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ADAPTATION TO DIGITALIZATION AS THE BASIS OF STATE MANAGEMENT'S QUALITY: A NEW METHODOLOGY BASED ON INDUSTRIAL AND MANUFACTURING ENGINEERING AND THE PERSPECTIVES OF DRONES

***Abstract*:** The goal of this paper is to study the possibilities of states' adapting to the global trends of the digital transformation of the main spheres of life for survival and development in the conditions of the forming multipolar world as the basis of state management's quality and to develop a new methodology of increasing the state management's quality based on industrial and manufacturing engineering and the perspectives of drones. The authors offer a new treatment of state management's quality in a modern multipolar world, which equals state management's quality to economic system's adaptation to digitalization, the reflection of which is global competitiveness. The offered treatment specifies the economic essence of state management's quality, which is considered – for the first time – from the positions of external criteria – primarily, global digital competitiveness. For the methodological support for new treatment of state management's quality, the authors offer a perspective methodology of increase of this quality. This methodology is based on development of industrial and manufacturing engineering and reflects new perspectives of dissemination of drones. The offered scientific and methodological provision of the increase of state management's quality with the help of adaptation to digitalization is universal and very effective and allows diversifying the measures of increase of state management's quality.

Key words: *State Management's Quality; Adaptation to Digitalization; New Trends of States' Survival; Industrial and Manufacturing Engineering; Drones.*

1. Introduction

The modern world is moving toward a special form of existence, in which high information and digital technologies dominate which support a multipolar structure of the world. Under the influence of a new form of existence and the global trends of development, people, markets, and the main spheres of life change quickly. This is stimulated by the development of virtual space and the transfer of the large part of

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relations to the online sphere. Broadband Internet is accessible for 82% of organizations, cloud services are used by 23% of organizations, ERP systems – 19%, online sales – 12%, and RFID technologies – 6% (Kachestvo, 2020).

New opportunities allow for a wide-scale transformation of organizations, global companies, industrial enterprises, and almost all spheres of life support. It is not limited – as before – only by implementation of the modern equipment or software, but includes the change of technologies, external and internal communications, corporate culture, and the whole management, and cardinal changes of the product or service for increase of personality and professional, requiring its adaptation.

Transformation is directly connected to digitalization, which influences the modern state of the global economic development (Khalin and Chernova, 2020) and, in our opinion, is the activities of public authorities, business, international, and public structures, and human on implementing the digital technologies into various spheres of life and their use. Together with adaptation, it stimulates the global transformation of the world toward multipolarity, with the help of systemic digital changes at the planetary scale, in all spheres of life activities. The hierarchy of these changes pierces all levels. This is, as different studies show, the economic basis of the multi-polar structure and formation of new centers of power is the diversity of economic models of development and cultures on which they are built. In other words, not only economic but also ethno-cultural factors participate in creation of a model of multipolar world (Kalyuzhny, 2010), for each global zone of economy is a separate ethno-cultural community. This stimulates countries' striving for active return to their own ethno-cultural civilizational roots, which should be taken into account during adaptation. Adaptation to the external conditions of digitalization should not destroy the value orientations of countries.

From the economic point of view, digitalization aims at development of innovative business models (Rauter, 2020), long-term competitive advantages, growth of profit and income, and receipt of additional resources for solving social problems. From the geopolitical positions, this is treated as supporting the global trend of development of multipolarity, connection of its components, and strengthening of the sustainable position of this phenomenon.

Large scale and cardinal changes toward digitalization predetermine the necessity for constant adaptation of human, organizations, and the whole system of life activities to changes. It is necessary to adapt, for changes take place around them and do not depend on them (Meyer, 2020). However, not all countries are ready for adaptation. The nature of this phenomenon has not been sufficiently studied, dependence of adaptation on the global trends of digitalization has not been determined, and there are no general rules of its implementation. Very often, digital transformation of countries leads to the loss of their sovereignty and value orientations and to the destruction of nature – the reproduction basis of human. Therefore, adaptation to digitalization is the basis of state management's quality in a modern multipolar world.

The search for the modern ways of adaptation to digitalization in view of the new trends of survival of countries in the changing world is an important task, which is connected to the increase of state management's quality. The purpose of this paper is to study the possibilities of states' adapting to the global trends of the digital transformation of the main spheres of life for survival and development in the conditions of the forming multipolar world as the basis of state management's quality and to develop a new methodology of increasing the state management's quality based on

industrial and manufacturing engineering and the perspectives of drones.

This work has been performed within the gram of the Russian Foundation for Basic Research and opens the results of the initial stage of its execution. The primary task was to develop a conceptual vision of solving the task of adaptation of countries to the global trends of digital transformation and to substantiate the mechanisms of its implementation in practice. Information for the research was taken from scientific works, Internet, statistical reports, and other open sources that are available for use.

In the theoretical part of this paper, we specify such notions as "digitalization" and "adaptation" and substantiate the manifestation of its main functions, and identify and describe such new global trends of digitalization that influence adaptation as the dominating role of countries in this issue over other participants of digital transformation; the wide and comprehensive character, high speed, and irreversibility of digital transformation; recognition of intellectual capital as the only dominating force of digital transformation and ousting the cultural and spiritual factors of human development to the background.

2. Literature Review

The issues of adaptation to digitalization are studied in a lot of scientific works. Certain scholars study the essence of digitalization (Müller et al. (2018), its global character (Manyika et al., 2020), mobility, and processes that influence economy, and education, taking into account the activities of countries. Other scholars consider the essence, level, technologies, and mechanisms of adaptation (Meyer, 2020). This paper also uses the materials on the topic of state management's quality in the conditions of the digital economy: Bratukhina et al. (2020), Devetyarova et al. (2020), Popkova (2020), Ragulina (2019a), and Ragulina (2019b).

However, adaptation to digitalization from the systemic positions and mutually dependent relations of its participants, caused by the manifestation of new trends of countries' survival in the multipolar world, has not been studied from the positions of state management's quality. This gap is to be filled in this paper. Here we also study the adaptation to digitalization as the basis of state management's quality and develop a perspective scientific methodology.

3. Materials and methods

Dynamic, structural, and situational analysis, based on the statistical measuring of the studied phenomena and detailed study of documents that regulate their manifestations, are the main methods that allow studying the adaptation to digitalization and consider new trends of countries' survival in the transforming world in time and space and in close interconnection with other manifestations.

The systemic approach was used for evaluating the state of adaptation of countries that are most successful in this issue, with the help of the indicator of added value volume per 1 employee in the sector of information and communication technologies of countries that showed the best results in adaptation to the conditions of digitalization and created the best climate for this.

The offered hypothesis is as follows: development of high technologies with the help of industrial and manufacturing engineering and, in particular dissemination of drones, stimulates the adaptation to digitalization for increasing state management's quality. In order to verify the offered hypothesis, we perform regression analysis of dependence of the adaptation to digitalization as a reflection of state management's quality on industrial and manufacturing engineering and, in particular dissemination of drones.

4. Results

4.1 Essence of the process of adaptation to digitalization in the modern multipolar world

The precursors of adaptation are the global trends of digitalization, the identification and consideration of which allow for timely preparation of the strategies of future changes and rules, mechanisms, ad tools of its implementation. The new global trends which determine the fate of digitalization and the use of its capabilities at the global scale and at the scale of certain countries, and which lead to the world's adaptation to the current changes" include the following:

- dominating role of governments as compared to other participants of digital transformation;

- wide and comprehensive character, large speed, and irreversibility of digital transformation;

-recognition of intellectual capital as the only dominating power of digital transformation and ousting the cultural and spiritual development of human to the background, accompanied by replacement of the civilization's value orientations.

Adaptation is a certain filter for country, society, and economic subjects. Passing through it, the subjects transform within visible and invisible – but working – laws, before entering a new communicative environment.

At the modern stage of digitalization of the global economic system, two main types of adaptation dominate: buffer – which levels and softens the clash of economic systems, and adaptive – which implements economic systems into new conditions.

Adaptation requires management, which is a process of targeted influence on its factors for achieving strategically important results. Countries have to be able to adapt to the conditions of digitalization and have the corresponding strategies of adaptation of institutions, economic subjects, population, and society.

4.2 Requirements to the adaptation to digitalization from the positions of state management's quality

We treat adaptation as interaction between human and internal and external environment of the surrounding world, which allows surviving, achieving the targeted settings of development with the most rational way, and preserving the living environment. Adaptation should be considered as a certain filter for country, society, and economic subjects. Passing through it, the subjects transform within visible and invisible – but working – laws, before entering a new communicative environment. It transforms the system of life activities before its entering the new space. The need for human communities' adaptation to the environment predetermines the development of special models of their behavior.

At the modern stage of digitalization of the modern economic system, two main types of adaptation dominate. The first type is connected to the buffer functions of adaptation (buffer adaptation – which levels and softens the clash), and the second type – to adaptive functions (accommodation adaptation). For society on the whole, the buffer function of adaptation is performed by culture – as a special phenomenon that contains the essential foundations of a nation, a link between human and its environment. Diversity of cultures predetermines diversity of forms and levels (Vujovic, 2020) and adaptation and interactions between human and its environment, leading to the possibility of existence of the diversity of economic forms and life activities in the conditions of digitalization.

For adaptation to be successful, it is necessary to develop the corresponding concepts, rules, mechanisms, and tools of its

implementation. Let's try to consider the global trends of development of information high technologies, which are strategic precursors of changes and adaptation – thus, we would be able to understand changes and the future to which human, company personnel, society, and country will have to adapt in the quickly complicating world.

One of the global trends that determine the fate of digitalization and the use of opportunities of its development at the global scale and at the scale of certain countries is the dominating role of countries as compared to other participants. This confirms the idea of J. Keynes on usefulness and necessity for the macro-economic policy for long-term growth, but in the modern conditions – with the help of the new tools and communicative space.

Formation of the digital economy is influenced by public authorities (Shustikov, 2020), while governments make decisions on the start of large-scale systemic programs of development of information and communication technologies and economy of the new technological generation, with financial and managerial support within the distinguished priorities. The legal basis of such decisions are constitutions of countries, special laws, and Programs of development, as well as other regulatory acts (M.Polit, 2020) in the sphere of information and communication technologies that are concerned with formation of a new technological basis of the digital economy and public-private cooperation in the sphere of digital innovations. Such cooperation allows for provision of a balance of interests of business and government, for their capabilities and risks could be in a state of balance (Bobyr and Orusova, 2020). The role of business here is very important, for following the strategic ideas of the government and moved by the competitive ideas, it tries to create own technological, managerial, and other advantages over rivals.

Therefore, countries have to be able to adapt to the conditions of digitalization, showing this by the example of e-government (OECD, 2020), and have the corresponding strategies of adaptation of institutions, economic subjects, and citizens. Governments may either stimulate or hinder the adaptation of countries to digitalization.

Adaptation could be ordered also by competition, but, combined with state regulation, this process will be more successful, for it requires implementation of strategic approaches to changes in at the national and international scale – which is not inherent to business. Governments determine the rules of economy's adaptation, involving business and society in this process. Adaptation to digitalization of economy according to domestic rules is one thing, and adaptation according to international rules is another thing. To make such choice, each government has to find an answer to the following question – to which extent and how exactly the country's economy can support the international standards, from the point of view of provision of growth and sustainability of macro-economic indicators, and make a decision – which values it will use in this process. The priority in adaptation should be given not to economy, technology, or equipment, but to nature – for human is a creation of nature.

Setting the priority of adaptation of society to nature, government uses the postulate that it is predetermined by the necessity to preserve nature as a reproduction basis of human. This allows preserving human and nature and also allows human to adapt to nature through own changes – and then to adapt to economy, technology, and equipment. Thus, selection of the values of digitalization during implementation of its strategy remains with the government, which strengthens its dominating role in development of digitalization, as compared to other participants.

Apart from the mobilization role, governments perform the functions of control of their decisions and correction of

strategic priorities, coordinating the relations between public authorities, business, and society that appear in the conditions of digitalization.

Another global trend of digitalization is its wide and comprehensive character, high speed, and irreversibility of transformations, as a result of which the whole world has to adapt to the current changes.

For example, by the end of 2018 more than 5.1 billion people subscribed to mobile services – which accounts for 67% of the planet's population; it is expected that in 2018 - 2025 the average annual growth rate will constitute 1.4% (Stryzhak and Mayuran, 2020). Large flows of data and information become create economic value, which is larger than the whole global trade (Manyika et al. 2020). The speed of digital transformation is so high that, as compared to industrial revolution, the changes that are caused by it are ten times quicker, exceed the scale by 300 times, and have 3,000 time larger influence on the processes of production and the connected relations. Besides, the use of certain digital technologies, technologies of psychological management, socialization of person, and change of corporate culture could change humans and make the processes of digital transformation of the main living spheres irreversible.

It is almost impossible to find a sphere of activities in which there would be no adaptation. All aspects of companies' activities have to adapt: cultural, technological, organizational, and managerial (Culturepartnership, 2020). As for an ordinary human or personnel, all socio-cultural, personnel, individual, and professional components are subject to adaptation.

For example, in Germany, China, Japan, and the USA, which achieved success in the implementation of digital technologies into the non-production sphere of the national economy, a lot of attention is paid to mass advanced training and adaptation of personnel to the digital economy (Kafidulina, 2020). A lot of attention is also paid to the issues of adaptation of managerial personnel who work at the intersection of the interests of different departments and have to interact due to the necessity for joint solving of tasks in the conditions of development of digitalization and large-scale transformation. Such issues are also studied in Russia. In particular, attention is paid to adaptation of managerial staff which ensure the inter-departmental interaction of various organizations that work on large-scale projects of the national importance.

Thus, adaptation to digitalization is a current need of adaptation of an ordinary person, managerial staff, and organizations to the constantly changing environment. The better the adaptability of these subjects, the higher the effectiveness of their activities.

Successfulness of adaptation of certain countries to digitalization could be indirectly characterized by the indicator of the added value volume per 1 employee in the sector of information and communication technologies. These countries were able to adapt to its conditions and create the required climate (National Research University "Higher School of Economics, Eurostat & OECD (2020). Let us rank 15 most successful European counties by the indicator of the added value volume per 1 employee in the ICT sphere in 2017; we got three groups, with the values of this indicator from USD 172,000 to USD 41,000.

The 1st group (USD 172,000-132,000): Norway (172), UK (163), Belgium (156), Sweden (142), and Germany (132). These countries have the highest values of this indicator – USD 153,000 on average. 2nd group (USD 128.000-59,000): France (128), Finland (119), Italy (105), Russia (75), and Czech Republic (59). Here the average value is USD 97,000. 3rd group (USD 54,000-41,000): Estonia (54), Hungary (48), Poland (46), Lithuania (41), and Latvia (41). Here the values of this indicator are the lowest – USD 46,000 on average.

Comparison of the minimum and maximum values of this indicator in each groups shows that the difference in the first one is USD 40,000, in the second – USD 69,000, and in the third – only USD 13,000. This is the proof of the existing reserves of growth of the considered indicators in all groups of countries. They are the highest in the second group, high in the first group, and the lowest in the third group – though, as compared to countries of other groups, the reserves of growth are the largest.

Thus, the results of adaptation in the studied countries have reserves of improvement, and each country has its opportunities.

A more thorough analysis (European Commission, 2020) of the studied countries shows that potential of development of countries from different groups is rather asymmetric. This causes the probability of increase of the new digital gaps between them. To avoid then, it is necessary to motivate business, so it could fully implement its capabilities as the key moving force of the process of digitalization.

In most cases, adaptation performs the transforming function, as it modifies all processes, constantly adapting them to the changing conditions of the internal and external environments of life activities. As a matter of fact, it supports and develops the diversity of culture, traditions, life modes, and natural, economic, and political systems, making a multi-polar world diverse, harmonious, and sustainable and creating conditions in which human is in the state of dynamic balance.

Adaptation is important also because it is a "filter" before organization's entering a new environment and another communicative space. Passing through a "filter", organization transforms and adapts to a new environment, without disturbing its integrity, configuration, and internal and external ties. The role of "filter" is performed by the corresponding systems of institutions, laws, norms, rules, regulations, traditions, and values. Transforming an organization, adaptation develops the corresponding immunity toward the internal and external influences of the environment that do not fit into the institutional laws. If everything goes according to the institutional rules, organizations that adapt, for example, to digital tools of management receive the maximum profit from their use. For full adaptation of management to the changes that take place as a result of the organization's transformation, investments in its transformation bring results that business counted on.

Organization's adaptation requires management that is a process of targeted influence on the factors of adaptation, for achieving the expected results. The necessity to manage adaptation is connected to minimization of probable loss to organization that is caused by future changes. Successfulness of organization's adaptation is largely determined by its adaptability – ability to transform its intellectual, managerial, and other components in the process of changes, preserving the basic sustainability and ensuring growth of the activities' effectiveness. In the conditions of changes, management also has to be adaptive – this is one of the main requirements to management of changes. It has to be able to quickly and flexibly react to any changes of the environment and to develop adequate managerial orders, which allow minimizing the effect of the factors that disturb the system.

It is possible to distinguish a range of the main principles of organization's adaptation and hierarchical rules, based on which adaptation takes place: preservation of historical and cultural & spiritual values of a nation, which cannot be adapted to other civilization; domination of Russian laws over foreign laws during adaptation; development of human based on the origins that were set by nature.

The research shows that successfully adapting organizations have a range of

specific features: belief and readiness of the manager to finish the process of the organization's transformation and high personal responsibility for results; trainability of personnel and management team, expressed in readiness and ability to learn; low level of natural opposition of the work personnel to changes; flexibility, which is expressed in readiness to change configuration and functions; orientation at quick implementation of complex projects and programs; striving for large-scale solutions that bring success.

Organizations could adapt to external and internal changes with the help of creation and work of special services of adaptation of personnel, which main tool of activities is formation and implementation of adaptation programs. Adaptation services could be independent and could be a part of other functional departments. Apart from the program, adaptation managers' programs should include formation of communications and preparation of teams that are able to generate creative ideas of adaptation, with the elements of provision of their implementation.

Another global trend of digitalization is acknowledging intellectual capital as the dominating force of digital transformation. Cultural and spiritual development of human goes to the background and starts lagging behind, reducing the civilization's ability to adapt to the current changes without the loss of value orientations. Also, the dominating force that saves countries from a downfall in the most difficult times of their existence is the power of spirit, which was set in human by nature. Resources that are required for supporting it are equal to the resources requires for informatization of digitalization.

Now we observe that the rates and scales of informatization exceed the speed of cultural and spiritual development of human potential, which was set in human by nature. As a result, it becomes more difficult for a human to react to changes, and the risks of loss of cultural and spiritual competencies of human resources grow. Besides, the creative capabilities of human, oriented at implementation of the set tasks and stimulating the transformation of ideas into real actions, decrease.

Digital transformation requires a wider use of all capabilities of a human. A certain role here belongs to education. There emerges the necessity to increase of the volumes and rates of continuous training and retraining of employees in the course of their life, for only the sufficient individual level of intellectual capital could allow an employee to master the necessary new knowledge in any age and could ensure their effective use. This is caused also by the constant growth of science intensity of production and the market of intellectual products and services, which predetermines the domination of personnel with creative intellect, skills of effective innovative activities, and outstanding skills of human resources management, with the use of digital technologies.

60-70% of Russian population must have digital skills (Dobrolyubova, 2020). The problems of retraining of youth for new jobs, which were created as a result of digitalization and authomatization of hi-tech and science intensive production, will not arise in Russia. The rates of digital transformation and its systemic character are not so high, and youth's training conforms to their growth. The problems of employment of young people and well-paid jobs, which require the knowledge of digitalization, are more urgent than the deficit of youth for these jobs, especially in capitals of regions.

Unemployment, caused by the absence of hi-tech and motivating jobs, is a larger danger for the youth. Russia's territory and resources are so large that it would be possible to create enough jobs in hi-tech production for young, middle-aged, and elderly people. However, this requires creation of productions according to the current needs for the products in the domestic and external markets. Digital

productions could raise labor efficiency and quality of the manufactured products (Digital Spillover, 2020).

Russian youth are very talented and is traditionally inclined to education. Young people require only the care from the government, motivation, and opportunities to get the corresponding job. Most of able-bodies Russians could retrain, but the government has to develop the adaptation mechanisms of digital transformation of hi-tech jobs, stimulating creation of new companies, motivating business, and supporting entrepreneurial activity as an additional source of organization of jobs.

4.3 Methodology of adaptation to digitalization for increasing state management's quality based on industrial and manufacturing engineering and the perspectives of drones

To verify the offered hypothesis, let us use the materials of "2020 Autonomous Vehicles Readiness Index" KPMG (2020) on readiness of countries of the world for drones – as the indicator of development of industrial and manufacturing engineering. We also use the materials of "World Digital Competitiveness Ranking 2019" IMD (2020) as a manifestation of state management's quality, manifested in the level of adaptation to digitalization.

The research objects are top-5 and low-5 country by the level of readiness for drones, according to the 2020 ranking of KPMG. The created selection of countries allows for large coverage of countries with different level of readiness for drones and allows receiving universal results at the scale of the global economy (Table 1).

On the basis of data from Table 1 we built a regression curve of dependence of digital competitiveness on readiness for drones (Figure 1).

As shown in the regression curve in Figure 1, increase of readiness for drones by 1 point leads to increase of global digital competitiveness by 1.999 points. The estimate value of determination coefficient R=0.9752 shows that the change of dependent variable (y) is by 97.52% explained by the change of factor variable (x). Normalized coefficient of determination (0.9721) characterizes proximity of the built regression to the initial data that contain "undesirable" random component, caused by "complexity" of the regression equation, determined by the number of equation's coefficients.

Table 1. Readiness for drones and digital competitiveness in 2020

Level of readiness for drones	Country	Autonomous Vehicles Readiness Index (x)	Digital competitiveness ranking (y)
Top-5 countries	Singapore	25.45	99.373
	Netherlands	25.22	94.261
	Norway	24.25	93.671
	USA	23.99	100.00
	Finland	23.58	93.732
Low-5 countries	Russia	11.45	70.406
	Chile	11.28	66.724
	Mexico	7.42	60.411
	India	6.95	64.952
	Brazil	5.49	57.346

Source: compiled by the authors based on IMD (2020), KPMG (2020).

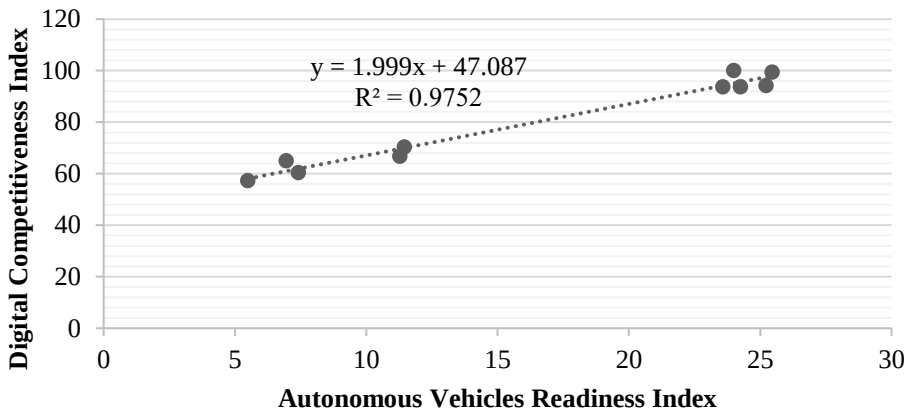

Figure 1. Regression curve of dependence of digital on readiness for drones.
Source: calculated and compiled by the authors

In the obtained model, R-square and normalized R-square do not differ much (constituting 0.9752 and 0.9721, accordingly), which characterizes the created model. The observed value of F criterion (F_{obs}) constitutes 314.4869. Table value of F criterion (F_{tabl}) at the significance level α = 0.05 and k_1 =m=1 and k_2=n–m–1=10–1–1=8 constitutes 5.32. As $F_{obs}>F_{tabl}$ (314.4869>5.32), the equation is deemed statistically significant.

Thus, industrial and manufacturing engineering in the sphere of development of drones opens wide perspectives for adaptation to digitalization and the increase of quality of economy state management. Based on the obtained conclusion, we develop and offer a new methodology of adaptation to digitalization for increasing state management's quality on the basis of industrial and manufacturing engineering and the perspectives of drones.

Uniqueness of the new methodology consists in the increase of state management's quality from the positions of adaptation to digitalization not directly – with the help of development of e-government's systems – but indirectly, with the help of industrial and manufacturing engineering, in particular development of drones. This allows diversifying the methods of increase of state management's quality, which, due to the obtained conclusions and offered recommendations, go beyond the limits of development of the e-government system. The advantage of diversification allows dealing with the limitations and increasing the effectiveness of the measures of increase of state management's quality based on adaptation to digitalization.

5. Summary

Thus, it has been substantiated that survival and development of countries in the forming multipolar world largely depends on their abilities to adapt to the global trends of digital transformation of the life activities' processes. This is stimulated by the timely identification, consideration of global changes, and implementation of the strategies of adaptation of institutions, economic subjects, population, and society of different countries to the future changes. Special rules, mechanisms and solutions, provided in this paper, allow developing the necessary economic policies and applying the best practices of global competitiveness (World Economic Forum, 2020).

Contrary to the expectations, we came to the conclusion that states' adapting to the global trends of the digital transformation of the

main spheres of life is stimulated by the timely identification, consideration of global changes, and implementation of the strategies of adaptation of institutions, economic subjects, population, and society of different countries to the future changes. Special rules, mechanisms and solutions, provided in this paper, allow developing the necessary economic policies and applying the best practices of global competitiveness.

Based on the received conclusion, we offer a new treatment of state management's quality in a modern multipolar world, which is susceptible to the influence of technological progress. This new treatment equals state management's quality to economic system's adaptation to digitalization, which reflection is global competitiveness. The offered treatment specifies the economic essence of state management's quality, which is considered not from the positions of internal criteria (e.g., effectiveness of state machine, accessibility of state services) but from the positions of external criteria – primarily, due to global digital competitiveness.

Due to this, the new treatment takes into account the specifics of the global socio-economic environment, in which state management is conducted and its qualities are formed: multi-polarity, accelerated rate, and comprehensive influence of technological progress. For the methodological support for new treatment of state management's quality, we offer a perspective authors' methodology of increase of this quality. The developed methodology is based on development of industrial and manufacturing engineering and reflects new perspectives of dissemination of drones.

Regression analysis has been used to show – by the example of top-5 and low-5 countries by the level of readiness for drones, according to the 2020 ranking by KPMG – that state management's quality, considered from the positions of adaptation to digitalization and measured through the level of global digital competitiveness, strongly and directly depends on industrial and manufacturing engineering in the sphere of drones.

Therefore, the methodology of increasing state management's quality should go beyond the traditional idea of adaptation to digitalization with the help of development of the e-government system and should cover also industrial and manufacturing engineering in the sphere of drones. The offered scientific and methodological provision of the increase of state management's quality with the help of adaptation to digitalization is universal and highly-effective and allows for diversification of the measures of increase of state management's quality.

The offered recommendations could be applied at the national and international levels of management during development of strategies, programs, regulatory and legal documents, regulations, and standards that regulate the adaptation to digitalization. They would be useful for business corporations and public organizations, which professional interests are connected to solving the problems of socialization and adaptation of humans, in view of diversity of cultures and national identity of citizens.

It should be noted that the perspectives of development of industrial and manufacturing engineering of drones require further additional research. Here they have been considered as a managerial measure of increasing the state management's quality, while the technical component of industrial and manufacturing engineering of drones has not been elaborated. This should be done on further works in continuation of this study.

Conflict of interests

The author confirms that the submitted materials do not contain a conflict of interest.

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