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METHODOLOGY OF QUALITY ECONOMY IN THE KNOWLEDGE SPACE

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Abstract

Development of the advanced countries' economy, which sets the world economy's trajectory, demonstrates growth industries with a high level of production intellectualization. Transition to a continuous innovation process, the emergence of epoch-making technology means forming new requirements for level and quality of life, the comfort of the environment. The crisis of modern development paradigm about which it is possible to talk due to long-existing and still an actual problem: depletion of vital natural resources, climate change, social inequality, poverty, unemployment, makes the world community continue the scientific search of acceptable solutions. The article shows a science-based approach with arguments, which united high requirements for the level of scientific and technological development and the population's quality of life at each level of the social-ecological-economic system. Such an approach formed within the concept of quality economy, in which base from the moment of its emergence, included metrology, standardization, and quality management. Framework formed by a quality economy identifies new lines of quality, opening through metrology prism, as the science of measurements, standardization based on joint achievements of science, technologies, and practical experience, which is the basis for long-term development, quality management focused on meeting quality requirements and its improving. Under the conditions of the new development paradigm based on the knowledge economy and which opens to the future, the quality economy is connecting the link necessary for full work of the economic system in a drastically changing world.

Keywords: Intellectual technology, knowledge space, quality, quality economics

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1. Introduction

The beginning of the 21st century is marked by an unprecedented growth of the number of remarkable discoveries in various science branches starting with bioengineering concluding with cosmonautics. Only in the last decade, among discoveries daily changing our world: successful bio implantation of body parts, detection of the particle of four quarks, the appearance of the prototype of the human bionic eye, expanding forms and spheres of electronic money, and much more. Along with the above-mentioned, mankind's future progress and development of mankind rest on a wide range of issues that have a couple of main problems. There is depletion of vital natural resources, climate change, social inequality, poverty, unemployment. Just the fact of having such problems so long against the background of epoch-making innovations, the absence of long-term positive effect after undertaken measures by the global community as evidence of the crisis of modern development paradigm is creating a new knowledge space. According to researchers conducted by McKinsey Company in 2017, the transformation of the social paradigm of human lives via digitalization opens endless amounts of abilities to get new knowledge, expand the boundaries of possible things, and worldwide improve the quality of life.

2. Problem Statement

Forming new paradigm of economic development proceeds due to creating modern institutional conditions, in which market in its conventional definition, being the major economic and social institution, is starting to stop performing a primary role in the economy. Market laws, which many decades have been determining the way of economic life, lose its system-forming role. A distinctive feature of the formation of new paradigm of economic development turned out to strengthen the impact of infrastructural and institutional factors, likewise introducing the science in the system of productive forces (Ahlstrom et al., 2020). Along with the progressive development of education, science and innovation arises the problem of complication of system of relationships and threat of loss of manageability of the economic system. Briefly, main research problems can be divided as follows:

•loss of some economic laws its system-forming role

•complication of the system of relationships and threat of loss of manageability of the economic system.

3. Research Questions

The main problems of research need working on the following issues:

The basic importance of intellectual technologies in the modern economy

The role of a quality economy in the formation of the new development paradigm

Process of dynamic socio-economic elaboration, rapid update and changing technologies bring significant transformation to all aspects of society, changing the place and human role in the knowledge economy. Nowadays, education is main asset and decisive factor of scientific and technical development,

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guarantee the competitiveness of the national economy. Therefore, problems related to the formation and development of knowledge space as an essential factor of increasing the Russian economy's stability and competitiveness are becoming topical.

4. Purpose of the Study

Identified issues allow formulating the following goal: general study components of knowledge space to find a way to solve a potential loss of manageability of the economic system at the stage of forming a new development paradigm.

5. Research Methods

In the research, to analyze the state and perspective of the development of knowledge space in the Russian economy, the system approach's methodology reasonably applies the quality economy's methodology.

The quality economy provides integrated approach to solving sophisticated practical tasks of modern economy and optimizes ongoing end-to-end processes and takes it to the next higher level of development. It should be noted that the object could be either whole country or individual components of the economy.

5.1. The main role of intellectual technologies in the modern economy

In modern economy – knowledge economy, science is a major current force and primary factor of development, it changes the kind and content of work globally. Just like industrial revolution in the last century provided the dominating role to current leading countries of global development, digital revolution forms the new economic space.

Turning the science into the major factor of development justifiably connected with coming new epoch-making technology – intellectual. Among the main components of modern technological mode of production can be highlighted following elements:

- information
- human intelligence
- latest information technologies

Each of these components contributes to improving efficiency of public production.

Dominant role of information is defined not only fact that among with substance and energy, this is one of the basic parts of the world. In modern economic relationships the commodity market information much more effective than material production; therefore information has become the main product. Production of goods in the sphere of material production is connected with transformational costs mostly. It is more energy and basically it contains physical movements of material, changing the phase state, structure, and molecular composition of the substance. Both in the production of goods and production of information, transaction costs prevail, but transformational costs are kept minimal.

The acceleration of production of information caused unthinkable growth of volume of knowledge. Processing and transformation of knowledge has become the primary factor of long-term economic

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development. In such conditions, competence, innovators' creativity, effective system of including the results of intellectual activity, advanced innovative infrastructure (Behrens & Patzelt, 2018).

Human intelligence defines not only by knowledge, skills, experience, but also, by such features of identity as abilities, motivation, tendencies, stress tolerance, endurance, and sociability. Hence, estimating the contribution of the intellectual component in modern production of GDP, among with income, provided by SRW (Scientific Research Work), R&D (Research and Development) and patents, considers incomings from the last component of production: marketing, advertising and trade (Lioukas & Reuer, 2020). Some branches that conventionally are parts of service sector account for more than 60% of the GDP.

The latest information technologies, means of communication, and telecommunications change the level of knowledge and opportunities for making rational decisions of the average person (Nambisan et al., 2019). These ones creates new world's picture. Mass production "moves" to countries with lower labor cost, its value for the economy declining. Simultaneously, branches and types of activity related to the satisfaction of growing society's cognitive and recreational needs are progressing more dynamically. Under normal conditions, especially, noticeable via functioning of tourism industry, paleographic and other infrastructure industries.

Among with progressing of digital technologies, occurs displacement from the market, basic companies act as an intermedium by owners of digital platforms. In the context of increasing global risks, like coronavirus pandemic, human beings experienced new reality in which exactly intellectual technologies let an economy to save delicate balance.

Formation and spreading the new structure of modern technological way of production caused exponential growth of public engagement in information and analytical activity, widespread increasing costs (Petricevic & Teece, 2019). Also, funds and tools for storing large amounts of data nave become cheaper. Technologies have adapted to work with enormous data sets (Makarov et al., 2019). Appeared opportunities to process raw data at the level of ordinary consumers.

Knowledge economy, replacing traditional market economy, exists and is managed by other laws. Intangible worth based on intangible assets – is economy's foundation. Added cost in conditions of knowledge economy forms as a result of using intellectual factors, instead of traditional production factors (Sycheva et al., 2020; Zhang et al., 2019). The specific weight of intellectual capital in the structure of national wealth different regions of the world varies from 43% to 76%, in Japan, Germany and Sweden it reaches 80%. This is one reason why the strengthening of specific positions and advantages of the country education system, scientific capacity, innovative system, health system, and the field of culture and art become more important than before. Each of the knowledge space components provides high surplus value created by intellectual rights, high-tech and knowledge-based production (Kano et al., 2020). Up to the end 20th at the beginning of 21st century Russia took 8th place in production volume of high-tech goods (figure 1).

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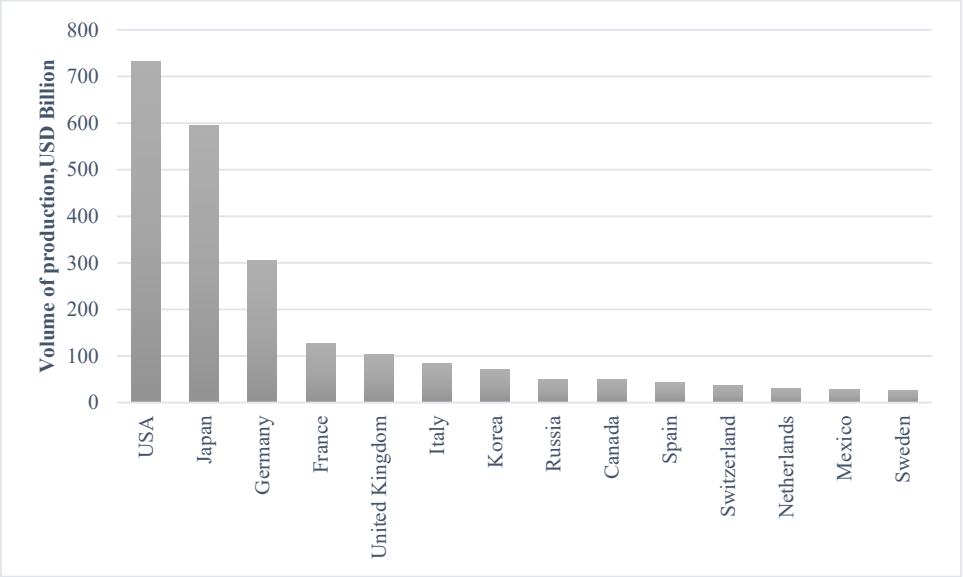

Figure 1. Production volume of high-tech goods

Nowadays, knowledge and information that is the most valuable create the preconditions for rising several innovations, improving the population's quality of life in some regions (Houneida & Slim, 2018). Simultaneously, in connection with the capitalization of intellectual assets, capital concentration sharply falls because of saving funds.

An agreed mode of digital transformation both in territorial aspect and sectoral aspect on a national economy scale as many interested and potentially interested participants as possible in adjustments, caused by digital transformation, creates conditions to change added-value chains and digitalization of the main economic processes (Li et al., 2019). In such conditions, traditional assets are revalued and inventoried, modifying assets' forms and content (Patton & Weller, 2020). The increasing impact of infrastructural and institutional factors resulted from such new categories as digital assets (Gagulina et al., 2020). The impetus to the emergence of the business convergence from different branches, implementation of end-to-end digital processes to take all vital spheres of social life of people to higher level with new digital mechanism (Loon et al., 2020).

5.2. The quality economy in the formation of new development paradigm

Practical implementation of technological trends of the digital transformation of new paradigm of economic development is difficult without an evidence-based approach, including high demands both for scientific and technological development and quality of life at each social-ecological-economic system. Such an approach formed within the concept of quality economy, in which base from the moment of its emergence included metrology, standardization and quality management. Framework formed by a quality economy identifies new lines of quality, opening through metrology prism, as science of measurements, standardization based on joint achievements of science, technologies and practical experience which is the basis for long-term development, quality management focused on meeting quality requirements and its improving.

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In the digital economy the quality economy acts as organization and development. Functioning of the social-ecological-economic system is completely supported by components of the quality economy (figure 2).

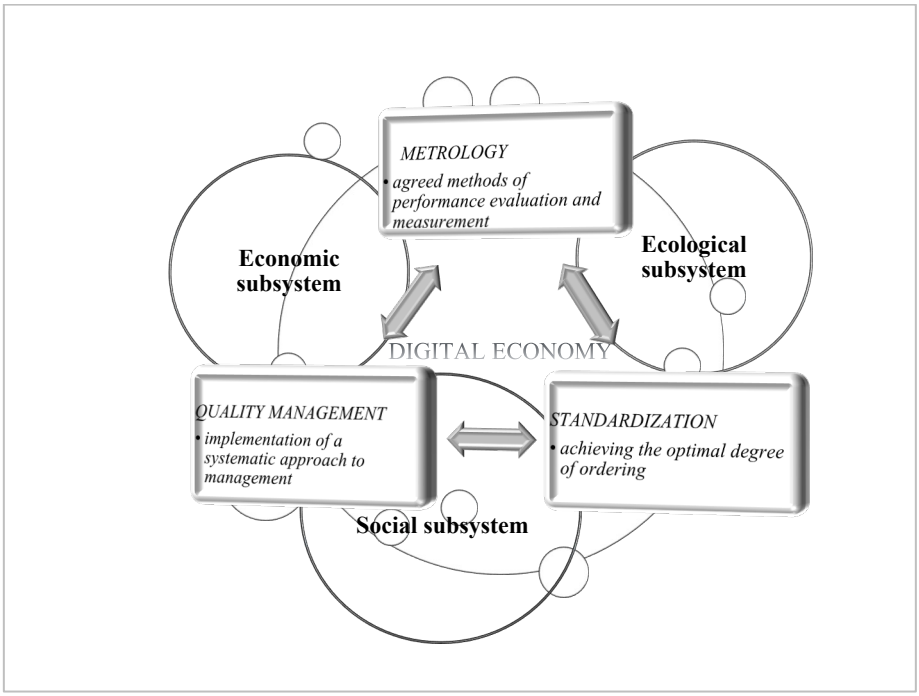

Figure 2. System of quality assurance in the digital economy

To develop such system should be agreed upon application of metrology tools and methods, standardization and quality management in the digital economy.

Standardization aims to reach an optimal level of regulation in the particular field using establishing provisions, for general and multiple use concerning real-world or potential tasks (Okrepilov, 2015). Metrology is like common methods of measurement and indicator assessments of digital economy. Metrology's relation to standardization caused by the standardization of unit of measurement, system of national standards, measurement tools and verification methods, creating standard samples of properties and composition of the substances. Anything, phenomenon or process is supposed to be measured and estimated, then it standardizes. Considering the metrology, standardization provides correctness, compatibility of measurement results, and extends these qualities to the economy. Decision-making principles, ways of its realization, planning of possible improvements, monitoring of performance – all listed parts are within the scope of the quality management.

The model clearly shows that reaching region's competitiveness and success in new conditions is impossible to provide, taking into account only traditional approaches. The relevance of quality economy in conditions of new development paradigm is defined by the fact that the region's quality economy tools allow forming new non-price competitive advantages to the region's economy connected with developing its innovative part. Moreover, the quality economy allows creating new knowledge efficiently in a quality estimate's global and regional processes.

Humanity rapidly takes over technologies; therefore, in modern human development priorities, quality takes first positions. It is demonstrated in the sphere of quality of education. Both in individual

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and public consciousness understand the direct relationship of getting high-tech educational services, with the successful realization of individual life plans and the dynamic and sustainable socio-economic development of regions and countries that provide a high education level. Quality education is recognized as one of the most important goals of sustainable development of humanity for the period up to the 2030 year, as it allows getting results in the achievement of all other aims. Also, education is an integrating factor of social progress.

Taking into account metrology of quality economy, it's necessary to analyze the UNESCO's contribution to the development of the knowledge space. UNESCO emphasizes higher education, which creates conditions and abilities to form a society based on knowledge. To implement its policy in raising the level of education, UNESCO develops an inter-university network of specialized Chair. At the moment, there are more than 750 Chairs and UNIWIN networks in 115 countries. Russian network of Chairs of UNESCO includes 60 Chairs and 5 UNIWIN networks. That's one of the world's largest national networks, with representation in many country's regions.

Results of conducted analysis of the activity of the inter-university network of specialized Chairs in Saint Petersburg showed that the work of UNESCO Chairs is well-coordinated and has focus on researches of direction of improving quality of education in target areas. So, UNESCO Chair "Sustainable development of areas and ensuring people's quality of life" operating at the Peter the Great Saint Petersburg Polytechnic University, in its work, relies on developing significant achievements of SPbPU’s scientists in the field of research questions of sustainable development and quality of life. The chair is an innovation guide at the international level and source of innovations. Essential results of Chair research demanded not only in the educational process but also are practically used in modern management systems. When the social-economic strategy of Saint Petersburg was adopted, also, the most important tasks in the field of education were refined up to the year 2035. Among 18 strategic goals of social-economic city's policy is the advancement of education, quality, and availability for all population sectors as the most important target.

6. Findings

Based on the research results, we can conclude that the quality economy and knowledge economy have great potential and a high-performance level. Presented in strategy 2035, elements of the quality management system of education aim to develop further a high level of education and population's culture in Saint Petersburg and designed to strengthen one of the most important competitive advantages of the city in Russia and in international relations and cultural interaction.

Management of quality of education is becoming a priority objective in forming knowledge space and letting to create the base of global competitiveness by integrating activity in different education directions and providing sustainable long-term social-economic development of the country.

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7. Conclusion

Regarding quality as a comprehensive system of methods and tools used in the whole system of economic relations, a quality economy lets to find optimal decisions of any social-economic problems at all hierarchical levels of management of the regional economy and national economy.

Under the conditions of the new development paradigm based on the knowledge economy and which opens to the future, the quality economy is connecting the link necessary for full work of the economic system in a drastically changing world.

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