

# Strategic Guidelines for The Intensification of Regional Development Under the Impact of Potential-Forming Determinants in the Conditions of Digitalization

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## Abstract

The key challenges and problematic aspects of the formation of intellectually and innovation-oriented strategies of regional entities at the present stage of their development are considered. The main tasks that arise in the process of strategizing the potential-forming development of regional economic systems in the context of digitalization are identified. The list of key organizational and economic directions of strategic character of providing intellectual and innovative development of regional economic systems is formed, which includes clustering of centers of high-tech development of regions, creation of creative hubs, development of knowledge infrastructure and improvement of interregional cooperation; a brief description of each of the presented strategic organizational and economic directions is given. Based on the analysis, the key strategic guidelines for the development of regional economic entities in the context of digitalization under the influence of potential-forming determinants, which form the content basis for further processes of strategizing qualitative aspects of development of specific regional entities.

## Key words:

*Region, Regional Policy, Potential-Forming Determinants, Intellectual And Innovative Development, Digitalization.*

## 1. Introduction

Current trends in spatial development in Ukraine can be characterized by transformational processes characterized by disproportionate trends in resource allocation, lack of tools to regulate the processes of intensification of regional economic systems and activation of potential-forming potential in the context of digitalization. Such imbalances are due to several reasons, first, the pandemic and forced lockdowns during 2020-2021, which led to the disorganization of the established economic processes of regional development. Secondly, the reform of state regional governance in the direction of decentralization of power, despite the positive benefits of decentralized governance of regional development, such

reform has also led to certain imbalances as a result of shifting responsibility for decisions and results of socio-economic development in the process of delegation of powers between different branches of government. On the one hand, the policy of decentralization of power is gradually becoming a tool for effective intra-regional allocation of resources and targeted funding of projects aimed at solving problems of regional development. On the other hand, the scale of certain infrastructural, national and regional tasks, global challenges of modern development of economic systems provoke a shortage of economic opportunities and investment resources in regional reserves.

Overcoming the negative manifestations and the coherence of market and regulatory regulation of the dynamics of changes in the intensification of the development of regional economic systems become urgent tasks for the further development of regional economic systems in the context of digitalization. The solution of which directly depends on the scale and speed of innovative renewal and intellectual support for the development and implementation of new technologies capable of intensifying regional development. Therefore, there is a topical scientific and applied issues of strategic orientation aimed at intensifying the development of regional economic systems under the influence of potential-forming determinants in the context of digitalization.

The purpose of the article is to substantiate and identify areas of strategic orientation to intensify the development of regional economic systems under the influence of potential-forming determinants in the context of digitalization.

## 2. Literature Review

Many scientific researches of well-known scientists are devoted to the study of the peculiarities of regional development management and strategic guidelines for optimization and intensification of regional development, among which: Arefieva O., Arefiev S. (2021) [1]; Becerra L., Carenzo S., Juarez P. (2020) [2]; Bouckaert G. (2019) [3]; Butko M., Ivanova N., Samiilenko G. (2020) [4]; Castellanos J. M. B. (2019) [5]; De Leon G. (2019) [6]; Dergaliuk B., Shevchuk N. (2021) [7]; Efremov A. (2020) [8]; Halkos G., Moll de A.J. (2021) [9]; Khanin S. (2021) [10]; Khudolei V., Bepalov M. (2021) [11]; Kraynyuk L., Uhodnikova O. (2020) [12]; Ljungholm D.P. (2017) [13]; Loginova E., Loseva N. (2020) [14]; Mukhametzhan S., Junusbekova G. (2020) [15]; Popelo O. (2017) [16]; Revko A. (2020) [17]; Reznichenko S., Shishkin V. (2016) [18]; Sakharova S., Avdeeva I., Golovina T., Parakhina L. (2021) [19]; Salbaroli E., Mazzini G. (2018) [20]; Zhuk O. (2020) [21]; Skica T., Dvouletý O. (2018) [22]; Soboleva Yu., Matveev V., Ilyukhina I., Efimenko I., Simonov S. (2019) [23]; Tulchynska S., Ishchejkin T. (2021) [24]; Vovk O., Kostyunik O. (2021) [25]; Wu D. (2018) [26]; Xu Y., Li A. (2019) [27]; Yin X. (2018) [28]; Yukhneva N., Mokerova O., Kukhtin P. (2016) [29] and others.

Domestic and foreign scientists have devoted their research to the study of digitalization of the economy, namely: Adam M. (2018) [30]; Afonasyova M.A., Panfilova E.E., Galichkina M.A., Ślusarczyk B. (2019) [31]; Alraja M.N., Hussein M.A., Ahmed H.M.S. (2020) [32]; Billestrup J., Stage J. (2014) [33]; Budzinski O., Stöhr, A. (2019) [34]; Chudnovskiy A. D., Tsabolova O. R. (2021) [35]; Cosmulescu C.G., Grosu V., Hlaciuc E. (2019) [36]; Dannikov O. V., Sichkarenko K. O. (2018) [37]; De Silva I. (2019) [38], Djakona A., Zhavoronok A., Lavrov R. (2020) [39]; Dubyna M. (2017) [40]; Eichstädt S. (2020) [41]; Gopane T.J. (2020) [42]; Heath N. (2019) [43]; Kholiavko N. (2021) [44]; Ključnikov A., Civelek M., Krajčák V., Ondrejmišková I. (2020) [45]; Klymenko E. Y., Alpeissova S. E. [46]; Kornieieva Yu. V. (2018) [47]; Kychko I., Zhygalkevych Zh. (2021) [48]; Lazarenko I., Saloid S. (2020) [49]; Lin Chia Jie (2018) [50]; Mashnenkov K., Derkachenko Yu. (2021) [51]; Myovella G., Karacuka M., Haucaj J. (2020) [52]; Samoilovych A., Garafonova O., Marhasova V. (2021) [53]; Shkarlet S. (2019) [54]; Sudolska A., Łapińska J. (2020) [55]; Szopik-Depczynska K., Cheba K., WiŚniewska J. (2020) [56]; Yunfu Xu, Aiya Li (2020) [57]; Zajkowska M. (2017) [58] and others.

Despite numerous studies, the issue of strategic guidelines for intensifying the development of regions under the influence of potential-forming terminants in the context of digitalization remains extremely relevant and requires further research.

## 3. Methodology

The methodological basis for the study of strategic guidelines for the intensification of regional development are general scientific research techniques and special methods of scientific knowledge, based on modern scientific principles of economics and other related sciences.

To achieve this goal, the authors of this study used various methods, namely: dialectical - to establish relationships and identify contradictions within the subject-object relations in the strategic planning of regional development; analysis and synthesis - to identify the most important determinants of regional development; grouping - to identify, systematize and build strategies for intellectual and innovative orientation of regional development; monographic - to identify the features of the tasks of strategic development of regional entities; formalizations and generalizations - to substantiate the conceptual provisions of activating the potential-forming determinants of intensification of regional economic systems and key organizational and economic areas of strategic nature to ensure intellectual and innovative development of regions in the context of digitalization.

## 4. Results

The fundamental basis for the functioning of the economic system of any organizational level, from microeconomic entities to systemic formations of global and transnational level is a certain target construct, the basis of which in this case is the concept of development embodied in the primary motivational desire to expand and increase economic efficiency. It is the issue of development and methodological tools for its provision served as a central element of management and research activities of man in the context of the organization of economic systems.

The change of relevant theoretical ideas directly correlates with the evolutionary processes of transformation of socio-economic relations, which originates from agrarian forms of economic systems for which the characteristic phenomenon was focusing on economic aspects of manual labor and use of raw materials, ending with modern processes of intensifying intellectual importance, activities, namely its innovative nature, in which technical support performs service functions, and cognitive abilities and parameters of the environment of their cultivation are the structural basis for achieving economic efficiency and long-term development.

Currently, the dominant theoretical basis for building effective economic systems of the open type is the post-industrial paradigm the core of which is knowledge, innovation, intellectual potential, information.

One of the first steps in building any strategy is to identify the primary environmental conditions of the strategic planning facility. The key element of the development of modern socio-economic systems is undoubtedly their innovative basis, which determines both the set of material aspects of the functioning of economic processes and their intellectual and organizational components, thereby forming the appropriate economic potential. That is, a set of opportunities for development in which the basic factors are knowledge, information, technology and the corresponding set of infrastructure for their generation, commercialization and diffusion as the actual environment of the innovation process in the context of digitalization.

Potential-forming determinants of intensification of development of regional economic systems have the following functional features in the conditions of digitalization:

- the interplay of innovation and intellectualization, ie the level of economic feasibility of human intelligence, in the form of certain knowledge, including scientific, in the regional economic system creates innovations. Innovations and innovations in the process of commercialization become activators of high-tech, innovative production. In turn, innovations in foreign markets provoke the need to generate new knowledge for their development. Together, intelligence and innovation intensify structural changes and redistribution of capital in the regional space, which leads to intensification of regional economic systems;

- the distribution of resources, including financial in intellectual and innovation flows is in accordance with the investment strategies of institutional settlement between the economic spheres of the region and innovative projects of regional development;

- Universities, research and production business structures, centers of innovative development and commercialization of innovations, scientific and technological institutions, as well as the development of an extensive innovation infrastructure for the fastest possible dissemination of knowledge and innovation are becoming centers of intellectual and innovative intensification of regional economic systems;

- socialization of digital technologies, which provokes mass intellectualization and digitalization of social and economic communications, visualization and dynamism of artificial intelligence technologies, which is accompanied by the need to spread innovative culture in the regions;

- expansion of potential-forming space, due to the availability of information, dissemination for all segments of the population and all areas of technical means of communication and information, the Internet;

- development of cognitive economy, which is provoked by the uniqueness of each person-consumer, the

use of psychological tools to regulate public perception of the effectiveness of intellectual and innovative development of regions;

- formation of market value and value of intellectual and innovative products through the creation of new technologies of production, sales and communications in regional markets.

Isolation of functional features of potential-forming determinants of intensification of regional economic development in the conditions of digitalization gives the chance to substantiate strategic orientations of intensification of development of regional economic systems under the influence of potential-forming determinants presented in fig. 1.

Next, we propose to consider the key challenges that arise in the process of building strategies for intellectual and innovative orientation in the context of digitalization, embodied in a set of restraining factors for the development of regional entities:

- first, the presence of deep structural asymmetries of regional development, especially in terms of income differentiation, levels of industrial, social and educational development;

- secondly, the disincentive influence of the institutional and legal field of functioning of business structures, the lack of legal norms of innovation and investment orientation;

- thirdly, the lack of norms and rules that would establish relations in the process of creating innovation structures and implementing innovation activities;

- fourth, the destructive formalization of the declared priorities of the strategic development of the regions, the lack of a state approach and politically motivated processes of intensification of the development of regional entities;

- fifth, the weak level of methodological and instrumental support for the process of regional strategy, the lack of horizontal and vertical consistency of strategic documents with similar documents at the national level;

- sixth, intensification of structural shifts towards deindustrialization of regional economic systems;

- seventh, the lack of organizational and economic mechanisms of communication and coordination in matters of strategic regional management between government and the business environment;

- eighth, negative trends in the development of the regional knowledge environment (low level of scientific staff, reduced level of education of young people and the quality of educational services they receive, their content inconsistency with market needs in the knowledge potential of human resources).

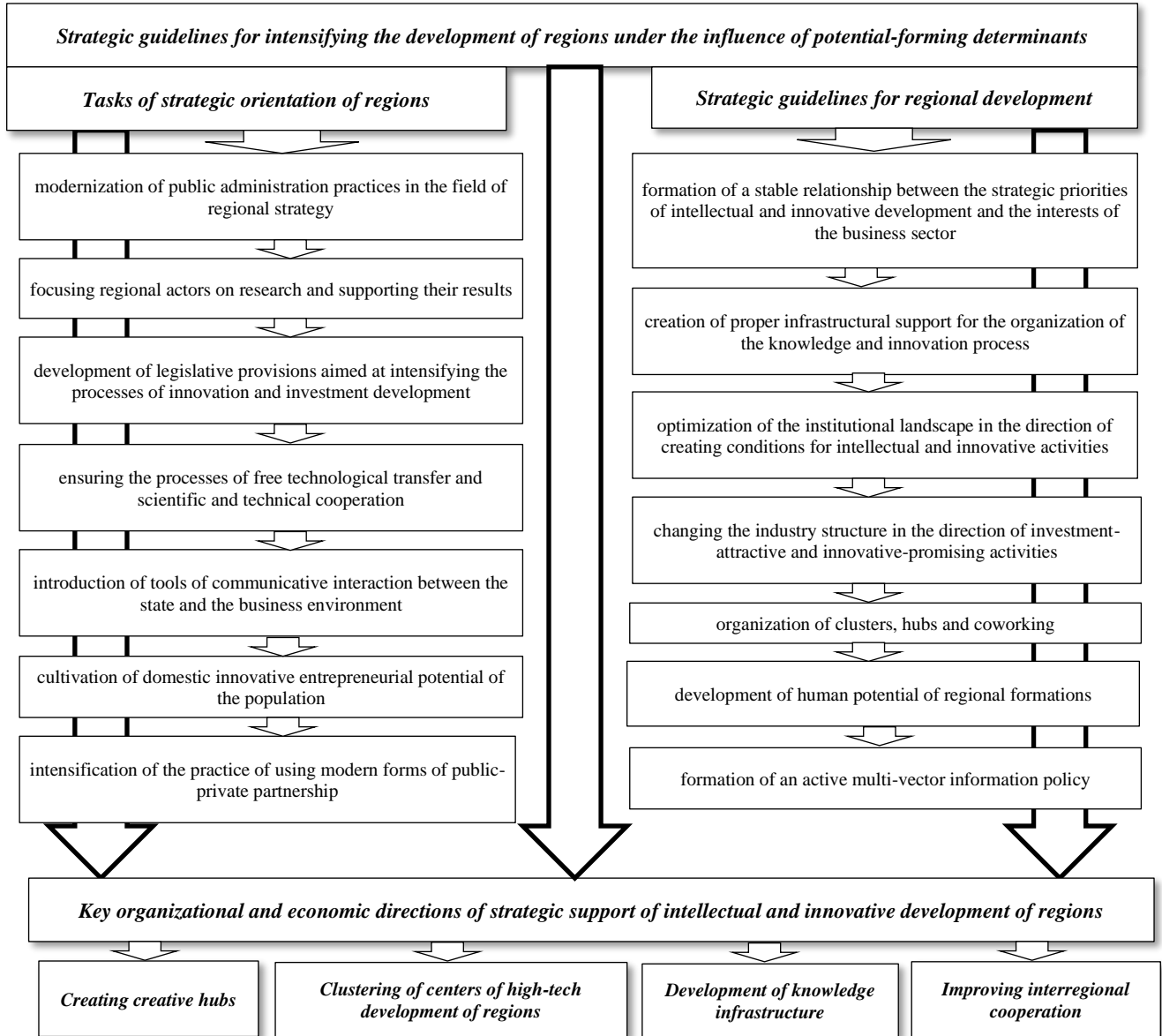


Fig. 1. Strategic guidelines for intensifying the development of regional economic systems under the influence of potential-forming determinants in the context of digitalization

Source: developed by the authors

Thus, highlighting the key problematic aspects in the functioning of domestic regional entities and the complexity of activating the relevant potential-forming determinants in the context of digitalization, we can identify the main tasks of strategic development of regional entities, which include the following:

- modernization of public administration practices in the field of regional strategy, creation of a clear hierarchical system of target priorities of intellectual and innovative development, in their quantitative and temporal dimension;

- development of legislative provisions aimed at intensifying the processes of innovation and investment development, in particular in terms of benefits and fiscal incentives for relevant forms of activity;

- intensification of the practice of using modern forms of public-private partnership, especially in the field of large infrastructure development projects in the region;

- orientation of subjects of regional economic systems scientific researches and support of their results;

- ensuring the processes of free technological transfer and scientific and technical cooperation of educational institutions and the business sector;
- determination of the main directions of state regulation of innovative economic development;
- introduction of tools of communicative interaction between the state and the business environment (state consulting, profile coordination councils and working groups, online platforms to support innovative entrepreneurship, etc.);
- cultivation of domestic entrepreneurial potential of the population both in economic and in educational dimensions.

Based on the above list of tasks, it is possible to form key organizational and economic directions of a strategic nature to ensure the intellectual and innovative development of regional economic systems in the context of digitalization.

1. Clustering of centers of high-tech development of regions, which consists in the creation of powerful territorial production and economic complexes, the cluster-forming core of which are high-tech industries, which in synergy with scientific institutions, industrial enterprises and the public sector form a separate intellectual and intellectual value added indicators.

2. Creating creative hubs. The essential basis for the formation of creative hubs is the creation of a specific creative space conducive to the cultivation of innovative ideas and solutions, and at the beginning of its development these hubs were mostly for creative industries innovative product, serving as an attractor of the creative process. At the same time, creative hubs are characterized by a logistically convenient location, open space, infrastructure for coworking, in which the emphasis is on the formation of innovation.

3. Development of knowledge infrastructure, which includes: modernization of scientific and technological potential of educational institutions, which includes the formation of appropriate material and technical base of scientific developments, providing them with highly qualified human resources, creating preconditions for their financial independence; monitoring the relevance of the knowledge base of educational institutions to the relevant needs of the commercial sector; creation of organizational and economic mechanisms of cooperation between the educational and business sectors; popularization of high-tech professions.

4. Improvement of interregional cooperation, which includes a set of measures aimed at intensifying cooperation of regional entities in order to optimize their resource potential and the formation of integrated interregional value chains, which in turn will eliminate existing structural imbalances in regional distribution and balanced use of appropriate productive forces.

Summarizing the results of the study, we can form a list of strategic guidelines for the development of regional economic entities in the context of digitalization under the influence of potential-forming determinants in the context of digitalization, which include the following:

- creation of appropriate infrastructural support for the organization of knowledge (modernization of the educational sector in the field of logistics, financial, staffing to improve the quality of educational services) and innovation process (formation of stimulating organizational and economic mechanisms of interaction and cooperation of key actors in the innovation process);
- formation of a stable relationship between the strategic priorities of intellectual and innovative development and the interests of the business sector;
- optimization of key characteristics of the institutional landscape in the direction of creating favorable conditions for the intensification of intellectual and innovative activities of business entities in the economic environment;
- change of branch structure in the direction of investment-attractive and innovation-perspective kinds of activity;
- organization of clusters, hubs and coworking;
- development of human potential of regional formations as a primary source of formation of intellectual potential embodied in high knowledge and creative qualities of human resources;
- formation of an active multi-vector information policy aimed at creating communication links and information support of the business environment, as well as cultivating a culture of innovative entrepreneurship among the population.

## 5. Conclusions

In summary, it should be added that the presented list of essential guidelines defines the basic provisions for the development of comprehensive strategic documents of intellectual and innovative development of regional systems in the context of digitalization, the practical implementation of which will solve a number of fundamental problems of the regions.

As a result of the study, a thorough analysis of strategic provisions and a set of strategic guidelines for the development of regional economic systems under the influence of processes in the context of digitalization and their characteristic potential-forming determinants in the context of digitalization.

The scientific novelty of the study is the substantiation of theoretical and conceptual principles of identifying strategic guidelines for intensifying the development of regional economic systems and organizational and economic areas of intellectual and

innovative direction of the regions in the context of digitalization.

Highlighting the key problems of intellectual and innovative development of regions made it possible to justify the list of strategic objectives for intensifying the development of regional economic systems under the influence of potential-forming determinants in the context of digitalization.

The organizational and economic directions of ensuring the intellectual and innovative development of regional formations under the influence of potential-forming determinants are determined and the corresponding list of strategic landmarks is generalized.

Further scientific research requires the development of a mechanism for financial support of strategic guidelines for intensifying the development of regional economic systems in the current conditions of post-industrial society.

## References

- [1] Arefieva, O., Tulchynska, S., Popelo, O., Arefiev, S., Tkachenko, T. (2021). The Economic Security System in the Conditions of the Powers Transformation. *IJCSNS International Journal of Computer Science and Network Security*, 21(7), 35-42. <https://doi.org/10.22937/IJCSNS.2021.21.7.4>.
- [2] Becerra, L., Carengo, S., Juarez, P. (2020). When circular economy meets inclusive development. Insights from urban recycling and rural water access in Argentina. *Sustainability*, 12(23), 9809. <https://doi.org/10.3390/su12239809>.
- [3] Bouckaert, G. (2019). Dissemination of scientific knowledge on reforming public administration: Some changing mechanisms. *Croatian and Comparative Public Administration*, 19(1), 9-22. <https://doi.org/10.31297/hkju.19.1.1>.
- [4] Butko, M., Ivanova, N., Popelo, O., Samiilenko, G. (2020). Conceptual foundations of the regional industrial cluster formation based on European experience and leading world tendencies. *Financial and credit activity: Problems of theory and practice*, 1(32), 319-329. <https://doi.org/10.18371/fcaptive.v1i32.200528>.
- [5] Castellanos, J. M. B. (2019). Social responsibility in public administrations with special reference to the region of Valencia. *Revista General de Derecho Administrativo*, 52.
- [6] De Leon C. A. G. (2019). The role of public administration in promoting socio-economic development. *Social Development and Societies in Transition* (pp. 107-120). ImprintRoutledge.
- [7] Tulchynska, S., Popelo, O., Dergaliuk, B., Khanin, S., Shevchuk, N. (2021). Strategic assessment of the ecological condition of the regions in the context of innovative development. *Laplace em Revista (International)*, 7(Extra D), 315-322. <https://doi.org/10.24115/S2446-622020217Extra-D1101p.315-322>.
- [8] Efremov, A. (2020). In reference to creating a mechanism for detecting systemic legal limitations of public administration digitalization. *Public Administration*, 4, 59-83.
- [9] Halkos, G., Moll de A. J., Todorov, V. (2021). Economies' inclusive and green industrial performance: An evidence based proposed index. *Journal of Cleaner Production*, 279, 123516. <https://doi.org/10.1016/j.jclepro.2020.123516>.
- [10] Khanin, S., Arefieva, O., Dergaliuk, M., Popelo, O., Tulchynska, S. (2021). Concepts of the activation of intellectual and innovative determinants for the development intensification of regional economic systems introduction. *Laplace em Revista (International)*, 7(Extra E), 234-244. DOI: <https://doi.org/10.24115/S2446-622020217Extra-E1180p.234-244>.
- [11] Khudolei, V., Bespalov, M., Tulchynska, S., Tulchinsky, R., Kholivko, N. (2021). Fiscal stimulation of spatial development: the eu countries' cases. *Financial and credit activities: problems of theory and practice*, 1(36), 124-132. <https://doi.org/10.18371/fcaptive.v1i36.227676>.
- [12] Kraynyuk, L., Uhodnikova, O., Vlashchenk, N., Sokolenko, A., Viatkin, K. (2020). The mechanism of public administration of the travel industry development: Prospects for the ecotourism development. *XIII International Scientific and Practical Conference "State and Prospects for the Development of Agribusiness – INTERAGROMASH 2020"*, 175, 10016. <https://doi.org/10.1051/e3sconf/202017510016>.
- [13] Ljungholm, D. P. (2017). Global policy mechanisms intergovernmental power politics and democratic decision-making modes of transnational public administration. *Geopolitics History and International Relations*, 9(2), 199-205. doi:10.22381/GHIR92201710.
- [14] Loginova, E., Loseva, N., Polkovnikov, A. (2020). Realization of population's motivational potential in the system of public administration as a factor of institutional ensuring the competitiveness of the Region. *Lecture Notes in Networks and Systems*, 110, 276-284. [https://doi.org/10.1007/978-3-030-45913-0\\_32](https://doi.org/10.1007/978-3-030-45913-0_32).
- [15] Mukhametzhan, S., Junusbekova, G., Daueshov, M. (2020). The management of Urban development for the regional economic growth: The example of Kazakhstan. *Economy of Region*, 16(4), 1285-1301. <https://doi.org/10.17059/ekon.reg.2020-4-19>.
- [16] Popelo, O. V. (2017). Methodological approaches to modernization processes of the productive forces in the conditions of Eurointegration. *Scientific Bulletin of Polissia*, 1(1(9)), 218-224. <http://orcid.org/0000-0002-4581-5129>.
- [17] Revko, A., Butko, M., Popelo, O. (2020). Methodology for Assessing the Influence of Cultural Infrastructure on Regional Development in Poland and Ukraine. *Comparative Economic Research. Central and Eastern Europe*, 23(2), 21-39. <http://dx.doi.org/10.18778/1508-2008.23.10>.
- [18] Reznichenko, S., Shishkin, V., Shichiyakh, R., Smolentsev, V. (2016). Theoretical and methodological foundations of the management by objectives for the regional socio-economic systems development. *International Review of Management and Marketing*, 6(6), 90-94. <http://www.econjournals.com/index.php/irmm/article/view/2929/pdf>.
- [19] Sakharova, S., Avdeeva, I., Golovina, T., Parakhina, L. (2021). The public administration of the socio-economic development of the Arctic zone based on a stakeholder approach. *IOP Conference Series: Earth and Environmental*

- Science*, 678, 012035. doi:10.1088/1755-1315/678/1/012035.
- [20] Salbaroli, E., Mazzini, G. (2018). OCP Deployment in a Public Administration Data Center: The Emilia-Romagna Region Use Case. *IEEE International Black Sea Conference on Communications and Networking (BlackSeaCom)*. DOI: 10.1109/BlackSeaCom.2018.8433637.
- [21] Shkarlet, S., Ivanova, N., Popelo, O., Dubina, M., Zhuk, O. (2020). Infrastructural and Regional Development: Theoretical Aspects and Practical Issues. *Studies of Applied Economics*, 38(4). <https://doi.org/10.25115/eea.v38i4.4002>.
- [22] Skica, T., Dvouletý, O. (2018). Quantification of the size of local public administration: Empirical study of Polish regions. *European Spatial Research and Policy*, 25(1), 75-92. <https://doi.org/10.18778/1231-1952.25.1.05>.
- [23] Soboleva, Yu., Matveev, V., Ilyukhina, I., Efimenko, I., Simonov, S. (2019). Progressive advance in supply chain management of regional socio-economic development: Conceptual framework and evaluation mechanism. *International Journal of Supply Chain Management*, 8(4), 751-760. <https://ojs.excelingtech.co.uk/index.php/IJSCM/article/view/3414/1828>.
- [24] Khanin, S., Tulchynska, S., Popelo, O., Derhaliuk, M., Ishehejkin, T. (2021). Systematization of functional features of intellectual and innovative determinants of the intensification of the regional economic development. *Laplage em Revista (Internacional)*, 7(2), 710-720. <https://doi.org/10.24115/S2446-62202021721118p.710-720>.
- [25] Tulchynska, S., Vovk, O., Popelo, O., Saloid, S., Kostiuik, O. (2021). Innovation and investment strategies to intensify the potential modernization and to increase the competitiveness of microeconomic systems. *IJCSNS International Journal of Computer Science and Network Security*, 21(6), 161-168. <https://doi.org/10.22937/IJCSNS.2021.21.6.22>.
- [26] Wu, D. (2018). Computer model deduction based on function mechanism of government micro-blog's participation in public administration. *Journal of Advanced Oxidation Technologies*, 21(2), 201811577.
- [27] Xu, Y., Li, A. (2019). Regional economic development coordination management system based on fuzzy hierarchical statistical model. *Neural Computing and Applications*, 31(12), 8305-8315. DOI: 10.1007/s00521-018-3953-8.
- [28] Yin, X. (2018). Construction of management system for coordination degree of regional economic development based on the fusion of spatial econometric model. *10th International Conference on Measuring Technology and Mechatronics Automation (ICMTMA)* (art 17703620). DOI: 10.1109/ICMTMA.2018.00124.
- [29] Yuhneva, N., Mokerova, O., Kukhtin, P. (2016). The regulatory role of the state strategic management in the development of the regional entrepreneurial sphere. *MATEC Web of Conferences*, 106, 08089. <https://doi.org/10.1051/mateconf/201710608089>.
- [30] Adam, M. (2018). Towards a unified approach to digitalization in Europe. *Revista de Obras Publicas*, 165(3597), 20-27.
- [31] Afonasova, M.A., Panfilova, E.E., Galichkina, M.A., Ślusarczyk, B. (2019). Digitalization in economy and innovation: The effect on social and economic processes. *Polish Journal of Management Studies*, 19(2), 22-32. <http://dx.doi.org/10.17512/pjms.2019.19.2.02>.
- [32] Alraja, M.N., Hussein, M.A., Ahmed, H.M.S. (2020). What affects digitalization process in developing economies? An evidence from the SMEs sector in Oman. *Bulletin of Electrical Engineering and Informatics*, 10(1), 441-448. <http://dx.doi.org/10.11591/eei.v10i1.2033>.
- [33] Billestrup, J., & Stage, J. (2014). E-government and the digital agenda for Europe: a study of the user involvement in the digitalisation of citizen services in Denmark. In A. Marcus (Ed.), *Design, User Experience, and Usability. User Experience Design for Diverse Interaction Platforms and Environments: Third International Conference, DUXU 2014, Held as Part of HCI International 2014, Heraklion, Crete, Greece, June 22-27, 2014, Proceedings, Part II* (PART 2 ed., pp. 71-80). Springer Publishing Company. Lecture Notes in Computer Science. [https://doi.org/10.1007/978-3-319-07626-3\\_7](https://doi.org/10.1007/978-3-319-07626-3_7).
- [34] Budzinski, O., Stöhr, A. (2019). The competition policy reform in Europe and Germany – institutional change in the light of digitization. *European Competition Journal*, 15(1), 15-54. Budzinski, Oliver and Stöhr, Annika, Competition Policy Reform in Europe and Germany – Institutional Change in the Light of Digitization (November 7, 2018). Ilmenau Economics Discussion Papers, Vol. 24, No. 117, Available at SSRN: <https://ssrn.com/abstract=3280896> or <http://dx.doi.org/10.2139/ssrn.3280896>.
- [35] Chudnovskiy, A.D., Tsabolova, O.R., Zhukova, M.A. (2021). Using the Digitalization Experience of Small Enterprises of the Tourism and Hospitality Sector in Germany for Development of the Tourism Infrastructure in Russia. *Studies in Systems, Decision and Control*, 314, 369-376. [https://doi.org/10.1007/978-3-030-56433-9\\_39](https://doi.org/10.1007/978-3-030-56433-9_39).
- [36] Cosmulese, C.G., Grosu, V., Hlaciuc, E., & Zhavoronok, A. (2019). The Influences of the Digital Revolution on the Educational System of the EU Countries. *Marketing and Management of Innovations*, 3, 242-254. DOI: <http://doi.org/10.21272/mmi.2019.3-18>
- [37] Dannikov, O. V., Sichkarenko, K. O. (2018). Conceptual principles of the economy digitalization in Ukraine. *Economics and management of the national economy*, 17, 73-79.
- [38] De Silva, I. (2019). Tackling the challenges raised by the economy digitalization: Recent experiences of the French competition authority. *Antitrust Bulletin*, 64(1), 3-10. <https://doi.org/10.1177%2F0003603X18822577>.
- [39] Kholiavko, N., Djakona, A., Dubyna, M., Zhavoronok, A., & Lavrov, R. (2020). The higher education adaptability to the digital economy. *Bulletin of the National Academy of sciences of the Republic of Kazakhstan*, 4(386), 294-306. DOI: <https://doi.org/10.32014/2020.2518-1467.130>
- [40] Shkarlet, S. M., Dubyna, M. V. (2017). Essence and features of information society development. *Scientific bulletin of Polissia*, 1(2(10)), 152-158.
- [41] Eichstädt, S. (2020). Metrology for the digitalization of economy and society. In *19th ITG/GMA-Symposium on Sensors and Measuring Systems 2018 "Sensoren und Messsysteme - Beiträge der 19. ITG/GMA-Fachtagung"* (pp. 340-343).

- [42] Gopane, T.J. (2020). Digitalisation, Productivity, and Measurability of Digital Economy: Evidence from BRICS. In *5th International Conference on Digital Economy, ICDEC 2020 "Lecture Notes in Business Information Processing"*, 395, 27-37. [https://ujcontent.uj.ac.za/vital/access/manager/Repository?view=null&f0=sm\\_identifier%3A%22http%3A%2F%2Fhdl.handle.net%2F10210%2F458882%22&sort=ss\\_dateNormalized%5C](https://ujcontent.uj.ac.za/vital/access/manager/Repository?view=null&f0=sm_identifier%3A%22http%3A%2F%2Fhdl.handle.net%2F10210%2F458882%22&sort=ss_dateNormalized%5C).
- [43] Heath Nick. (February 19, 2019). How Estonia became an e-government powerhouse. [https://www.ncsl.org/Portals/1/Documents/educ/International\\_Ed\\_Study\\_Group\\_2020/Estonia/12.Article\\_%20HowEstoniabecameane-governmentpowerhouse.pdf](https://www.ncsl.org/Portals/1/Documents/educ/International_Ed_Study_Group_2020/Estonia/12.Article_%20HowEstoniabecameane-governmentpowerhouse.pdf).
- [44] Popelo O., Dubyna M., Kholiavko N. (2021) World Experience In The Introduction Of Modern Innovation And Information Technologies In The Functioning Of Financial Institutions. *Baltic Journal of Economic Studies*, 7(2), 188-199. <https://doi.org/10.30525/2256-0742/2021-7-2-188-199>.
- [45] Ključnikov, A., Civelek, M., Krajčík, V., Ondrejmišková, I. (2020). Innovative regional development of the structurally disadvantaged industrial region by means of the local currency. *Acta Montanistica Slovaca*, 25(2), 224-235. <http://dx.doi.org/10.46544/AMS.v25i2.9>.
- [46] Klymenko, E.Y., Alpeissova, S.E. (2021). The Experience of Ukraine and Kazakhstan of the Education Digitization Under Quarantine Conditions. Proceeding from *Advances in Intelligent Systems and Computing*, 1352, 161-172. [http://dx.doi.org/10.1007/978-3-030-71782-7\\_15](http://dx.doi.org/10.1007/978-3-030-71782-7_15).
- [47] Kornieieva, Yu. V. (2018). The role of the state in promoting investment in digital economy. *Economics of forecasting*, 1, 120-134. <https://doi.org/10.15407/eip2018.01.120>.
- [48] Popelo, O., Kychko, I., Tulchynska, S., Zhygalkevych, Zh., Treitiak, O. (2021). The Impact of Digitalization on the Forms Change of Employment and the Labor Market in the Context of the Information Economy Development. *IJCSNS International Journal of Computer Science and Network Security*, 21(5), 160-167. DOI: 10.22937/IJCSNS.2021.21.5.23
- [49] Lazarenko, I., Saloid, S., Tulchynska, S., Kyrychenko, S., Tulchynskiy, R. (2020). Necessity of implementing data science course in economics curricula. *Information technologies and teaching aids*, 4(78), 132-144. <https://doi.org/10.33407/itlt.v78i4.3505>.
- [50] Lin Chia Jie (July, 2018). Denmark leads the world in digital government. <https://govinsider.asia/innovation/denmark-online-services-digital-government-australia-korea/>.
- [51] Samiilenko, H., Popelo, O., Khudolei, V., Mashnenkov, K., Derkachenko, Yu. (2021). Transformational processes of clustering in digital economy. *Laplace em Revista (International)*, 7(Extra C), 691-702. <https://doi.org/10.24115/S2446-622020217Extra-C1106p.691-702>
- [52] Myovella, G., Karacuka, M., Haucap, J. (2020). Digitalization and economic growth: A comparative analysis of Sub-Saharan Africa and OECD economies. *Telecommunications Policy*, 44(2), 101856. <https://doi.org/10.1016/j.telpol.2019.101856>.
- [53] Samoilovych, A., Garafonova, O., Popelo, O., Marhasova, V., & Lazarenko, Yu. (2021). World experience and ukrainian realities of digital transformation of regions in the context of the information economy development. *Financial and credit activity: problems of theory and practice*, (3(38)), 316-325. <https://doi.org/10.18371/fcaptop.v3i38.237462>.
- [54] Shkarlet, S., Kholiavko, N., Dubyna, M. (2019). Information Economy: Management of Educational, Innovation, and Research Determinants. *Marketing and Management of Innovations*, 3, 126-141. <http://dx.doi.org/10.21272/mmi.2019.3-10>.
- [55] Sudolska, A., Łapińska, J. (2020). Exploring determinants of innovation capability in manufacturing companies operating in Poland. *Sustainability*, 12(17), 7101. <https://doi.org/10.3390/su12177101>.
- [56] Szopik-Decpczynska, K., Cheba, K., WiSniewska, J. (2020). Innovation, R&D and user-driven innovation activity in R&D Departments in Poland. The multi-criteria analysis. In *International Conference on Knowledge-Based and Intelligent Information and Engineering Systems, KES 2020*, 176, 2705-2713. <https://doi.org/10.1016/j.procs.2020.09.290>.
- [57] Xu, Y., Li, A. (2020). The relationship between innovative human capital and interprovincial economic growth based on panel data model and spatial econometrics. *Journal of Computational and Applied Mathematics*, 365. <https://doi.org/10.1016/j.cam.2019.112381>.
- [58] Zajkowska, M. (2017). Open models of innovation processes as a future management challenge for small and medium-sized enterprises in Poland. *Journal of Management and Business Administration. Central Europe*, 25(4), 193-208. <https://doi.org/10.7206/jmba.ce.2450-7814.214>.