
Formation of Human Capital as a Key Factor in Ensuring the National Security of Agriculture in the Digital Economy

I.G. Kuznetsova¹, O.Yu. Voronkova², S.Y. Bakhvalov³,
I.R. Ruiga⁴, G.N. Zhuruli⁵, V.E. Levichev⁶

Abstract:

Over the past few years in many literary sources and the media an issue of the digital economy is rapidly gaining popularity due to the qualitative technological changes in society.

In current circumstances the qualitative component of labor resources called “human capital” is a priority value.

The authors have identified the main realities of the development of agribusiness, studied the main directions of information support on the example of the agricultural sector of the economy and identified the root causes of the slowdown in the innovation development of agriculture in Russia, the features of using information technologies in agribusiness have been considered in detail.

Keywords: Graduate, digital economy, innovation, human capital, professional competences.

JEL Classification: Q18, O15, O31.

¹Novosibirsk State Agrarian University, Novosibirsk, Russia, finka31081988@list.ru

²Altai state University, Barnaul, Russia, olka2004@yandex.ru

³Kazan Federal University, Elabuga Institute of KFU, Elabuga, Russia, bakhvalov_ineka@mail.ru

⁴Siberian Federal University, Krasnoyarsk, Russia, IRuiga@sfu-kras.ru

⁵Moscow State University of Medicine and Dentistry, Moscow, Russia

⁶Altai State Agricultural University, Barnaul, Russia, vas_lev65@mail.ru

1. Introduction

The scientific-and-technological advance has a significant impact on the development of industrial and socio-economic relations in society, which favorably affects the development of the state. Technological changes in the production process also affected the workforce, which was expressed in an increase in employers' requirements for increasing labor productivity and efficiency of economic activity (Nagimov *et al.*, 2018). Today, in the period of advanced development of logistics, the theory of human capital plays a leading role in economic research.

2. Literature review

Features of formation of human capital, as well as the problems of human resource development in the agricultural sector, are reflected in the works of Abalkin L.I., Adukov R.Kh., Altukhov A.I., Arutyunyan F.G., Bautin V.M., Belaya N.V., Bogdanovsky V.A., Bondarenko L.V., Veselovsky M.Ya., Demishkevich G.M., Dolgushkin N.K., Dorofeeva A.F., Kozlov A.V., Koritsky A.V., Kuznetsova T.M., Nuriyev R.M., Pankov B.P., Paptsov A.G., Pershukevich P.M., Petrikov A.V., Prok N.I., Rudy E.V., Sandu I.S., Semin A.N., Stadnik A.T., Stukach V.F., Ushachev I.G., Shelkovnikov S.A. and others.

3. Methodology

The object of this research is the relations arising in the process of the formation of human capital in the context of digitalization of the rural economy. The subject of research is a set of socio-economic conditions, principles and factors influencing the formation of human capital in the context of digitalization of agriculture (Dmitrieva, *et al.*, 2017; Smirnova and Rudenko, 2016). The theoretical and methodological basis of the study includes the fundamental provisions of economic theory, the economics of agricultural organizations, scientific papers on the topic under study, legal and regulatory acts of the Russian Federation. The data from the Federal State Statistics Service of the Russian Federation and its territorial body, materials of the Ministry of Agriculture of the Russian Federation, as well as professional and reference literature were used in the study. The following research methods have been used in the work: monographic, abstract-logical, sociological, economic-mathematical and calculation-constructive ones.

4. Results

Many experts agree that the world is on the verge of an industrial revolution. It should be noted that information computer technologies play a significant role in all spheres of human activity. In the economic scientific environment this phenomenon is called the digital economy. Despite this, the content of this concept is still not entirely clear. It is worth noting that even the term "digital economy" is often

replaced by such definitions as “API economy”, “application economy”, “creative economy”, “industry 4.0”, etc. However, the concept of “digital economy” is used in all regulatory documents (Buraeva, 2014; Kamolov, 2017; Plotnikov *et al.*, 2018a; 2018b).

It is fair to say that there are several basic approaches to the term “digital economy”. In the framework of the first approach – a classical one, the digital economy is an economy based on digital technologies and, at the same time, it can be characterized exclusively as the field of electronic goods and services (Nedelkin *et al.*, 2016; Cherepovitsyn *et al.*, 2017; Nikolaeva *et al.*, 2019; Rasskazova *et al.*, 2014). According to the second approach, the digital economy is an economic production using digital technologies (Korableva *et al.*, 2017). Turning to the definition of the digital economy, according to the World Bank’s definition, it is a system of economic, social and cultural relations based on the use of digital information and communication technologies. Urmantseva A. understands the digital economy as “the basis setting the new paradigm of development of the state, the economy and the whole society” (Urmantseva, 2017).

The definition given by Kuntsman (2018) is rather interesting: *“The digital economy is a modern type of economy, characterized by the predominant role of information and knowledge as determining resources in the production of tangible products and services, as well as by the active use of digital technologies for storing, processing and transmitting information”*.

According to the Digital Economy Development Program in Russia until 2035, the digital (electronic) economy is a combination of social relations emerging through the use of electronic technologies, electronic infrastructure and services, technologies of analyzing large amounts of data and forecasting in order to optimize production (Yemelyanov *et al.*, 2018a), distribution, exchange (Yemelyanov *et al.*, 2018b; Yemelyanov *et al.*, 2018c) consumption and to increase the level of socio-economic development of states.

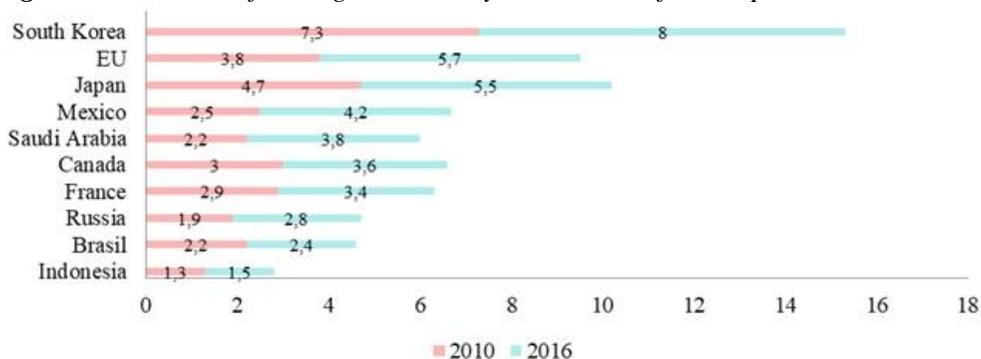
Thus, having analyzed various interpretations of the definition of “digital economy”, it can be concluded that the overwhelming majority of researchers agree that in current circumstances there comes an “era of knowledge”, in which information and human capital are a priority value (Talovina *et al.*, 2017; Dmitrieva *et al.*, 2017; Sharafutdinov *et al.*, 2017; Yamova *et al.*, 2018; Latyshev *et al.*, 2017; Ma’Arif *et al.*, 2018; Kambey *et al.*, 2018; Akhmetshin *et al.*, 2018a; 2018b; 2018c; 2018d; Ruslan Agarunovich, 2015; Hanif *et al.*, 2018; Glebova *et al.*, 2016; Abramov and Sokolov, 2017; Karpov *et al.*, 2017; Kirillova *et al.*, 2018; Kolesnikov *et al.*, 2018; Anilan *et al.*, 2018; Abramov *et al.*, 2018a; 2018b; Sycheva *et al.*, 2018a; Gurieva *et al.*, 2016). In June 2016, Minister of Agriculture Alexander Tkachev, making a keynote speech at the session on innovations in agriculture at the XXI St. Petersburg International Forum, noted as follows: *“We are faced with the tasks of increasing*

labor productivity and improving yields. To solve all these problems, it is necessary to use innovative technologies, carry out robotization”.

According to A.N. Tkachev, the state of agriculture is currently experiencing transformations. First, this happens because the population of the planet is increasing annually and the production of agricultural products should grow by 60-70% over the next few years (The program "Digital Economy of the Russian Federation", 2017). It is worth noting that the level of intensification of the agricultural sector lags far behind the world average. For the past 5 years, the countries with a more developed agricultural sector have been developing an average of about 55% of the innovation potential, while in the Russian Federation no more than 5% is used. Over the past 20 years, more than 1,000 varieties and hybrids of agricultural crops have been created. According to scientists, their development would provide an opportunity to increase the efficiency of the agricultural industry by more than 3 times (Sycheva *et al.*, 2018b; Voronkova *et al.*, 2018a; 2018b; Polyakova *et al.*, 2018).

The rapid development of the digital economy indicates that in the most developed countries the share of the digital economy in the GDP has grown in developed countries up to 5.5%, in developing countries – up to 4%. The UK is the absolute leader, the share of the digital economy has increased up to 12.4%. In the Russian Federation, the share of the digital economy is 2.8%. At the same time, there are positive changes associated with an increase in gross domestic product (Figure 1).

Figure 1. The share of the digital economy in the GDP of developed countries, %



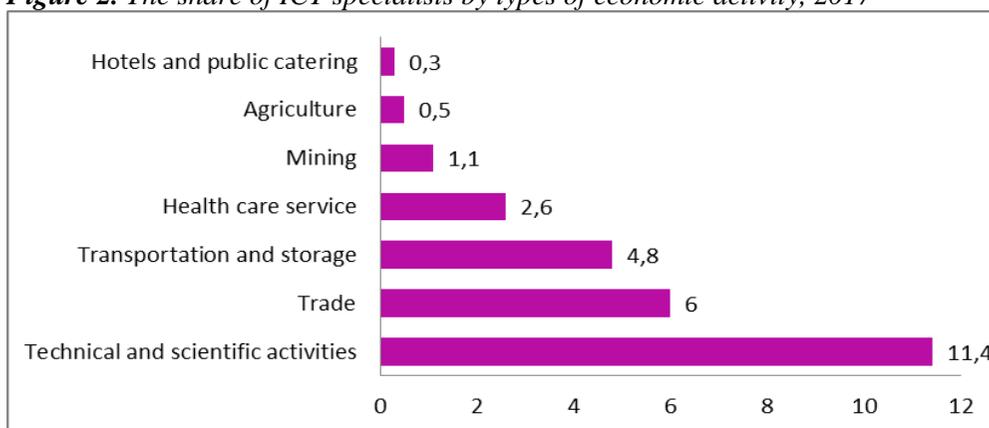
It is fair to say that the practical implementation of the digital economy in the agricultural sector of the Russian Federation is hampered because it is explained by the following factors:

- ✓ the lack of legal regulation that would allow organizations and individuals to fully use digital economy technologies;

- ✓ the lack of specific knowledge and skills of using digital technologies among the population (Shelkovnikov, 2016; Aleksandrova and Afanasova, 2019).

It is worth noting that a significant number of agricultural organizations are not yet ready to use the advantages of Internet platforms, since their maintenance requires professional and highly qualified service (Nedelkin *et al.*, 2017). The study shows that in current circumstances the level of availability of specialists in the field of information and communication technologies in the agricultural sector lags significantly behind other sectors of the economy and is 0.5%. While in other sectors of economic activity this figure varies from 2 to 10% (Figure 2).

Figure 2. The share of ICT specialists by types of economic activity, 2017



As already mentioned, the digital development of the industry requires the use of information and communication technologies in production. They may establish the effective interaction in a constant online mode. For the agricultural industry, the main digital platforms can be “Technologies of Food and Processing Industry of Agribusiness – Healthy Foods” and “Eurasian Agricultural Technology Platform”. In addition, “Space and GIS Technologies – Products of Global Competitiveness” and “Eurasian Supercomputer Technology Platform” can also be used.

It should be noted that for the smooth transition to new conditions, it is necessary to develop the digital economy step by step, considering the historical and socio-cultural characteristics of the population living in the territory of the state. We can state with full confidence that the basis for increasing the welfare of the state, including an increase in human capital, depends on investment (Takhumova *et al.*, 2018). In other words, lack of investment leads to a slowdown in economic growth.

A significant role is played by direct investment in the main production facilities, ensuring intensive growth of the economy and adapting the socio-economic structure to modern technological innovations (Gamidullaeva, 2018; Hanfan and Setiawan,

2018; Tarman *et al.*, 2016; 2017; Tarman, 2017; Akhmetshin *et al.*, 2017). An increase in labor productivity is the most important indicator characterizing the efficiency of using human capital (Table 1).

Table 1. Labor productivity by types of activity, %

Indicators	Years					
	2012	2013	2014	2015	2016	2017
In the economy as a whole	103,5	101,8	100,7	97,8	97,2	96,9
Agriculture, hunting and forestry	100,4	99,1	97,3	96,9	94,3	93,5
Fisheries and fish farming	108,5	103,8	96,1	99,5	99,8	101,0
Mining	100,4	97,1	102,8	98,4	97,5	96,8
Manufacturing	105,7	106,0	102,5	96,9	94,5	92,1
Production and distribution of electricity, gas and water	101,3	99,5	100,2	99,9	97,6	95,3
Construction	101,6	99,8	98,4	101,0	101,2	99,3
Wholesale and retail trade	102,1	100,0	98,7	91,5	89,6	86,2
Hotels and restaurants	101,5	101,0	99,8	94,1	91,8	88,6
Transport and communication	102,2	102,7	100,4	99,4	98,2	97,1
Real estate operations	103,2	100,2	98,6	97,2	96,3	94,2

The statistical data provided by the state statistical bodies allow estimating the dynamics of changes in the labor productivity index by types of economic activity. Significantly high rates of labor productivity are observed in construction, manufacturing and mining. It should be noted that the maximum decrease in this index is observed in the types of economic activity related to the provision of services to the public, such as wholesale and retail trade, repair of motor vehicles, etc. First, this can be caused by a decrease in actual monetary income of the population, which greatly affects the amount of consumer demand (Korableva and Guseva, 2015; Arize *et al.*, 2018; Bernadus *et al.*, 2018). Considering a digital divide in various countries, it is necessary to study one of its most important components – a divide in the sphere of education and development of digital competences. It is worth noting that in order to solve this problem the state has planned a gradual increase in the state order for IT specialists (Peshkova *et al.*, 2017).

According to the data provided by the Ministry of Agriculture of Russia, the need for IT specialists is 210 thousand people, while only 113 thousand people work today. In general, this creates a situation where the shortage of IT specialists in agriculture is more than 60%. Currently, there is 1 (one) IT specialist for every 1,000 specialists working in agricultural production (Stadnik, 2015).

Thus, we can conclude that the most important condition for the implementation of measures to introduce technological innovations relating to increasing labor productivity of the agricultural sector is to saturate the labor market with professionals with a set of professional and digital competences.

5. Discussion

In the opinion of many researchers it is obvious that during the transition to the digitalization of the agricultural industry the workforce must be characterized by considerable mobility, flexibility and digital competence. Most of the tasks cannot be solved in the new conditions without the use of knowledge in the field of innovative developments, which determines the need for agricultural production in training specialists with innovative thinking. Since the latest technologies are quickly introduced into the production process, the speed of decision-making by heads of organizations becomes essential. Nowadays, information has a significant impact on the process of distribution, exchange and consumption of goods, as well as on the emergence of partnership and economic relations between all participants in economic relations, determining the formation and development of market mechanisms and principles, which makes information a special production factor (Rudoy, 2016).

6. Conclusion

Summarizing the above, there is little doubt about the relevance of introduction and the use of modern technologies in agriculture. Since, according to experts, already in 15 years the population of the country will increase significantly. The solution of the problem of ensuring food security of the population of the region depends on the methods and strategies of applying technologies in domestic and global agriculture, as well as on the correct and effective use of scientific-technical implementations in the industry. The use of digital technologies in the agricultural industry will increase the efficiency of production activities. The period of change creates the need for rapid knowledge management due to the importance and necessity of striving not only for the generation of new knowledge, but also for its subsequent use (Shelkovnikov, 2018).

References:

- Abramov, R.A., Sokolov, M.S. 2017. Current challenges and competitive advantages of national innovation systems (NIS) of the countries-participants of the union state up to 2030. *Journal of Advanced Research in Law and Economics*, 8(4), 1031-1039.
- Abramov, R.A., Koshkin, A.P., Sokolov, M.S., Surilov, M.N. 2018a. Transformation of the public administration system in the context of integration of the national innovation systems of the union state. *Espacios*, 39(14).
- Abramov, R., Sokolov, M., Surilov, M., Morozov, I. 2018b. The simulation of the development of innovation systems in the countries-participants of the union state. *International Journal of Mechanical Engineering and Technology*, 9(7), 1112-1119.
- Akhmetshin, E.M., Artemova, E.I., Vermennikova, L.V., Shichiyakh, R.A., Prodanova, N.A., Kuchukova, N.M. 2017. Management of investment attractiveness of enterprises: Principles, methods, organization. *International Journal of Applied Business and Economic Research*, 15(23), 71-82.
- Akhmetshin, E.M., Sharafutdinov, R.I., Gerasimov, V.O., Dmitrieva, I.S., Puryaev, A.S.,

- Ivanov, E.A., Miheeva, N.M. 2018a. Research of human capital and its potential management on the example of regions of the Russian Federation. *Journal of Entrepreneurship Education*, 21(2).
- Akhmetshin, E.M., Brager, D.K., Pokramovich, O.V., Andreyko, M.N., Aleynikova, M.Yu. 2018b. Modern theoretical and methodological approaches to personnel management in manufacturing enterprises. *Espacios*, 39(31).
- Akhmetshin, E.M., Dzhavatov, D.K., Sverdlukova, E.A., Sokolov, M.S., Avdeeva, O.A., Yavkin, G.P. 2018c. The influence of innovation on social and economic development of the Russian regions. *European Research Studies Journal*, 21(S2), 767-776.
- Akhmetshin, E., Morozov, I., Pavlyuk, A., Yumashev, A., Yumasheva, N., Gubarkov, S. 2018d. Motivation of personnel in an innovative business climate. *European Research Studies Journal*, 21(1), 352-361.
- Aleksandrova, T.N., Afanasova, A.V. 2019. Fine-dispersed particles of noble metals in sulphide carbonaceous ores and its beneficiation prospects. Paper presented at the IMPC 2018 - 29th International Mineral Processing Congress, 2368-2376.
- Arize, A.C., Andreopoulos, G.C., Kallianiotis, I.N., Malindretos, J. 2018. MNC transactions foreign exchange exposure: An application. *International Journal of Economics and Business Administration*, 6(1), 54-60.
- Bernadus, D., Utami, C.W., Liliana. 2018. Factor analysis of ownership behavior at family business: The case of Indonesia. *International Journal of Economics and Business Administration*, 6(2), 27-38.
- Buraeva, E. 2014. Innovations in agriculture as a factor in the growth of efficiency of agricultural production. *Scientific-methodical electronic journal "Concept"*, 2161-2165.
- Cech, P., Jindrichovska, I., Neubauer, J. 2018. Corporate social responsibility in hotel industry: Empirical analysis of transitional market. *International Journal of Economics and Business Administration*, 6(1), 61-89.
- Cherepovitsyn, A.E., Ilinova, A.A., Smirnova, N.V. 2017. Key stakeholders in the development of transboundary hydrocarbon deposits: The interaction potential and the degree of influence. *Academy of Strategic Management Journal*, 16(2).
- Dmitrieva, D., Ilinova, A., Kraslawski, A. 2017. Strategic management of the potash industry in Russia. *Resources Policy*, 52, 81-89.
- Dmitrieva, I.S., Sharafutdinov, R.I., Gerasimov, V.O., Akhmetshin, E.M., Pavlov, S.V. 2017. Method evaluation of the human capital with its innovational potential consideration and perspectives of regional development: The example of the Republic of Tatarstan and Volga Federal District regions. *Espacios*, 38(40).
- Gamidullaeva, L. 2018. Towards combining the innovation ecosystem concept with intermediary approach to regional innovation development. *International Journal of Economics and Business Administration*, 6(1), 39-53.
- Glebova, I.S., Kotenkova, S.N., Abramov, R.A. 2016. The analyses of socio-economic development tendencies of the capital cities in the modern Russia. Paper presented at the Social Sciences and Interdisciplinary Behavior - Proceedings of the 4th International Congress on Interdisciplinary Behavior and Social Science, ICIBSOS 2015, 189-194.
- Gurieva, L.K., Akhmetshin, E.M., Savicheva, A.N., Kataeva, V.I., Norkina, A.N. 2016. Theoretical foundations of management of the organization: Development, types of structures, management methods of control. *International Business Management*, 10(22), 5406-5416.

- Hanfan, A., Setiawan, A.I. 2018. Exploiting regio-centric product advantage to increase small and medium enterprises' (SMEs) marketing performance. *International Journal of Economics and Business Administration*, 6(2), 3-26.
- Hanif, M.I., Malik, F., Abdul Hamid, A.B. 2018. The effect of knowledge management and entrepreneurial orientation on organization performance. *Journal of Entrepreneurship Education*, 21(4).
- Kambey, J.P., Wuryaningrat, N.F., Kumajas, L.I. 2018. Examining leadership and knowledge sharing role on small and medium enterprises innovation capabilities. *International Journal of Economics and Business Administration*, 6(1), 24-38.
- Kamolov, S.G. 2017. Digital public governance: Trends and risks. *Giornale Di Storia Costituzionale*, 33(1), 185-194.
- Karpov, A.O. 2017. Education for knowledge society: Learning and scientific innovation environment. *Journal of Social Studies Education Research*, 8(3), 201-214.
- Kilinc, E. 2017. Review of Modernising school governance: Corporate planning and expert handling in state education. New York, Routledge, 172, ISBN-9781138787476.
- Kirillova, E.A., Pavlyuk, A.V., Mikhaylova, I.A., Zulfugarzade, T.E., Zenin, S.S. 2018. Bitcoin, lifecoin, namecoin: The legal nature of virtual currency. *Journal of Advanced Research in Law and Economics*, 9(1), 119-126.
- Kolesnikov, Y.A., Pavlyuk, A.V., Radachinsky, Y.N., Rodionova, N.D. 2018. Problems of implementation of public-private partnership in Russia. *European Research Studies Journal*, 21(S1), 187-197.
- Korableva, O., Guseva, M. 2015. Activation of innovation processes in banks as a result of the implementation of basic basel accord provisions. *Ikonomicheski Izsledvania*, 24(3), 108-128.
- Korableva, O.N., Gorelov, N.A., Shulha, M.V. 2017. Risk component of innovation management strategy. Paper presented at the Proceedings of the European Conference on Innovation and Entrepreneurship, ECIE, September 837-843.
- Kuntsman, A. 2018. Business Adaptation to the Challenges of the Digital Economy. *Human capital in the digital economy format*, 45-47.
- Latyshev, I.O., Akhmetshin, E.M. 2015. Methodological approaches to analyzing the indicators of human capital management in the interests of innovation development of enterprise. *International Business Management*, 9(6), 1565-1570.
- Ma'Arif, S. 2018. Education as a foundation of humanity: Learning from the pedagogy of pesantren in indonesia. *Journal of Social Studies Education Research*, 9(2), 104-123.
- Nagimov, A.R., Akhmetshin, E.M., Slanov, V.P., Shpakova, R.N., Solomonov, M.P., Il'yaschenko, D.P. 2018. Foresight technologies in the formation of a sustainable regional development strategy. *European Research Studies Journal*, 21(2), 741-752.
- Nedelkin, A.A., Novikov, S.V., Titov, V.A., Sannikov, D.V., Mikhailova, A.V., Popova, L.N. 2017. Development of human resources of agro-industrial complex. *Journal of Applied Economic Sciences*, 12(7), 1932-1942.
- Nedelkin, A.A., Titov, V.A., Tikhomirova, E.I., Romanova, Y.D. 2016. The processing's automation of digital documents for hypertext scientific library. *ARNP Journal of Engineering and Applied Sciences*, 11(7), 4681-4684.
- Nikolaeva, N., Romashev, A., Aleksandrova, T. 2019. Degree evaluation of grinding on fractional composition at destruction of polymineral raw materials. Paper presented at the IMPC 2018 - 29th International Mineral Processing Congress, 474-480.
- Peshkova, G., Antohina, Y., Smirnova, N. 2017. Measures to improve Russian federal strategy of the construction materials industry development. *Journal of Business and Retail Management Research*, 11(3), 39-46.

- Plotnikov, A.V., Kuznetsov, P.A., Urasova, A.A., Akhmetshin, E.M. 2018a. Digital economy: data analysis on the context advertising market in the UK and the US. *International Journal of Civil Engineering and Technology*, 9(11), 2372-2382.
- Plotnikov, A.V., Kuznetsov, P.A., Urasova, A.A., Akhmetshin, E.M. 2018b. Correlation analysis of the data on the UK and US market for contextual advertising. *International Journal of Civil Engineering and Technology*, 9(11), 1630-1639.
- Polyakova, A.G., Akhmetshin, E.M., Goloshchapova, L.V., Rakhmeeva, I.I., Noeva, E.E., Rakovskiy, V.I. 2018. A model of regional economic space modernization. *European Research Studies Journal*, 21(S2), 624-634.
- Rasskazova, A.V., Alexandrova, T.N., Lavrik, N.A. 2014. The increase of effectiveness of power utilization of brown coal of russian far east and prospects of valuable metals extraction. *Eurasian Mining*, (1), 25-27.
- Rudoy, E.V., Stasiulis, M.V., Samokhvalova, A.A., Vyshegurov, M.S., Iakimova, L.A. 2016. Development of agrofood market in the southern part of siberia by means of regional and food relations. *International Journal of Applied Business and Economic Research*, 14(9), 5875-5890.
- Ruslan Agarunovich, A. 2015. Management functions of integrative formations of differentiated nature. *Biosciences Biotechnology Research Asia*, 12(1), 991-997.
- Sharafutdinov, R.I., Gerasimov, V.O., Yagudina, O.V., Dmitrieva, I.S., Pavlov, S.V., Akhmetshin, E.M. 2017. Research of human capital in view of labour potential of staff: National companies case study. Paper presented at the Proceedings of the 29th International Business Information Management Association Conference - Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth, 839-852.
- Shelkovnikov, S.A., Kuznetsova, I.G., Denisov, D.A., Peshkova, O.O., Malyshev, Y.A. 2018. Enhancing the instruments of state support for the process of building human capital. *International Journal of Civil Engineering and Technology*, 9(8), 1633-1641.
- Shelkovnikov, S.A., Kuznetsova, I.G., Hodos, D.V., Yakimova, L.A., Ganieva, I.A., Poddueva, I.S. 2016. Regulation of the labor market and human capital in the agriculture of the Novosibirsk region. *International Journal of Economic Research*, 13(9), 3829-3845.
- Smirnova, N.V., Rudenko, G.V. 2016. Priorities for improving taxation in oil industry in russia. *Indian Journal of Science and Technology*, 9(19).
- Stadnik, A.T., Shelkovnikov, S.A., Rudoy, Y.V., Matveev, D.M., Maniehovich, G.M. 2015. Increasing efficiency of breeding dairy cattle in agricultural organizations of the Russian Federation. *Asian Social Science*, 11(8), 201-206.
- Sycheva, I.N., Ovchinnicov, Y.L., Voronkova, O.Y.U., Akhmetshin, E.M., Kolmakov, V.V., Vasilieva, A.G. 2018a. Economic potential and development prospects of small businesses in rural areas. *European Research Studies Journal*, 21(4), 292-303.
- Sycheva, I.N., Akhmetshin, E.M., Dunets, A.N., Svistula, I.A., Panteleeva, T.A., Potashova, I.Y. 2018b. Labour relations in research of socio-economic systems. *European Research Studies Journal*, 21(4), 356-367.
- Takhumova, O.V., Kasatkina, E.V., Masliхова, E.A., Yumashev, A.V., Yumasheva, M.V. 2018. The main directions of increasing the investment attractiveness of the Russian regions in the conditions of institutional transformations. *Espacios*, 39(37).
- Talovina, I.V., Aleksandrova, T.N., Popov, O., Lieberwirth, H. 2017. Comparative analysis of rocks structural-textural characteristics studies by computer X-ray microtomography and quantitative microstructural analysis methods. *Obogashchenie Rud*, (3), 56-62, doi:10.17580/or.2017.03.09.

-
- Tarman, B. 2016. Innovation and education. *Research in Social Sciences and Technology*, 1(1), 77-97.
- Tarman, B., Chigisheva, O. 2017. Transformation of educational policy, theory and practice in post-soviet social studies education. *Journal of Social Studies Education Research*, 8(2), I-IV.
- The program "Digital Economy of the Russian Federation." Approved by the order of the Government of the Russian Federation dated July 28, 2017.
- Urmantseva, A. 2017. Digital economy: how experts understand this term. Retrieved from <https://ria.ru/science/20170616/1496663946.html>
- Voronkova, O.Y., Akhmetshin, E.M., Sycheva, I.N., Shpakova, R.N., Pashkova, E.Y., Poltarykhin, A.L. 2018a. Economic mechanism of regulating land relations in the agricultural sector of Russia. *European Research Studies Journal*, 21(4), 280-291.
- Voronkova, O.Y., Zadimidchenko, A.M., Goloshchapova, L.V., Polyakova, A.G., Kamolov, S.G., Akhmetshin, E.M. 2018b. Economic and mathematical modeling of regional industrial processes. *European Research Studies Journal*, 21(4), 268-279.
- Yamova, O.V., Maramygin, M.S., Sharova, I.V., Nesterenko, J.N., Sobina, N.V. 2018. Integral Valuation of an Enterprise's Competitiveness in the Industrial Economy. *European Research Studies Journal*, 21(S2), 777-787.
- Yemelyanov, V., Tochilkina, T., Vasilieva, E., Nedelkin, A., Shved, E. 2018a. Computer diagnostics of the torpedo ladle cars. Paper presented at the AIP Conference Proceedings, 2034, doi:10.1063/1.5067351.
- Yemelyanov, V., Yemelyanova, N., Nedelkin, A. 2018c. Neural network for decision support to determine the operating mode of lined equipment. Paper presented at the MATEC Web of Conferences, 224, doi:10.1051/mateconf/201822404005.
- Yemelyanov, V.A., Tochilkina, T.E., Vasilieva, E.V., Deeva, E.A., Nedelkin, A.A., Shved, E.V. 2018b. Information technology of monitoring technical condition of torpedo ladle cars based on neural networks. Paper presented at the *Journal of Physics Conference Series*, 1118(1), doi:10.1088/1742-6596/1118/1/012051.