

Digitalization as a Means of Anti-Corruption Policy in the Sphere of Health Care in Ukraine

Olexandr Budniuk [†], Viacheslav Pereviznyk ^{††}, Hanna Mazurenko ^{†††}, Serhii Shcherbakov ^{††††},
Liudmyla Antonova ^{†††††}

buchk1810@ukr.net

[†] Odessa National Medical University, Ukraine

^{††} National University of Civil Defence of Ukraine, Ukraine

^{†††} Odessa National Medical University, Ukraine

^{††††} Odessa National Medical University, Ukraine

^{†††††} Petro Mohyla Black Sea National University, Ukraine

Abstract

The main purpose of the article is to determine the role of the digitalization phenomenon (its positive and negative sides) as a means of anti-corruption policy in the healthcare sector of Ukraine and provide practical recommendations for transforming the domestic healthcare sector based on digitalization through the implementation of organizational and legal measures. The definitions of such concepts as: corruption in the healthcare sector; digitalization; digitalization of the healthcare sector; e-medicine. A typology of reasons for promoting the development of corruption in the healthcare sector of modern Ukraine is given. As a result of the study, a number of scientific tasks were implemented. The negative side of the introduction of digitalization in the healthcare sector has been identified and illustrated. The types of e-services in the healthcare sector are systematized, each of them is characterized and the fundamental directions of their development are indicated. The existing problems of technostress are characterized (techno-overload; techno-invasion; techno-complexity; techno-insecurity; techno-uncertainty). In the context of considering digitalization as a means of anti-corruption policy in the healthcare sector, practical organizational and legal measures are proposed for implementation.

Keywords:

anti-corruption policy, e-medicine, healthcare, technostress, digitalization of healthcare.

1. Introduction

The antisocial phenomenon of corruption is a modern challenge for a large number of countries in the world. Today's Ukraine is no exception. Despite the existing domestic system of anti-corruption legislation, which is more in line with European principles, standards and requirements, in the Ukrainian state, according to data from Transparency International, there is a high level of corruption in almost all spheres of public life, including healthcare.

This still relevant metaphor meaningfully illustrates the fundamentality and significance of corruption for any society and country, because objectively, a disease at a late stage of its development is much easier to recognize than to cure. That is why most of the anti-corruption measures of the Ukrainian state, following the example of the developed countries of the world (Germany, Sweden, Denmark), should be aimed precisely at preventing corruption by all possible modern means, among which the digitalization phenomenon has recently taken a leading place [1].

Today, digitalization in the healthcare sector is an important and indispensable condition for the creation and competitive functioning of the medical services market. It should be patient-oriented and sectoral in nature and take into account the established global approaches to digitalization.

Thus, the purpose of the article is to determine the role of the digitalization phenomenon (its positive and negative sides) as a means of anti-corruption policy in the healthcare sector of Ukraine and provide practical recommendations for transforming the domestic healthcare sector based on digitalization through the implementation of organizational and legal measures.

2. Methodology

To achieve the goals set in the study, we applied the following methods: induction and deduction, comparison and systematization; synthesis and

analysis; abstract-logical - for theoretical generalizations and conclusions of the study.

3. Research Results and Discussions

In the field of providing services to the population, the modern healthcare system is one of the main corrupt areas of Ukrainian society. Due to the presence of corruption schemes in the healthcare sector, people often either do not receive, or receive, but at the same time poor-quality and incomplete medical care. When it comes to human life and health, such situations pose a serious danger. The price of corruption in the medical field is paid in human suffering, ill health, or even life itself [2].

The Basic Law of Ukraine enshrines the right of citizens to protect their health. According to Article 49 of the Constitution of Ukraine, everyone has the right to health care, medical care and health insurance. Health care is provided by state funding of relevant socio-economic, medical and sanitary and health-improving and preventive programs. The state creates conditions for effective and affordable medical care for all citizens. In state and communal health care institutions, medical care is provided free of charge; the existing network of such establishments cannot be reduced [3]. The state promotes the development of medical institutions of all forms of ownership. The state works for the development of physical culture and sports, ensures sanitary and epidemic well-being. But, as practice shows, citizens do not have the opportunity to fully exercise this constitutional right, since health care workers receive property or non-property benefits from patients. Since in the mass consciousness the profession of a medical worker is associated with selflessness and mercy, and health is seen as a priority good, the reaction of the population to corruption abuses is most acute in the healthcare sector.

Public authorities, officials of relevant organizations, within the limits of their authority, are responsible for ensuring guarantees in the field of healthcare established by the legislation of Ukraine. However, domestic realities show that neither the existing Ukrainian legislation nor law enforcement practice can yet effectively resist corruption in general, and in the healthcare sector in particular. Therefore, citizens are forced to pay extra for free healthcare for a number of different reasons.

The current Law of Ukraine "On the Prevention of Corruption" provides such a definition of the concept of "corruption" - the use by the person specified in the first part of Article 3 of this Law of the official powers granted to him or related opportunities in order to obtain an unlawful benefit or accept such a benefit or accept a promise / offering such a benefit for oneself or other persons or, accordingly, a promise/offer or provision of an unlawful benefit to a person specified in the first part of Article 3 of this Law, or at his request to other individuals or legal entities, in order to induce this person to illegally use the official powers granted to him or opportunities associated with them [4].

Corruption in the healthcare sector is a recurring complex negative socio-legal phenomenon that is in constant development, expressed in the selfish use by medical workers of their official position in the public and private healthcare system, with the aim of illegally obtaining material, intangible benefits and advantages, as well as in illegal granting such benefits to individuals or legal entities, which has caused or is capable of causing significant harm to the interests of society and the state in the field of public health, and also destroys constructive social relations in the sphere of realization of citizens' rights to health care and receiving medical care [5].

Today, among the broad strata of the Ukrainian population, there is a widespread opinion that such factors as: the ongoing large-scale armed aggression of the Russian Federation against Ukraine; introduced martial law; the concentration of citizens on the problems of personal protection and lack of money; reduction in the availability of educational, medical and other services, etc. is a guarantee that the complex problems of preventing and combating corruption are not in the focus of the priorities of the Ukrainian state. However, as the facts show, the Ukrainian politicians, even in such difficult times for the country, are aware that one of the main means of minimizing corruption, including in the healthcare sector, is the constant improvement of the relevant regulatory framework. In this regard, the Verkhovna Rada of Ukraine adopted in the second reading and in general the Law of Ukraine "On the Fundamentals of the State Anti-Corruption Policy for 2021-2025" (registration No. 4135), which determines the directions of the state anti-corruption policy for the coming years [6].

The purpose of this law is to achieve significant progress in preventing and combating corruption, as well as ensuring the coherence and consistency of anti-corruption activities of all public authorities, primarily through the approval and successful implementation of the Anti-Corruption Strategy for 2021-2025. The approved anti-corruption strategy for 2021-2025 will allow Ukraine to provide all public institutions with a reliable anti-corruption index and tools. Therefore, further proper implementation of the Anti-Corruption Strategy will reduce the level of corruption in Ukraine, in particular by eliminating or minimizing corruption risks, reducing the number of corruption and corruption-related offenses, reducing the corruption experience of citizens and businesses, increasing the number of public servants, citizens and businesses that are ready and actually report cases of corruption known to them, as well as a decrease in the tolerance of public servants, citizens and businesses to corruption [7]. One of the five principles of anti-corruption policy defined by law for 2021-2025 is the discovery of data and the digital transformation of the exercise of powers by public authorities. The strategy defines the priority areas of public administration, including healthcare. This regulatory document provides for the introduction of an electronic accounting system for medicines and medical devices in all state and municipal healthcare institutions, information from this system will be published in open data format, etc. In order to effectively implement the principles and provisions of the anti-corruption strategy, its executors need to be clearly aware and understand the typology of the main reasons that contribute to the development of corruption in the healthcare sector [8].

The Table 1 shows the typology of reasons for promoting the development of corruption in the healthcare sector in modern Ukraine.

Table 1: The typology of reasons for promoting the de

velopment of corruption in the healthcare sector in modern Ukraine.

<i>Type</i>	<i>Characteristic</i>
-------------	-----------------------

Economic	The growth of property differentiation among the population (stratification of the domestic healthcare sector: “for the wealthy”, “for the middle class”, “for the poor”); increase in the cost of medicines and treatment; unstable situation in the domestic economy
Political	Insufficient development of political and public interaction and, as a result, public control.
Social	Dissatisfaction of the population with the quality of "free" medical care; relatively low salaries of medical workers in the public health sector (especially among young professionals), which, according to medical workers, do not correlate with their contribution to the health of the population; low level of social protection of healthcare workers.
Organizational	Insufficient efficiency of control and revision measures; miscalculations in personnel policy; shortcomings in the regulation of the activities of healthcare workers; lack of truthful statistical reporting on corruption crimes in the healthcare sector.
Legal	Insufficient protection of the rights to receive free medical care; the presence of gaps in the relevant legislation that provide opportunities for corrupt practices.

Despite the variability of the above types of reasons for promoting the development of corruption in the healthcare sector of modern Ukraine, the state is still trying to find effective means of preventing and combating corruption in the relevant area. In our opinion, ubiquitous digitalization can become one of such means.

In the broadest sense, digitalization is usually understood as a process of socio-economic transformation initiated by the massive introduction and development of digital technologies. Digitalization is the introduction of digital technologies into various spheres of public life [9].

Digital transformation is the meaningful feature that today distinguishes the Ukrainian state from countries with economies in transition. Ukraine of the modification of the 20s of the XXI century is gradually building a digital state that becomes a service - without bureaucracy, queues and the dominance of corruption. The digital transformation of Ukraine is, first of all, the convenience of its citizens, it is anti-corruption, it is the opportunity to ensure equal access for all Ukrainians to the resources they need, it is changes, simplification, transformation, liquidation of certain areas of activity of public authorities and relevant organizations. That is why it is important today to build effective management at the level of the entire state, which will lead to the transformation of the state into a convenient online service.

Speaking about digitalization, it should be noted that the ever-changing changing world and global fleeting trends are both challenges that need to be answered and opportunities that can be used by creating and implementing innovations in the sphere of being of Ukrainian society. Digitalization of the healthcare sector is a systematic and comprehensive introduction of modern information technologies into the relevant processes of the medical industry, both public and private commercial medicine; this is efficiency, a new quality, a decrease in the influence of the human factor and the corruption component. Among the main prerequisites for the digital transformation of the healthcare sector are: Among the main prerequisites for the digital transformation of the healthcare sector are [10]:

- 1) global informatization and mobility - actively using the global Internet, mobile gadgets, social networks and applications for communication at a convenient time, people are no longer limited by geographical barriers in communication;
- 2) patient orientation - client-patients are becoming more demanding, as a result of which the medical services offered to them should be of better quality, affordable and convenient to receive;
- 3) scientific and technological progress - opportunities are being created for the wide application of the achievements of science and technology in medicine, for example, the introduction of electronic medical records and devices for remote monitoring of patients using Big Data;

- 4) data-centricity - analytical tools are created for making decisions based on a lot of data on the state of health of citizens.

The global response to the SARS-CoV-2 acute respiratory disease COVID-19 has accelerated the use of digital tools and tools in the domestic healthcare sector. However, their effective application has often been hampered not by technical but by social constraints: procedural, legal and financial barriers[11].

World technological progress already now provides the healthcare sector with a whole range of both hardware and software tools that facilitate the work of the doctor and the leading staff of the medical institution and reduce the cost of medical care. However, there are now a number of obstacles preventing widespread deployment of the aforementioned facilities [12]. In Ukraine, there is now a clear lack of funding for state and local projects in the field of healthcare informatization at the all-Ukrainian and local levels. And digitalization in the healthcare sector can lead to meeting the needs of the population in medical care, optimizing it, improving quality control, reducing various costs and minimizing corruption.

Electronic medicine deserves special attention in the context of digitalization of the healthcare sector. Electronic medicine (e-medicine) is also a new phenomenon for the Ukrainian state. Today, one of the main approaches to the processes of reforming the domestic healthcare industry is the implementation, precisely on the basis of the collection of preliminary data from preventive examinations, the creation of electronic identification of patients in healthcare institutions, an integrated unified information and analytical system for recording the state of health of citizens for the purpose of further use in statistical, expert, analytical systems. .

The concept of "E-medicine" includes a wide range of interconnected integrated systems and services located at the intersection of information and communication technologies, healthcare and medicine. The main types of e-services in the health sector are systematized in Table. 2.

Table 2: Types of e-services in healthcare

<i>Type</i>	<i>E-service</i>
Virtual medical teams	Consist of healthcare professionals who collaborate and share patient information through digital equipment (eg, web conferencing).
Electronic prescription	Electronic access to providing or changing prescriptions, printing prescriptions for patients, and sometimes electronic transfer of prescriptions from physicians to pharmacists.
Electronic health records	Allows the transfer and exchange of patient data between different medical professionals.
Informing the population	Use of electronic resources on medical issues to inform patients, ensuring public awareness of health care.
Medical Information Systems	Specialized programs for scheduling doctors' appointments, managing patient data, managing work schedules and other administrative tasks related to healthcare organization.
Mobile medicine	Includes the use of mobile devices to collect data on the physical or psychological state of the patient, transmitted to doctors or researchers, as well as real-time monitoring of the patient's vital organs, direct assistance (using mobile telemedicine).
Developing Your Own Diet	The subject area of e-medicine provides modern methods for diagnosing, monitoring (control and self-control) and assessing the state of human health, helping to determine changes in the state of the body depending on various external and internal factors.

The main task of e-medicine is to ensure effective interaction between healthcare institutions, medical professionals and patient-clients through modern information and communication technologies. The fundamental directions for the development of e-services in the healthcare sector are [13]:

1) improvement of the development of the system for monitoring the state of health of the population;

2) creation and implementation of disease prevention, new computer technologies, diagnostics, provision of medical processes;

3) introduction of information automated industry systems for the purpose of maintaining medical records in electronic form;

4) development of telemedicine;

5) creation of electronic publicly available medical resources, etc.

The main advantages of introducing digitalization in the healthcare sector include [14]:

1) for healthcare institutions - increasing the level of efficiency in the provision of medical services through the use of new methods (methods) of examination, treatment of client patients; improving the organization in the field of health care due to the infocommunication processing of a huge amount of data;

2) for doctors and the medical community - improving the quality of medical care by reducing medical errors, broadcasting operations (telemedicine), discussing possible methods of treating patients with colleagues, introducing electronic medical records and case histories and other benefits, in particular, the use of 3D printing technologies human organs;

3) for patient-clients - increasing the level of accessibility of medical care, in particular, in rural areas; examination of patients in a remote format from a medical institution; the possibility of obtaining additional consultations on the disease in the implementation of programs for remote monitoring of the health status of patients.

So, modern digital technologies blur the boundaries of time and space on the organization of work, offer a means to update gender roles and new forms of control.

One of the main vectors for building a digital society in Ukraine should be directed to the healthcare sector and aimed at global changes that will bring medicine to a qualitatively new level of development. These changes are associated with the widespread introduction of advanced digital technologies. Modern digital medicine is not only a record in health care via the Internet, but also telemedicine, artificial intelligence, augmented reality, Block Chain, etc. This will reduce the amount of financial investments and lead to minimization of the level of corruption in the domestic healthcare sector [9].

In the context of considering digitalization as a means of anti-corruption policy in the healthcare sector, we propose the following organizational and legal measures for implementation [15]:

- active introduction and use of a variably possible range of modern digital and information and communication technologies (including in rural areas), which will speed up the process of obtaining quality medical services and reduce the level of corruption;
- creation of a set of conditions that, in their totality, make it impossible to falsify official medical documents; introduction of appropriate algorithms of anti-corruption actions in healthcare institutions;
- formation and systematic development of the legal culture of medical workers and their digital skills; implementation of a strategy for the formation of zero tolerance for corruption;
- strengthening the material and technical base of healthcare institutions, especially on the territory of the newly territorial communities, in order to effectively use medical information systems, electronic medical passports of patients. This will contribute to the elimination of paperwork and the receipt of the services of medical professionals in any relevant medical institution;
- study of thematic foreign experience, both positive and negative.

Therefore, the transformation of the domestic healthcare sector based on digitalization should be comprehensive and systemic in nature for all dominant concepts of the anti-crisis management system and cover the system of functional activities of healthcare institutions, intra-organizational management, as the basis for the development of a motivational mechanism for managing personnel of a security institution. health, resource provision, competitive positioning in the medical services market in compliance with the institutional sequence and synergistic interaction of healthcare institutions in providing a wide range of services to patient clients.

4. Conclusions

According to the current purpose of the study, we consider it appropriate to note the following substantive provisions:

- the problem of domestic corruption is closely connected, first of all, with the mentality of

Ukrainians, which has recently been rapidly changing due to the large-scale invasion of Russian troops into the territory of sovereign Ukraine. However, the situation in which the necessary issues are resolved with the help of a certain type of bribe still satisfies a large number of Ukrainians, who often consider a bribe as a necessary gratitude for improving the state of affairs. And the quality of the provision of medical services and the improvement of a person's health, like nothing else, is directly related to the size of the bribe. As a fact, in the modern healthcare sector, the laws of the "market of corrupt services" continue to operate, when demand generates supply. Against the backdrop of the need to protect Ukraine, bribery of members of military medical commissions has recently taken place in the corruption market.

- it should be noted that the construction in Ukraine of a full-fledged digital society focused on the implementation of the social policy of the state, including in the field of healthcare, is possible with the formation of a different system of values based on legal education, control over the legislative and executive activities of public authorities and discussion the most pressing issues related to the corruption of society with the involvement of the possibilities of digitalization, digital communication and information and communication technologies. The country should develop social anti-corruption advertising, agitation and information-propaganda work with the population. In general, the state needs an atmosphere of severe rejection of corruption in all spheres of public life.

- today, one of the most important stages in the digital transformation of domestic healthcare institutions is the timely training of personnel, increasing the level of their qualifications on the principles of consistency, the formation of the necessary competencies among specialists of various profiles, as well as the planned training of employees for the use of new technologies in their professional activities.

In this regard, we consider the following promising areas for further theoretical and practical research in this area:

- improvement of a comprehensive mechanism for the development of digital competencies of healthcare workers in modern Ukraine;
- the main directions of transformation of the processes of digitalization of the healthcare sector in the context of armed aggression and martial law.

So, the article formulated and proposed a solution to an urgent scientific problem in the field of public administration, which consists in determining the role of the digitalization phenomenon (its positive and negative sides) as a means of anti-corruption policy in the healthcare sector of Ukraine and providing practical recommendations for transforming the domestic healthcare sector based on digitalization through the implementation of organizational and legal measures.

References

- [1] Quinn P. Crisis Communication in Public Health Emergencies: The Limits of 'Legal Control' and the Risks for Harmful Outcomes in a Digital Age. *Life sciences, society and policy*, 2018, 14(1), 4. <https://doi.org/10.1186/s40504-018-0067-0>
- [2] Puauschunder, J., Beerbaum, D. The Future of Healthcare around the World: Four Indices Integrating Technology, Productivity, Anti-Corruption, Healthcare and Market *Financialization*. *SSRN Electronic Journal*. 2020. <https://doi.org/110.2139/ssrn.3662010>
- [3] Gaitonde R, Oxman AD, Okebukola PO, Rada G. Interventions to reduce corruption in the health sector. *Cochrane Database Syst Rev*. 2016 Aug 16;(8). <https://doi.org/10.1002/14651858>
- [4] Kohler, J., Dimancesco, D. The risk of corruption in public pharmaceutical procurement: how anti-corruption, transparency and accountability measures may reduce this risk. *Glob Health Action*. 2020;13(sup1):1694745. <https://doi.org/10.1080/16549716.2019>
- [5] Okewu E., Okewu, J. E-government, e-Governance and e-Administration: A Typology of Corruption Management Using ICTs, in *European Conference on e-Government*, 2015, pp. 203–212.
- [6] Mackey, T., Cuomo, R. An interdisciplinary review of digital technologies to facilitate anti-corruption, transparency and accountability in medicines procurement. *Glob Health Action*. 2020;13(sup1):1695241. <https://doi.org/10.1080/16549716.2019.1695241>
- [7] Heeks R., Mathisen, H. Understanding success and failure of anti-corruption initiatives, *Crime, Law Soc. Chang.*, 2019, vol. 58, no. 5, pp. 533–549,
- [8] Hutchinson E, Naher N, Roy P, McKee M, Mayhew SH, Ahmed SM, Balabanova D. Targeting anticorruption interventions at the front line: developmental governance in health systems. *BMJ Glob Health*. 2020 Dec;5(12). <https://doi.org/10.1136/bmjgh-2020-003092>
- [9] Sommersguter-Reichmann M, Wild C, Stepan A, et al. Individual and institutional corruption in European and US healthcare: overview and link of various corruption typologies. *Appl Health Econ Health Policy*. 2018;16:1–24.
- [10] Kryshtanovych M., Gorban I., Kornat L., Dykyi A., Marushko N. Investment Support for the Digitalization of Socio-Economic Systems in the Context of Ensuring Security. *IJCSNS. International Journal of Computer Science and Network Security*. 2022. 22, 6, 733-738. <https://doi.org/10.22937/IJCSNS.2022.22.6.92>
- [11] Huss, R., Green, A., Sudarshan, H., Karpagam, S, Ramani, K, Tomson, G., eGood governance and corruption in the health sector: lessons from the Karnataka experience. *Health Policy and Planning*. 2010;26(6):471–84. <https://doi.org/10.1093/heapol/czq080>
- [12] Vian, T. Anti-corruption, transparency and accountability in health: concepts, frameworks, and approaches. *Glob Health Action*. 2020;13(1):1694744. <https://doi.org/10.1080/16549716.2019.1694744>
- [13] Kryshtanovych M., Antonova L., Pohrishchuk B., Mironova Y., Storozhev R. Information System of Anti-Crisis Management in the Context of Ensuring National Security.. *IJCSNS International Journal of Computer Science and Network Security*, 2021, 21,12, 719-725 <https://doi.org/10.22937/IJCSNS.2021.21.12.98>
- [14] Wierzynska A, Steingrüber S, Oroxom R, Bauhoff S. Recalibrating the anti-corruption, transparency, and accountability formula to advance public health. *Glob Health Action*. 2020;13(sup1):1701327. <https://doi.org/10.1080/16549716.2019.1701327>
- [15] Kryshtanovych, M., Kotyk, T., Tiurina, T., Kovrei, D., & Dzhand, H. Pedagogical and Psychological Aspects of the Implementation of Model of the Value Attitude to Health. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 2020 11(2Sup1), 127-138. <https://doi.org/10.18662/brain/11.2Sup1/99>