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THE ROLE OF DIGITALIZATION IN HEALTH CARE FOR HUMAN CAPITAL DEVELOPMENT

Annotation: *In the context of the platformization of economic development of organizations and service enterprises, a systematic study of the prerequisites for increasing the effectiveness of the introduction of end-to-end digital technologies in the processes of interaction of stakeholders in a digital environment represented by many multi-level ecosystems is relevant. The Decree of the President of the Russian Federation "On National Development Goals of the Russian Federation for the Period until 2030" defines national goals for the next ten years, including, inter alia, "preservation of the population, health and well-being of people, digital transformation."*

Keywords: *Health, health care, economic development, population, human capital.*

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РОЛЬ ЦИФРОВИЗАЦИИ В ЗДРАВООХРАНЕНИИ ДЛЯ РАЗВИТИЯ ЧЕЛОВЕЧЕСКОГО КАПИТАЛА

Аннотация: *В условиях цифровизации экономического развития организаций и предприятий сферы услуг системное изучение предпосылок повышения эффективности внедрения сквозных цифровых технологий в процессы взаимодействия заинтересованных сторон в цифровой среде, представленной множеством многоуровневых экосистем. В Указе Президента Российской Федерации «О национальных целях развития Российской Федерации на период до 2030 года» определены национальные цели на ближайшие десять лет, в том числе, «сохранение населения, здоровья и благополучия люди, цифровая трансформация».*

Ключевые слова: *Здоровье, здравоохранение, экономическое развитие, население, человеческий капитал.*

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АДАМ КАПИТАЛЫН ӨНҮКТҮРҮҮ ҮЧҮН САЛАМАТТЫКТЫ САКТООДО САНАРИПТЕШТИРҮҮНҮН РОЛУ

Аннотация: *Уюмдардын жана тейлөө ишканаларынын экономикалык өнүгүүсүн санариптештирүү контекстинде санариптик чөйрөдө кызыкдар тараптардын өз ара аракеттенүү процесстерине акырындык менен санариптик технологияларды киргизүүнүн натыйжалуулугун жогорулатуунун өбөлгөлөрүн системалуу түрдө изилдөө. көп деңгээлдүү экосистема актуалдуу болуп саналат. Россия Федерациясынын Президентинин "2030-жылга чейинки мезгилге Россия Федерациясын өнүктүрүүнүн улуттук максаттары жөнүндө" Жарлыгы жакынкы он жылга улуттук максаттарды, анын ичинде, анын ичинде, "калкты, калктын саламаттыгын жана бакубаттуулугун сактоону" аныктайт.*

Негизги сөздөр: *Ден соолук, саламаттыкты сактоо, экономикалык өнүгүү, калк, адамдык капитал, санариптик трансформация.*

Introduction. The development of health services in the context of the COVID-19 pandemic is characterized, on the one hand, by the significant penetration of digital technologies into the processes of providing medical services, including prevention, diagnosis, treatment, rehabilitation of citizens, and, on the other, by the increase in new challenges and threats, primarily associated with a decrease in the sustainability of the functioning of medical organizations in conditions of poorly predicted external shocks.

Materials and research methods. The intensive development of digitalization processes in the health sector determines the relevance of conducting economic research in the field of justifying the use of platform models in increasing the effectiveness of the organization of the provision of medical services in order to meet the growing needs of people for medical care. The digital transformation of medical services is directly related to the use of end-to-end digital technologies such as artificial intelligence, big data, the Internet of things, virtual and augmented reality technologies, and distributed registry systems.

Despite the positive experience of leading countries of the world in obtaining significant technological changes and increasing attractiveness of investment investments in the development of systems for supporting medical decision-making (23% of total investment), predictive analytics, indicator monitoring, risk assessment (18%), an important problem in the digital development of the healthcare sector is the desbalance of systemic solutions and lack of coherence in the organization of interaction between medical organizations, emergency medical services and other actors in the health system at the national and regional levels.

The introduction of digital technologies in the provision of medical services is also closely related to the solution of the problem of shortage of medical personnel. The shortage of medical and medical personnel in Russia is estimated at 50 thousand doctors and 130 thousand average medical staff as of 2000. This situation in Russia reflects such trends in the development of the medical services sector at the global level. According to the World Health Organization, by 2030, the shortage of doctors and nurses in the world will be 9.9 million people.

The organization of the provision of medical services in modern conditions is associated with the prevailing trends in digitalization, which have a significant impact on the nature and quality of the provision of medical services. The very economic content of health services in the digital environment is also undergoing substantial transformation due to changes in the way health services are provided, especially during the pandemic period. According to the Federal Law of 21.11.2011 No. 323-F3 "On the Basics of Protecting the Health of Citizens in the Russian Federation," a medical service is a medical intervention or a set of medical interventions aimed at the prevention, diagnosis and treatment of diseases, medical rehabilitation and having independent completed significance ". Studying the economic content of the essence of the medical service, we note that "the medical service, as an economic category, includes conscientious actions of medical personnel aimed at preserving and improving the patient's health, as well as providing the patient with additional service services aimed at improving the quality of service".

Modern publications emphasize the reimbursable nature of the provision of medical services as a type of professional services. The reimbursable form of providing medical services in a digital environment is gaining new forms of content, and therefore it is very important to investigate the economic trends in the organization of the provision of medical services in the context of digitalization.

The research on the essential content of the digital health service delivery environment should begin with the importance of understanding digital society.

It is believed that the forerunner of the concept of digital society is the concept of the information society, the birth of which took place in Japan in the 1960s. As noted in the scientific monograph of Russian scientists, the first book on the topic of the information society was the work "Information Society: from a tough society to a soft one" (Yu. Hayashi, 1969). Subsequently, in 1980, J. Masud's book "Information Society as a Post-Industrial Society" was published. Scientists emphasize that "the information society for Japan 1960-1980 is a society progressing from comprehensive computerization, manifested in the financial sector, commerce, production automation, and a shift in emphasis to the high-tech industry. This society, which has access to reliable and rapidly transmitted information, triumphs in the heyday of human creativity, and information processes and values dominate the material component. " Table 1.1 presents the main stages of the formation of scientific ideas about the development of digital society in the development of the digital environment.

Table 1.1. The main stages of formation of scientific ideas about the development of digital society in the development of the digital environment

Stage	Scientific direction	Country
1960-1980 .	Information Society for Japan Program [7]	Japan
1969	Y. Hayashi "Information Society: From Hard Society to Soft" [7]	Japan
1960	I. Reimers "Information Economics" F. Makhlup "Post-Industrial Society" [54]	USA
1970-e гг.	D. Bell "The Coming Post-Industrial Society" [10]. M Porat "Development of Post-Industrial Society" E. Toffler "Third Wave" [185]	USA
1980 г.	I. Masuda "Information Society as a Post-Industrial	Japan
1980-е гг.	Development of the World Wide Web (WWW) project.	USA
1990-е гг.	A. Gore High Performance Computer Systems Act (HPSA)	USA
1991 г.	Malaysian Vision 2020 Program	Southeast Asia
1993 г.	Singapore's Smart Island Strategy	Southeast Asia
1994-1996 гг.	Development of a plan for the implementation of the policy in the field of development of informatization of the society "Europe and the global information society"; "Danish Information Society-2020"; UK Information Societies Initiative; "The German Way to the Information Society 2020."	Europe
1994 г.	Taiwanese program "National Information Society 2005"; South Korea National Information Society 2003	Southeast Asia
1995 г.	Scientific direction "Digital inequality"	USA
1995-2000 г.	M. Castels "Theory of Network Society"	Europe
2000 г.	The Global Information Society initiative, which includes, in particular, bridging the information and digital gap.	Global level

In modern works, the problems of investigating digital inequality are presented more through the prism of such approaches as the geographical remoteness of territories, characterizing digital inequality between countries at the global level and digital inequality between citizens living within the same territory; different levels of access of the population to information and communication technologies (hereinafter referred to as ICT) using an extensive set of data on the income of respondents, their education and other indicators using various mathematical models of analysis and assessment.

One form of digital inequality is the digital divide. As stated in the Global Digital Health Strategy 2020-2025, the digital divide characterizes the gap between demographic indicators and regions with access to modern information and communication technologies, and regions that do not have access or have limited access (telephony, television, personal computers, Internet, etc.).

Figure 1.2 shows statistics by leading countries, which present the maximum number of companies in the artificial intelligence market in medicine.

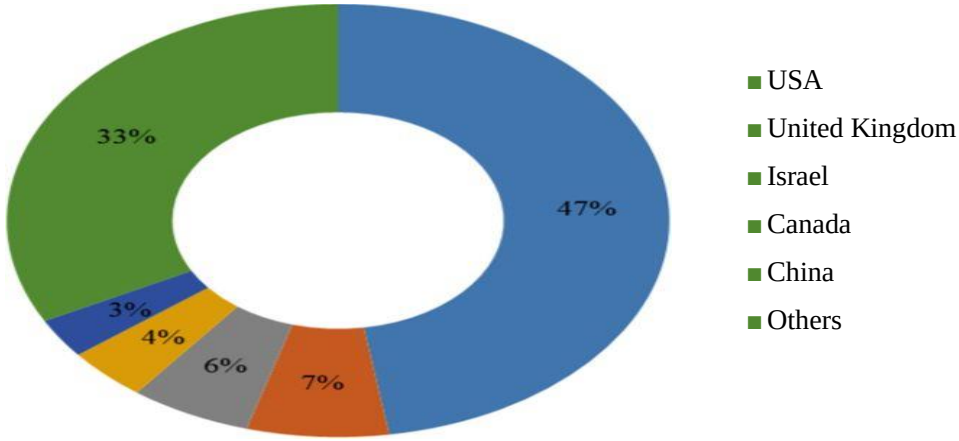

Figure 1.2 - The leading countries by the number of the companies using artificial intelligence in the sphere of medical services

Considering the problem of digital inequality in the context of the development of the field of medical services, we emphasize that it is ensuring the availability of medical services that is the determining factor in bridging the digital gap in society and ensuring sustainable socio-economic development of the regions. In this regard, the study of the prerequisites for the development of the information society is inalienably connected with the problems of digital inequality, the solution of which plays a very important role in the development of health care.

The formation of a digital environment for the provision of medical services is determined by the introduction of breakthrough digital technologies aimed at improving the quality of medical services, ensuring the health of the population. Note that the concept of the digital environment is also linked with the concept of the information space determined by the Strategy for the Development of the Information Society [OUT]. According to the Strategy, the information space is a set of information resources created by subjects of the information sphere, means of interaction of such subjects, their information systems and the necessary information infrastructure.

Research results. Considering the digital environment from the standpoint of the development of information technologies, we note that the Global Digital Health Strategy for 2020-2025. identified such basic concepts that characterize the development of digital health care in the world, including: artificial intelligence technology (Artificial intelligence); Big data technology; Blockchain technology; Telemedicine technology; Digital divide; Internet of things; Digital trial; patient health data (Health data); Interoperability Digital health ecosystem idr.

We will note that the Decree of the President of the Russian Federation "About Development of Artificial Intelligence in the Russian Federation" of October 10, 2019 No. 490 defined the priority directions of development and use of technologies of artificial intelligence among which the crucial role is assigned to technologies of improvement of quality of services in health sector. Improvement of quality of services provides "preventive inspection, diagnostics based on the analysis of images, forecasting of emergence and development of diseases,

selection of optimum dosages of medicines, reduction of threats of pandemics, automation and accuracy of surgical interventions" in health sector.

Conclusion. Attention should also be paid to such a crucial area in the development of the health care sector as ensuring the safety of processes in the health care system. Currently, the formation of a digital circuit for the development of the medical services sector is causing an increase in demand both from medical and preventive organizations and from citizens for the protection of personal data, which requires the development and implementation of a system of cyber-immune intelligent devices, it is pointed out the importance of information protection tools based on an analysis of the use of information and communication technologies in health organizations.

Along with this, a number of scientists investigate aspects of citizens' involvement in the processes of digitalization of medicine through the prism of "biopolitan aspects of self-health cognition practices that underlie the culture of self - tracking, self - examination".

Taking into account the above, we will determine such trends in the development of the digital environment for the provision of medical services, taking into account the functional features of the use of digital technologies in the service economy:

- networking of the development of the modern information society;
- targeted focus of medical organizations on ensuring the availability of medical services;
- integrativity of the development of information, communication and digital technologies in the field of health care;
- growing demand for the development of cyber-moon platforms with an integrated system for protecting personal data, medical information systems and other objects;
- reduction of transaction costs in the course of organization of medical services provision;
- growing digital inequalities in access to quality health services;
- low level of public confidence in the use of medical services in digital form;
- the need to improve legislation in matters related to the use of digital technologies in the process of providing medical services;
- limited opportunities for the development of digital infrastructure in the field of health care in the regions;
- the need for constant advanced training of medical personnel, nurses in the development of digital competencies.

Note that the integrative characteristics and trends in the development of the digital environment for the provision of medical services listed by us do not pretend to be exhaustive essential coverage of the studied phenomenon, but they generally reflect the prerequisites for the focus of further study of economic trends in the development of the medical services sector.

Based on the above, it can be concluded that the digital transformation of the healthcare sector is intensified, which has a significant impact on the nature and quality of the provision of medical services and determines the relevance of studying the patterns of digital development of the healthcare sector.

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