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Цифровизация в системе средств противодействия коррупции

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Аннотация: Статья посвящена обзору текущего состояния цифровизации, направленной на решение актуальных задач противодействия коррупции, как в сфере государственного управления, так и в частном секторе бизнеса. Рассматривается опыт зарубежных стран, а также влияние цифровых технологий на достижение целей борьбы с коррупционными проявлениями. Отмечается, что диджитализация государственного управления становится одним из решающих факторов повышения эффективности системы противодействия коррупции и совершенствования управленческих механизмов, a big data, интегрированные и структурированные по заданным параметрам, позволяют осуществлять законодательную, правоприменительную, контрольно-надзорную и правоохранительную деятельность достоверно и транспарентно. Инструменты работы с большими данными позволяют анализировать процессы, выявлять зависимости и прогнозировать коррупционные риски. Описываются наиболее значимые проблемы, которые на практике осложняют процессы перевода офлайн-технологий в онлайн-среду. Анализируются перспективные направления развития цифровых технологий, позволяющих решить эти проблемы, а также реализовать задачи, ранее казавшиеся недостижимыми. В статье рассмотрены актуальные разработки в сфере сбора и управления большими массивами данных, “Интернета вещей”, современной архитектуры сетей и иных достижений в области ИТ и приведены прикладные примеры возможного их использования в сфере противодействия коррупции. Обосновывается необходимость выделения цифровизации в контексте противодействия коррупции в отдельное направление деятельности, подконтрольное и регулируемое государством.
Ключевые слова: коррупция, безопасность, цифровизация, диджитализация, государственное управление

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DIGITALIZATION IN THE SYSTEM OF ANTI-CORRUPTION MEASURES

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Abstract: The article is devoted to the current state of digitalization aimed at solving urgent problems of combating corruption in the field of public administration and private business sector. The work considers the experience of foreign countries and the influence of digital technologies on the fight against corruption. It is noted that the digitalization of public administration is becoming one of the decisive factors for increasing the efficiency of the anti-corruption system and improving management mechanisms. Big Data, if integrated and structured according to the given parameters, allows the implementation of legislative, law enforcement, control and supervisory and law enforcement activities reliably and transparently. Big Data tools allow us to analyze processes, identify dependencies and predict corruption risks. The author describes the most significant problems that complicate the transfer of offline technologies into the online environment. The paper analyzes promising directions for the development of digital technologies that would lead to solving the arising problems, as well as to implement tasks that previously seemed unreachable. The article also describes current developments in the field of collecting and managing large amounts of data, the “Internet of Things”, modern network architecture, and other advances in the field of IT; the work provides applied examples of their potential use in the field of combating corruption. The study gives reasons that, in the context of combating corruption, digitalization should be allocated in a separate area of activity that is controlled and regulated by the state.
Keywords: corruption, security, digitalization, public administration

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Introduction

The digitalization of public administration is a priority area for the development of the Russian Federation [Bartsits, Sidorenko, Khisamova, 2019], this is confirmed by the National Program "Digital Economy of the Russian Federation" which includes the following federal projects: "Normative regulation of the digital environment", "Personnel for the digital economy", "Information infrastructure", "Information security", "Digital technologies", "Digital public administration"[1].

Anti-corruption measures as one of the public administration priorities, certainly also cannot bypass the challenges of digitalization. The activities of the current National Plan (2018-2020) imply the improvement and updating of existing anti-corruption measures, in particular, the use of digital technologies to ensure openness and transparency of processes, activation of the social mechanism through public discussions, and feedback. One of the tasks is to develop a system of data on legal entities that are brought to administrative responsibility for illegal remuneration (Art. 19.28 of the Code of the Russian Federation on Administrative Offenses), which allows users to automatically receive the information contained in the relevant registry.

The National Plan establishes the use of modern technologies aimed at combating corruption to ensure transparency of processes, minimize intermediation and the influence of the human factor in making managerial decisions, as well as increase the effectiveness of anti-corruption policy.[2]

The current state of digitalization in the field of combating corruption

Today, anti-corruption is one of the actions in the policy of open government within the framework of digitalization. To improve the government transparency, the following measures are being taken[3]: annually, the Internet and the media publish data on the income/expenses and property of civil servants and their family members (including specific positions in the Bank of Russia, state corporations, public law companies, off-budget funds, etc.); the government is steadily enhancing mechanisms for automated control over state expenditures; during the public procurement, an active anti-corruption policy is being pursued – the Unified Information System in the field of procurement (http://www.zakupki.gov.ru), also, there is a mechanism for mandatory public discussion of procurement over 1 billion rubles.[4]

Digital transformation in the field of public administration should increase the transparency and depersonalization of the "citizen-state" interaction and become a serious incentive for the use of the latest technologies for the anti-corruption development. Digitalization helps to create a totally new decentralized platform system of relationships - to exclude intermediary relations in public administration, ensure efficient interaction, and improve the quality of managerial decisions. Today, the digital transformation of public administration is the most significant factor in increasing the efficiency of the anti-corruption system and improving the public administration mechanism.

To clarify the understanding of the digitalization of the anti-corruption system, the following definition is proposed – the digitalization of anti-corruption is a function of public administration. I.e., this is a set of scientifically grounded and interconnected legal, control and supervisory, and technological measures aimed at creating an efficient mechanism for combating corruption and implementing anti-corruption actions in the context of the transformation of the public administration system.

Among **the principal technologies used in the digitalization of the national anti-corruption system** and the transition to "digital government", the following should be selected:

– technologies for operating with Big Data as a basis for the development of data-based management, and an information base for identifying suspicious transactions and illegal transfer of funds - neural networks, the Internet of Things (IoT), predictive analytics, digital traceability, and others;

– distributed ledger technology (specifically, Blockchain) as a data storage system to ensure the reliability, confidentiality, and security of information blocks;

– quantum communications (networks) as a quantum encryption algorithm that provides fast and reliable data transmission.

Priority areas for developing digitalization in the field of combating corruption

The use of big data, integrated and structured with specified parameters on specialized platforms, will allow performing legal, control, and supervisory activities in conditions of availability and reliability of data and transparency of processes. Many countries are developing strategies for operating with data: this can be either a particular model for the entire country (USA, Australia) or part of a general strategy for digital transformation (Sweden, Mexico, Colombia).[5] There are two principal approaches for working with data: Data Release and Data Sharing. Tools for operating Big Data allow us to analyze the execution, operational efficiency of processes, identify previously hidden dependencies, and predict corruption risks. Thus, distributed ledger technologies make it possible to create public data ledgers with an accessible history of all transactions and protect them from unauthorized deletion. And quantum cryptography, in turn, provides the highest

1 [Electronic resource] URL: https://digital.gov.ru/ru/activity/directions/858 (date of access: July 25, 2020).

2 Decree of the President of the Russian Federation on June 29, 2018 No. 378 "On the National Anti-Corruption Plan for 2018-2020" The official Internet portal of legal information. URL: http://publication.pravo.gov.ru/ (date of access: August 17, 2020).

3 Report on the results of the implementation of the Open Government system and prospects until 2024 [Electronic resource]. URL: https://report.open.gov.ru (date of access: July 28, 2020).

4 Decree of the Government of the Russian Federation of August 22, 2016 No. 835 "On epy approval of the Rules for conducting a mandatory public discussion of the procurement of goods, works, services to meet state and municipal needs". Collected Legislation of the Russian Federation. 2016. No. 35. Art. 5352.

5 Digital government [Electronic resource]. URL: https://www.oecd.org/gov/digital-government/ (date of access: July 27, 2020).

degree of information protection, in particular, providing an opportunity for secure communication and cooperation between law enforcement agencies.

The most approved and widespread tool used in most countries over the past decades is the publication of data on information resources on the internet (sites, portals, platforms). The principal function of such data placement is to ensure openness. In the context of anti-corruption, the authorities use information platforms to disclose information on public sector revenues/expenditures and to publish declarations of civil servants and their family members (in particular cases). In many countries, there are internet portals (in Russia, it is gossluzhba.gov.ru/reestr)[6], where a list of persons dismissed due to loss of trust is published. Electronic platforms (websites, portals) are also used to publish information on public procurement and tenders. However, most countries use public procurement portals not only to inform and ensure openness but also to use modern technologies to digitalize the complete procurement cycle.

In addition, the state authorities use the technologies of web sites to conduct open discussions on significant issues. For example, in Russia, there is a Federal portal of draft regulatory legal acts[7] that allows you to find out about current legislative initiatives, take part in the discussion of a draft regulatory legal act, and, if you receive the appropriate accreditation, you can participate in independent anti-corruption expertise. According to the Federal Law of the Russian Federation No. 44-FZ[8], in some cases, an obligatory public discussion of public procurement is held. In theory, public discussions should have an impact on the objectivity of the choice of the state customer; however, in most cases, the whole procedure is only formal and does not totally exclude the corruption component.

This raises a pertinent question about the use of smart contracts to automate management decisions and exclude self-will of some civil servants in the procurement of both public and private nature. The use of smart contracts allows to objectively track the conditions for concluding a contract and independent decision-making based on structured and decentralized data from the distributed ledger system. For example, smart BI recognition tools can easily read information from scans of documents in various formats and use it for analysis along with other data. Despite the advantages of smart contracts using, the highest vulnerability of an automated contracting system is exposed to cyber threats; that is, there is a probability of fraudulent actions aimed at electronic assets and transactions.

In the context of combating corruption, another opportunity offered by modern information resources is feedback. Each citizen can leave a comment or surmise about persons suspected of corruption on a specific site (crowdsourcing platform). The online platform makes it possible to leave an anonymous message about an act of corruption, extortion/bribery, illegal transactions, and other data containing information on corruption violations or suspicions. The task of crowdsourcing platforms is to use the incoming data to increase the transparency of corruption manifestations, as well as to identify and investigate events that indicate the need to develop and implement appropriate anti-corruption actions.

The main problems of such platforms include anonymity, falsity, distortion of information, and motives for discrediting a competitor. For example, the anonymous nature of fraud reports precludes the possibility of testimony in prosecutions. In Russia, there is an analog Internet portal of the Prosecutor General's Office of the Russian Federation (ipriem.genproc.gov.ru/contacts/ipriem/) where anyone can report corruption. The purpose of this portal is not to simply collect and analyze the information received but to conduct a thorough check on each complaint and prepare an appropriate response.

Along with the main task of outreach platforms to ensure transparency of data, the central area for working with Big Data is the financial sector. Financial technologies (FinTech) have been actively developing over the past five years, and today they show technological solutions associated with the use of RegTech and SupTech to digitalize supervisory processes. RegTech's subject area covers the anti-money laundering (AML) projects. SupTech technologies are used to automate and simplify administrative procedures, transfer the communication system of interaction between the regulator, and controlled objects into a digital format. Algorithms based on neural networks and machine learning can organize the structure and conduct an in-depth analysis of primary data to identify violations and illegal operations in the actions of supervised organizations [Mehtiev, 2018].

Another significant area for applying digital technology is budgetary relations. The task of digitalizing budgetary relations is to create an integrated public finance management system and ensure transparency in accountability in the operations of public authorities. The introduction of platform solutions into the budgetary process makes it possible to create an algorithm for a system of interaction and communication and significantly reduce the unlawful spending of budgetary funds. In Russia, it is the Unified portal of the budgetary system "Electronic budget"[9], which was created for the formation, maintenance, and exchange of documentation, as well as for tracking financial and economic transactions at all stages of the budget process. According to the authors, during the digitalization of public administration, further optimization and modification of budgetary relations should be transformed into a "digital budget", where technologies will not act as an auxiliary tool but completely transform the existing system. The German Bank of Development (KfW) is currently using blockchain technology to improve transpar-

6 Gossluzhba. Register of persons dismissed due to loss of trust [Electronic resource]. URL: https://gossluzhba.gov.ru/reestr (date of access: July 27, 2020).

7 Federal portal of drafts of normative legal acts [Electronic resource]. URL: https://regulation.gov.ru (date of access: July 27, 2020).

8 Federal Law No. 44-FZ of April 05, 2013 (as amended on June 08, 2020) "On the contract system in the field of procurement of goods, works, services for ensuring state and municipal needs". Collected of legislation of the Russian Federation. 2013. No. 14. Art. 1652.

9 The unified portal of the budgetary system "Electronic budget" [Electronic resource]. URL: http://budget.gov.ru/epbs/fa-ces/page_home?_adf.ctrl-state=4prk7xpsp_4&regionId=28 (date of access: July 29, 2020).

ency in the use of budget funds in Africa for the first time (TruBudget application).

All of the above technological and platform tools represent a system of "electronic government" ("digital government" in the perspective). Today, in most cases, "e-government" as an integrated indicator (Online Services Index, ICT Infrastructure Index, Human Capital Index), is used to host transparent databases, visualize key information blocks (used as an efficient tool for monitoring accountability), to provide an electronic form for public services and increase the transparency of public administration.

The average indicator of the connection between the development of e-government and the Corruption Perception Index shows a high level of interdependence, thereby confirming the effectiveness of the use of information resources to ensure the transparency of management processes. The Open Data Barometer study[10] found that despite an increase in the number of countries providing open data, politically sensitive information, and other datasets that will be key to accountability efforts are the least likely to be published.

Problems of digitalization in the field of combating corruption and proposed solutions

One of the principal problems of "electronic government" is that open data is entered by government officials and can be imprecise in nature without a specific description, not meeting the qualitative characteristics of the digital format. In this regard, most countries are moving to "digital" (smart) government: modern digital technology allows to move from accumulating versatile data to automating the collection, analysis, and management of information. Because of this, the corruption component based on the introduction of inaccurate, false, distorted information is reduced to a minimum. Also, the issue of protection and confidentiality of personal data is still relevant. Despite the advantages of digitalization in the field of combating corruption, innovative technologies also carry many potential threats, most of which at the moment cannot be analyzed due to the novelty of most digital technologies.

For most countries, the issue of using new technologies to automate management processes remains relevant. This is complicated by many factors: incomparability of data, technical parameters; lack of equipment for the automatic collection of specified indicators; insufficient number of technical specialists in the field of digitalization; lack of a legal framework to regulate emerging relations; lack of an appropriate infrastructure base, and some others. In Russia, this process is complicated by the scale of changes that need to be made and the inequality of economic and technological development of different regions.

Consistency and coherence become an essential aspect of data application. The world experience of the transition to e-government shows the importance of formalizing the subject areas of information interaction and standardizing data for interdepartmental exchange of information (research by Transparency International and the Web Foundation [Vrushi, 2017]). Lack of interoperability of departmental information systems is the main obstacle to the complete digitization of public administration processes and the provision of the necessary interaction in the process of performing public functions, in particular, combating corruption.

The experience of international organizations in creating information interaction (the use of UML-models and XML, the National Information Exchange Model in the USA; basic vocabularies-semantic models in the EU) became the basis for the development of data models in various subject areas, the formation of methodology for modeling and data harmonization, practices of the broad discussion by the community of the experts and publication of data models in open sources. However, the increase in the scale of integration of independent information systems and the concomitant complication of the information environment led to a stricter formalization of exchange models in the context of the relevant field. In world practice, semantic models (Semantic Web) are used to solve such problems [Akatkin, Yasinovskaya, 2018].

A promising solution to the development of secure communication is quantum networks. The use of quantum protection technologies will reduce the risks of security breaches and infringements of data confidentiality. Quantum technologies create a secure encryption network and provide information protection during storage, processing, and transmission of data. The use of quantum technologies is also valid in processing Big Data, in the formation and training of quantum neural networks, in solving optimization problems. At the moment, quantum communications already provide secure data transmission; however, quantum systems may have their own vulnerabilities due to the peculiarities of their device, in this regard, the issue of the security of quantum systems requires additional research. Today, China is the leader in cryptographic quantum communications. The fiber-optic "Quantum Highway" with a length of 2000 km passes through China territory.

A promising task in the field of digitalization of public administration is to ensure digital traceability, that is, equipping objects with embedded technologies (Internet of Things) for constant monitoring and timely analysis of changes in the digital environment. Tracking tools include identification tools, data registers, and digital descriptions of objects [Shklyaruk, 2019]. The main anti-corruption tools include electronic documents, transactional data, and digital footprint. Electronic document flow makes it possible to track each stage in the course of entering/changing data; thus, control and supervisory and law enforcement agencies can track suspicious activity and identify corruption at an early stage.

Speaking of relevance in transitioning to "digital government", we should note the complexity and consistency of the necessary changes: working with big data as an information base should be considered in synergy with the usage of artificial intelligence technologies (Data mining, Machine learning, Fraud detection), a distributed ledger and quantum networks. Breakthrough and end-to-end digitalization technologies begin to work effectively in the anti-corruption field only when technologies and forms of anti-corruption policies work together. Digitalization in the field of combating

10 Open Data Barometer 4th Edition. Global Report, May 2017. The World Wide Web Foundation [Electronic resource]. URL: https://opendatabarometer.org/doc/4thEdition/ODB-4thEdition-GlobalReport.pdf (date of access: July 27, 2020).

corruption should create a digital ecosystem that will encompass legislative, law enforcement, control, and supervisory activities. An integrated approach to the digitalization of the anti-corruption function will allow coordinating and concentrating anti-corruption measures on the implementation of modern technological solutions to increase its effectiveness in the fight against corruption.

Digitalization in private business sector and its role in combating corruption

It should be noted that the tasks of digitalization in the field of combating corruption in private business organizations are in many ways similar to the tasks of public administration – they include increasing objectivity and transparency of the procurement process, automating risk management, resolving conflicts of interest, communicating with persons wishing to report violations related to finances, providing up-to-date information, ensuring data security.

Organizations solve these challenges in different ways. A large organization with the appropriate financial, organizational, and qualification resources, develops its own information platforms, or engages external providers for IT solutions. For the most part, Russian business introduces digital technologies in small portions, without the task of building an integrated digital management system to combat corruption. The digitalization of private business is a promising direction in the development of a national anti-corruption strategy. Its implementation requires the development of measures to support organizations that are not only developers of such IT solutions but also implement them in their activities.

Support measures include:

- organizing specialized educational events;
- offering tax incentives;
- implementing successful public administration digitalization practice in the business environment;
- introducing into law enforcement practice of such a concept as "compliance-procedure";
- minimizing punishment for corruption offenses in case of implementing such control and verification systems in an organization, etc.

Conclusion

In conclusion, we should say that the digitalization process is both a condition and a means for increasing the effectiveness of anti-corruption measures. Therefore, it requires special attention at the state level. The following directions of the national anti-corruption system digitalization are proposed:

- forming and operating national data infrastructure: **creating national data management system**, forming unified standards for working with data, embedding analytical tools for operating Big Data to make managerial decisions, and distributed ledger technologies to ensure their reliability, ensuring staff competencies to work with innovative technologies;
- creating **proactive digital platform for the provision of public services**: the registry model for the provision of public services will reduce administrative mediation and corruption component;
- **digitalizing control and supervisory activities and developing risk-based approach system**: creating digital platform for information-analytical and expert-analytical support of control activities, introducing "digital inspector" and reducing the powers of civil servants so that they can act only within the law;
- **creating digital super-services to ensure transparency of management processes and prevent corruption risks**: introducing integrated platforms for the procurement cycle, electoral process, conflict of interest, licensing and certification, legal proceedings and notaries, the register of financial assets of civil servants;
- **providing secure data transmission system**: using quantum technologies for interdepartmental and international communication, as well as coordinating interaction of law enforcement agencies to conduct activities for preventing and combating corruption;
- **developing a set of measures to support digitalization in the field of private business**, whose organizations can combat corruption.

The most important aspect of digitalization of the national anti-corruption system is the development of a clear and logical nationwide data architecture that will ensure coherence and create unified data management environment. Data is a strategic asset and a significant instrument for digitalizing the anti-corruption function of public administration. The use of professional knowledge and artificial intelligence tools can provide an integrated approach in the fight against corruption, and innovative distributed ledger technologies will reduce corruption risks.

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