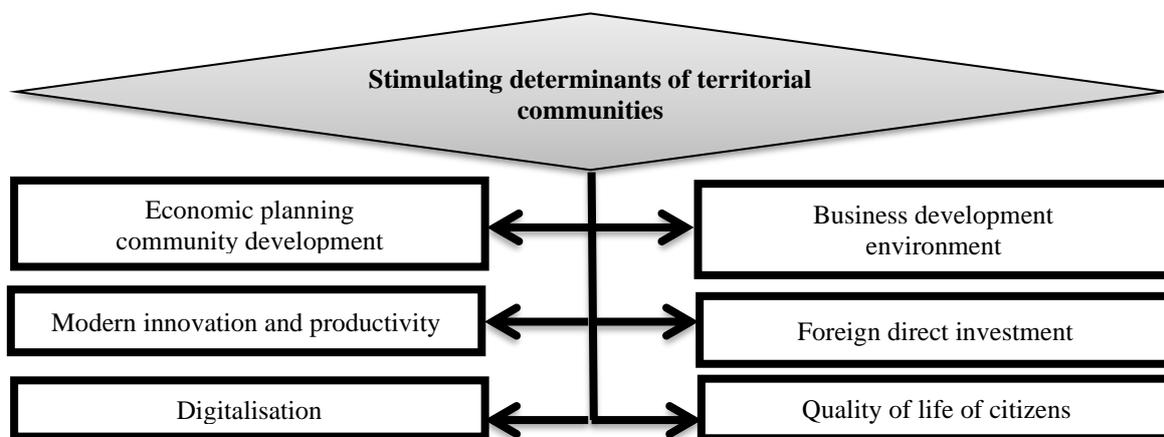
Table 4. Matrix of paired correlation coefficients

	Y	X1	X2	X3
Y	1	0.71	0.95	0.59
X1	0.71	1	0.72	0.38
X2	0.95	0.72	1	0.44
X3	0.59	0.38	0.44	1

As we can see, the greatest closeness of the connection (0.95) is observed between the revenues to the general fund (Y) and the population (X2). Graphic and tabular techniques are used to visualize the results. The research methodology is based on comparative analysis and generalization of scientific data.

The reliability of the obtained results, conclusions, and proposals is based on a comprehensive analysis of statistical data and scientific generalizations.

Results

Competing local communities need to create the most favorable environments for attracting investment and business, which will include infrastructure and better services at a lower cost to businesses and citizens. In modern conditions, the measures of innovative development of territorial communities should be complemented by projects of integrated and sustainable development, which will include local industry, construction, trade, tourism, socio-economic component. Stimulating determinants of territorial communities are shown in Figure 1.
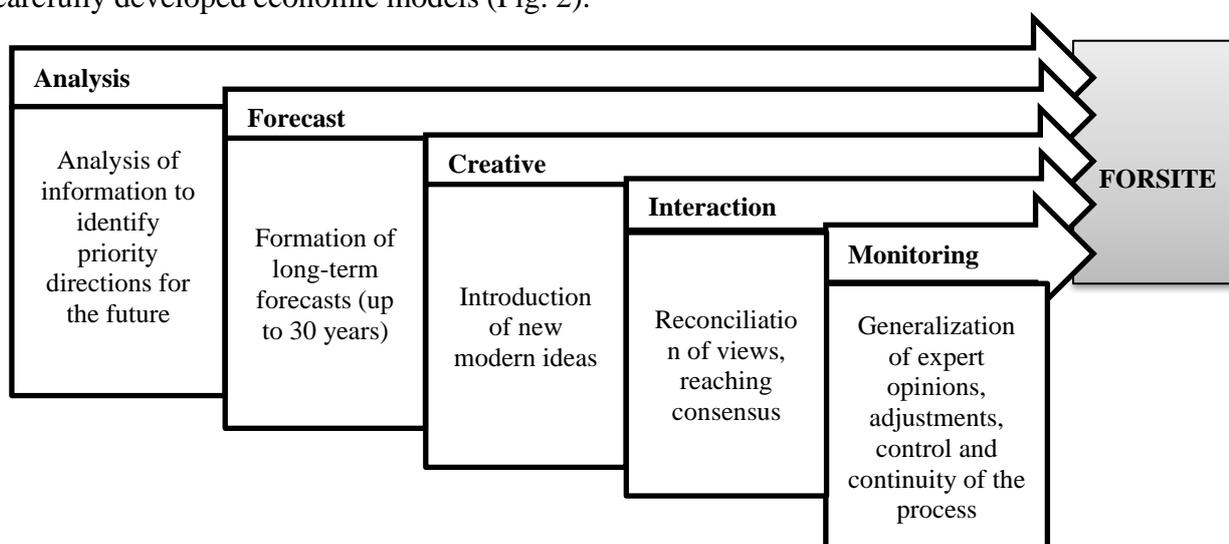

Figure 1. Stimulating determinants of territorial communities

Source: own research.

Achieving these goals will create appropriate conditions for socio - economic development of the community as a whole as well as allots components, while using the diversification mechanisms to address potential risks in rural areas (Siryk, 2020).

In modern conditions, the introduction of foresight technology is relevant, as a prediction in the process of strategic planning for the development of the territorial community. In the forsite, not only the result is important, but also the process of obtaining it, taking into account specific scenarios or carefully developed economic models (Fig. 2).

Foresight methodological tools take into account the interests of both government and business and the community by involving stakeholders who will participate in the planning and implementation of new, creative ideas. Forsythe helps to solve the problem of achieving a balance in predicting the future through the coordination of interests in the community and thus stimulate social activity. Much of the economic effect is due to the improvement of local government policy towards business and the formation of a positive investment climate.

Figure 2. Forsite as a technology for forecasting the development of territorial communities
Source: own research.

The reliability of the obtained results, conclusions, and proposals is based on a comprehensive analysis of statistical data and scientific generalizations.

Lviv Oblast is one of the five leaders in terms of revenue to the general fund, so dividing it into three groups according to population, we will analyze in more detail the revenues, expenditures and transfers of territorial communities of Lviv Oblast (Table 5).

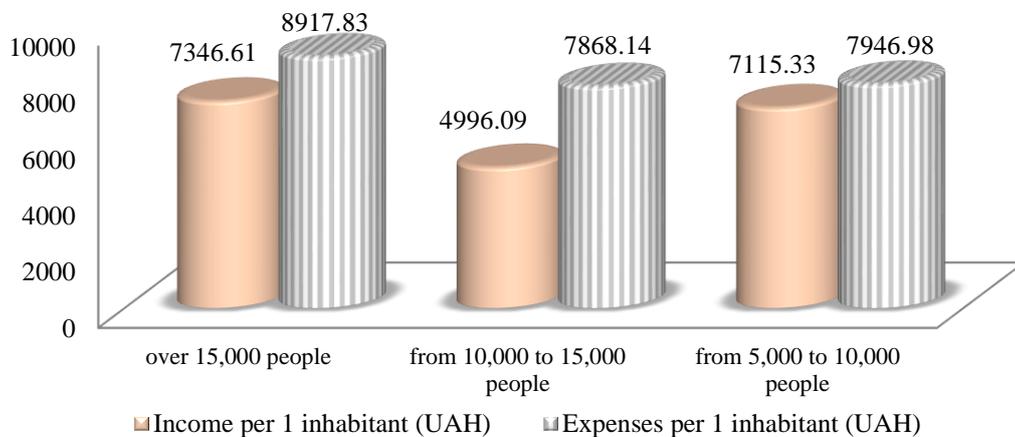**Table 5. Grouping of territorial communities of Lviv region and their analysis, 2021**

	Group 1	Group 2	Group 3
Maximum population, a thousand people,	over 15,000 people	from 10,000 to 15,000 people	from 5,000 to 10,000 people
Number of territorial communities	43	20	10
Population in the group, a thousand people	2138470	251739	81922
% of the total research population	86.5	10.18	3.31
Area (thousand square kilometres)	15.79	4.89	1.35
Total revenues to the general fund, (UAH)	15710503839	1257709567	582902466
Revenue per 1 inhabitant (UAH)	7346.61	4996.09	7115.33
Share of local taxes and fees in general fund revenues (%)	13.57	25.39	32.86

Total expenditures of the general fund, (UAH)	19070506833	1980718577	651032367
Expenses per 1 inhabitant (UAH)	8917.83	7868.14	7946.98
General fund transfers (UAH)	6421526003	1101213575	330820009
Transfers per 1 inhabitant (UAH)	3002.86	4374.43	4038.23

Source: Calculated according to the State Statistics Service of Ukraine (2022).

The focus is on the role of local budgets as a financial base for the functioning of communities, based on which the guidelines for the development of local budgets in the main areas are determined: increasing the revenue base; ensuring efficient implementation of expenditures; improving the procedure for providing intergovernmental transfers (Sodoma, 2021). Revenues and expenditures per capita are shown in Figure 3.

Figure 3. Receipts and expenditures per 1 inhabitant of territorial communities of Lviv region, 2021

Source: own calculations.

Periodic recessions or regresses of this process caused by some changes in the economy (Agres, 2017). The figure shows that in all three groups studied, expenditures per capita exceed incomes by an average of 30%.

In the process of economic and mathematical modeling, the increase in revenues to the general budget from the population, namely from the number of working citizens, has been proved. The conducted research testifies to the higher economic efficiency of larger territorial communities.

Conclusions

Modern technologies have increased the efficiency of public administration and autonomy. Competitiveness of territorial communities base on the ability of the local economy (companies located in the community), provide quality services, produce goods in demand in international markets, thereby increasing the total income of the community, creating interest for local businesses, attracting foreign investment by encouraging living and working people in this area.

The economic growth of territorial communities is associated with innovative programs and projects, the implementation of which allows the community to increase competitiveness and improve the economy of its environment, but this is impossible without the joint activities of the community.

According to the grouping in Table 5, we can say that in 43 communities of the Lviv region live more than 15 thousand people, which is 88% more than in group 2 and 67% more than in group 3. The highest share of

local taxes and fees on the income, general fund can be tracing in group 3, where the lowest population.

The digital for the transition to innovative development of local communities should first of all include accelerating innovation in mobile financial services, e-commerce, increasing trust and security in the digital economy, as well as the digitalization of industry.

References

Agres, O., Sodoma, R., Sadura, O. (2017). Realities and prospects of Ukraine banking system. *Financial and credit activity: problems of theory and practice,* 2 (23), 17-23.

Batanov, O. (2008). Territorial community - the primary subject of municipal law in Ukraine: concepts and features. *Bulletin of the Central Election Commission,* 2 (12), 51-57

Bondarenko, V., Popadynets, N., Dovba, I., Fedurtsia, V. (2020). Assessment of Efficiency of the Use of Natural Resources Capacity by Territorial Communities in Conditions of Administrative-Territorial Reform in Ukraine. *International Journal of Industrial Engineering & Production Research,* 31 (4), 499-510.

Danko, Y. I., Medvid, V. Y., Koblianska, I. I., Kornietskyy, O. V., Reznik, N. P. (2020). Territorial government reform in Ukraine. *Problem aspects of strategic management. International Journal of Scientific and Technology Research,* 9(1), 1376-1382.

Danylyshyn, B., Cymbal, O., Ostafiichuk, Y., Pylypiv, V. (2022). The tax changes impact on the municipal budgets revenues in Ukraine. *Financial and credit activity-problems of theory and practice*, 5 (46), 126-136.DOI10.55643/fcaptp.5.46.2022.3843

Danylyshyn, B.M. (2023). Of the modern research and innovation policy. *Science and innovation*, 19, 1, 3-19. DOI10.15407/scine19.01.003

Decentralization (2022). http://decentralization.gov.ua

Lysenko, I. M. (2009). Territorial community in the system of civil society. S*cientific Herald "Gileya",* 28, 362-372.

Maksymiv, Y., Yakubiv, V., Pylypiv, N., Hryhoruk I., Piatnychuk, I., Popadynets, N. (2021) Strategic challenges for sustainable governance of the bioeconomy: Preventing conflict between sdgs. *Sustainability*, 13 (15), 8308. https://doi.org/10.3390/su13158308

Patytska, K. (2020). Regularities of Development of the Property Taxation System in Ukraine in the Context of Increasing the Financial Capacity of Territorial Communities. *Business Inform,* 5,129-135.

Radetsky, Yu. (2019). Development of entrepreneurship in territorial communities as a factor of provision of socio-economic development. *Fundamentalis scientiam,* 26, 18-21.

Simkiv, L., Andrusiv, U., Kupalova, G., Goncharenko, N., Dzoba, O., Yushkevych, O. (2022). Concentration of entrepreneurial activity in the regions of Ukraine in the context of sustainable development. *Financial and Credit Activity Problems of Theory and Practice*, 3 (44), 347–356. https://doi.org/10.55643/fcaptp.3.44.2022.3776

Siryk, Z. A., Bilyk, R. R., Panukhny, O. V. (2020). Territorial framework of local self-government: basis of legislative regulation. *Journal of Vasyl Stefanyk Precarpathian National University,* 7 (3), 147-156.

Sodoma, R., Dubynetska, P., Kupchak, M., Lesyk, L., Podizei, O., Zhuk, M. (2021). Financial decentralization of territorial communities in the context of the implementation of international experience. *Financial and credit activity: problems of theory and practice,* 6(41), 100-111.

State Statistics Service (2022). http://www.ukr_stat.gov.ua/

Valyukh, A., Yakymchuk, A., Diugowanets, O., Bilyk, R., Pavlov, K., Pavlova, O., Batkovets, N., Popadynets, N., Hryhoruk, I. (2020) Public Administration and Economic Aspects of Ukraine's Nature Conservation in Comparison with Poland. In: Kantola J., Nazir S., Salminen V. (eds) Advances in Human Factors, Business Management and Leadership. AHFE 2020. Advances in Intelligent Systems and Computing, 1209, 258-265. https://doi.org/10.1007/978-3-030-50791-6_33

Vorotin, V. E., Koval, O. M. (2019). Priorities of the authorities regarding the reform of local self-government. Municipal reform in the context of Ukraine's European integration: the position of the government, academics, trade unions and the public: thesis add. *The third annual university. scientific_practice conf.* (Kyiv, December 6) 46-50.

Voznyak, H., Patytska, K., Kloba, T. (2020). Determination of financial factors in the latest theories of economic growth of territorial communities. *Journal of Vasyl Stefanyk Precarpathian National University,* 7 (3), 49-59.

Voznyak, H., Patytska, K., Kloba, T. (2021) Behavioral economics in modern research of regional and local development: theoretical aspects. *Financial and credit activity: problems of theory and practice,* 1 (36), 293-301.

Was, A., Sulewski, P., Krupin, V., Popadynets, N., Malak-Rawlikowska, A., Szymanska, M., Skorokhod, I., Wysoki´nski, M. (2020). The Potential of Agricultural Biogas Production in Ukraine-Impact on GHG Emissions and Energy Production. *Energies.* 2020, 13, 5755, 1-20. doi:10.3390/en13215755

Zhuk, P. V. (2018). Achievements and problems of decentralization reform in Ukraine. *Regional Economy,* 88 (2), 32-38.