

# STATE FINANCIAL CONTROL IN TERMS OF DIGITALIZATION OF THE INSTITUTIONAL ENVIRONMENT

Svitlana Volosovych<sup>1</sup>, Yurii Baraniuk<sup>2</sup>

**Abstract.** *The purpose of the study* is to substantiate the benchmarks of digitization of the institutional environment of state financial control in Ukraine based on foreign experience. The *methods* of qualitative, quantitative, and correlation analysis, graphical modelling, causality tests, comparisons and generalizations were used. *Results.* The essence of the institutional environment of the state financial control is determined and its contradictions are revealed. It is established that in order to overcome the contradictions of the institutional environment of state financial control, it is necessary to resolve the issue of intensifying its digitalization since the use of financial technologies affects the state of governance. Directions of the digitization of the institutional environment of the state financial control were examined through the prism of relations "control-state", "control-enterprise", "control-society", and "control-European Community", with the justification of proposals that should be implemented in the context of isolated components. *Practical importance.* The digitalization of the institutional environment of state financial control should be based on electronic democracy, parameterization of annual reports of controlling bodies, blockchain interoperability, automation of control measures, use of artificial intelligence and cloud computing technologies, services based on open data, interactive methods of information sharing (social networks, television programs, and video blogs), and electronic tax fraud identification services in international trade. *Value/originality.* The level of digitalization of the external institutional environment of the state financial control is higher than the level of digitalization of the internal environment. This creates the basis for the development of the theory of state financial control, as well as the practice of its implementation, which requires appropriate innovative and technological transformations.

**Key words:** state financial control, digitalization, institutional environment, shadow economy, blockchain, big data, cloud technology.

**JEL Classification:** E44, E62, G18

## 1. Introduction

Nowadays, the system of state financial control is undergoing significant changes over the influence of various factors, among which digitization occupies the leading place. At the same time, both the internal institutional environment of the state financial control and the external one are subject to transformation. The introduction of financial technologies into the activities of controlling bodies and controlled entities necessitates the creation of services based on open data, the use of interactive methods of information exchange. This raises the problem of creating conditions for the use of financial technologies, products, and services between state financial control institutions. As a result,

the organization of relations between the controlling bodies changes, on the one hand, with taxpayers, budget spending units, consumers of financial services, and on the other, with the whole of society as a whole.

The purpose of the study is to substantiate the benchmarks of digitization of the institutional environment of state financial control in Ukraine based on foreign experience. Based on the stated purpose, the following research tasks are solved in the article:

- determine the essence of the institutional environment of state financial control and identify its contradictions;
- substantiate the impact of financial technologies as a component of innovation on the state of governance;

*Corresponding author:*

<sup>1</sup> Kyiv National University of Trade and Economics, Ukraine.

E-mail: [volosovych\\_sv@ukr.net](mailto:volosovych_sv@ukr.net)

ORCID: <https://orcid.org/0000-0003-3143-7582>

ResearcherID: N-2394-2016

<sup>2</sup> Kyiv National University of Trade and Economics, Ukraine.

E-mail: [baraniukyurii@gmail.com](mailto:baraniukyurii@gmail.com)

ORCID: <https://orcid.org/0000-0003-1289-2248>

ResearcherID: J-5726-2018

– outline and disclose the main areas of digitization of the institutional environment of state financial control in Ukraine.

Based on the determined essence of the institutional environment of the state financial control, its contradictions were revealed and it was proved that the basis for the formation of the optimal institutional environment of the studied system is the harmonization of interests of the subjects of all its institutions. It is established that in order to overcome the contradictions of the institutional environment of state financial control, it is necessary to resolve the issue of intensifying its digitalization since the use of financial technologies affects the state of governance. Directions of digitization of the institutional environment of the state financial control were examined through the prism of relations “control-state”, “control-enterprise”, “control-society”, and “control-European Community”, with the justification of proposals that should be implemented in the context of isolated components and taking into account best practices.

Research papers of scientists and practitioners, published in Ukraine and abroad, are the information base of the study. The article uses materials of foreign and domestic bodies of state financial control, state authority, transnational corporations, and media enterprises.

The methods of qualitative, quantitative, and correlation analysis, graphical modelling, causality tests, comparisons and generalizations were used in the study. To identify the impact of innovation, technology, investment, crime, and terrorism on the level of corruption, a high level of which indicates the lack of proper functioning of the system of state financial control, we analysed the relationship between the studied components, which were compared based on indicators of international indices. To establish the relationship between the indices, we used the Granger causality test that allows identifying the null hypothesis “X is not the cause of Y”. The criterion for acceptability of the hypothesis is the P-value. Granger tests were performed for one lag. Granger causality was calculated in EViews 7. The obtained data that showed causality was verified using Pearson’s correlation coefficient in MS Excel, which allowed revealing the density and direction of communication.

## 2. Theoretical basis

Studies of both scientists and practitioners in the fields of business, public administration, finance, and innovation are devoted to the problems of digitization of the economy and the development of financial technologies. According to prof. Lang Franz (2018), digitization now requires transformations in production organization, social systems, and public administration, which will predetermine change in the role of the state

since society will be based mainly on self-organization and individual self-realization. This will allow increasing the demand for the use of innovative technologies in public financial control. Prof. Anatolii Mazaraki (2018) argues that the development of financial technologies will result in evolutionary changes in the financial sector that will lead to transformational processes in the economy. This also applies to state financial control, the institutional environment of which is transformed due to the spread of financial technology (Baranovskyi, 2018).

In our view, there are restrictive, reproductive, activity, and structural approaches to understanding the institutional environment. The basis of the restrictive approach is the theory of constraints. Its representatives consider the institutional environment as an orderly set of institutions that determine the constraints of economic entities (Chupryna, 2011). But this is somewhat contrary to the theory of constraints, as it is important not only to identify these constraints but also to effectively manage them. The basis of the reproductive approach (Oxley, 1999) is the value of a set of political, economic, social, and legal agreements to establish the grounds for production and exchange as phases of social reproduction. It does not mention such important components of social reproduction as distribution and consumption. The activity approach (Davis & North, 1970) focuses on the importance of fundamental political, social, and basic legal norms for regulating the economic and political activity. The structural approach to understanding the institutional environment is the most commonly used that it involves the separation of its various components (Lifanova, 2018).

Based on restrictive and reproductive approaches, we define the institutional environment of state financial control as a set of political, economic, social, and legal agreements to identify the constraints on the implementation of control measures and their effective management during the mobilization, distribution, and use of public financial resources.

Restrictions on the implementation of control measures should be determined first and foremost on the basis of legal agreements, but currently in Ukraine, there is no regulation of digitization processes at the national level, there are no defined directions of their development, which does not facilitate the formation of a single information space between business and public financial control bodies. At the same time, already for the last five years, digitization for business has been considered one of the main competitive advantages (Yaremko, 2013).

The results of research on the use of information technology in the state financial control obtained by N. Shyshkova (2018) show that there are opportunities to apply control measures to control objects that are currently inaccessible, there are services, tools, and technologies in the IT-sphere which are consistent with existing requirements (Blockchain, Hashgraph,

Otonomos, BoardRoom, Colony, Paperless), the introduction of which will allow accelerating the processes of digitization of the institutional environment of the studied system. Herewith, there are considerations that the separate technological and computer modernization of the state financial control will lead to the fact that in the future, combining them to create a unified state information base will be practically impossible or will require considerable expenses (Pikhotskyi, 2015). Thus, the directions of digitization of the institutional environment of state financial control in Ukraine should be justified, which is based on the formation of digital information infrastructures.

### 3. Results

#### 3.1. The institutional environment of state financial control: components, contradictions of interaction, and influence of digital innovations and technologies on its development

The institutional environment of state financial control is favourable, provided that the interests of the subjects of all its institutions, in particular, the institute of state financial audit, banking supervision, tax, customs, market, economic, and municipal control, financial monitoring, are coordinated. Among the main contradictions of the institutional environment of state financial control in Ukraine are the following: its insufficient density; the time gap between the implementation of the control measure and the business operation; limited access of controlling bodies to controlled objects; outstripping rates of introduction of digital technologies by controlled entities in comparison with controlling bodies, which leads to incompatibility of software products during the control event; duplication of control functions by different bodies of state financial control. Solving these contradictions will ensure effective interaction of all entities of state financial control and harmonization of their interests. The contradictions that arise both within the individual institute and within the institutional environment as a whole are the basis for its modernization, which is to a certain extent facilitated by the institute of innovative development, which includes financial technology.

The purpose of the digitization of the institutional environment of state financial control is to increase the efficiency of its implementation through the use of financial technology tools. Based on this purpose, its tasks can be defined, which are to harmonize software products used by controlling bodies and controlled entities; increase the transparency of the information of the controlled entities; create a unified state information base; provide cybersecurity when using financial technology tools. The resolution of these tasks will help to overcome the contradictions of the institutional environment of state financial control.

Digitization should be understood not only as the introduction or increase of the use of digital and computer technologies by organizations in a particular industry or country but also as the use of such technologies and data that change or transform economic processes, create an appropriate environment for their implementation. Digitization is carried out with the help of instruments of financial and digital technologies, in particular, big data, the Internet, blockchain.

Financial technologies are the basis for introducing innovations in economic systems while the expansion of the use of their instruments in public administration, an important component of which is state financial control, involves the achievement of goals such as strengthening public confidence in governments, combating corruption, protecting sensitive data in public databases, reducing public spending and increasing the efficiency of their use.

In case of misuse of financial technologies in public administration bodies, there is an imbalance, which currently exists in the internal institutional environment of state financial control in Ukraine, characterized by the lack of interaction with the external environment, which to a certain extent predetermines a high level of the shadow economy, inability to reduce the level of public debt and causes a slowdown in the growth rate of gross domestic product (hereinafter – GDP), Figure 1.

Since 2014, there has been a trend in Ukraine in which the amount of public debt and the level of the shadow economy exceed GDP in total. This indicator is alarming for the domestic economy. It is quite difficult to ensure Ukraine's economic growth under these conditions, and a major instrument capable of overcoming the situation that has arisen should be the activation of public financial control institutions to remove a part of the shadow economy from the tax-free zone.

As can be seen in Figure 1, violations found by the Accounting Chamber of Ukraine and the State Audit Service of Ukraine, which are the highest bodies of control by the parliament and the government in the country, are unable to solve national problems. If in 2010 the volume of violations identified by these bodies was 7.8% of GDP, then during 2011–2018 this figure was only 1-2%, which actualizes the need to modernize the activities of these institutions.

The consequences of imbalances in the institutional environment of state financial control are related to the increase in the level of the shadow economy, which causes a decrease in budget revenues, failure to implement socio-economic development programs, a decline in GDP, and an increase in borrowing. These negative trends lead to an increase in corruption and crime, deterioration of indicators of financial technology, innovation, and investment attractiveness. Herewith, isolated consequences occur not only in the domestic economy but also in many foreign ones.

Thus, application of the Granger causality test made it possible to establish a cause-and-effect



**Figure 1. Found violations of the state financial control bodies and some macroeconomic development indicators of Ukraine for 2009–2018**

Source: compiled by the authors based on data of the Ministry of Economic Development and Trade of Ukraine (2019), Accounting Chamber of Ukraine (2010-2019), State Audit Office of Ukraine (2010-2019), and Minfin Media (2019)

relationship between the Corruption Index (Y) and the Investment Attractiveness Index (X1), the Financial (State) Technology Index (X2), the Crime and Terrorism Index (X3), and the Innovation Index (X4) in Denmark, New Zealand, Finland, Singapore, Sweden, United Kingdom, Lithuania, Latvia, Estonia, Poland, USA, Brazil, Ukraine, India, China, Canada, Australia, Belarus, Bahrain, and Kuwait during 2014–2018. The countries were selected based on expectations to find a correlation in the surveyed indices, and Bahrain and Kuwait were selected

because of the highest volatility of the corruption index in the analysed period (Table 1).

The results disprove the notion that intensification of technology adoption causes reducing corruption. Out of the twenty countries, this statement is confirmed only in Ukraine. In China, by contrast, the decline in corruption has led to a rise in technology during 2014–2018. At the same time, in Estonia, the slowdown in the introduction of innovations, which include financial technology, has led to a decline in corruption, which has taken place amidst the intensification of

Table 1

**Countries that have a relationship between the corruption, investment attractiveness, financial (state) technology, crime and terrorism, and innovation indices in 2014–2018**

Country	Cause	Result	Correlation coefficient	Relationship between indicators
Ukraine	Growth of the Financial (State) Technology Index	Growth of the Corruption Index (reducing corruption)	0.9041	High, direct
Denmark	Growth of the Corruption Index (reducing corruption)	Decrease in the Financial (State) Technology Index	0.8089	High, inverse
China	Growth of the Corruption Index (reducing corruption)	Growth of the Financial (State) Technology Index	0.6218	High, direct
Belarus	Growth of the Crime and Terrorism Index (reduction of the phenomenon)	Decrease in the Corruption Index (the growth of corruption)	0.9082	High, inverse
Estonia	Decrease in the Innovation Index	Growth of the Corruption Index (reducing corruption)	0.6793	High, inverse
Sweden	Decrease in the Innovation Index	Growth of the Corruption Index (reducing corruption)	0.5682	High, inverse
New Zealand	Decrease in the Corruption Index (the growth of corruption)	Decrease in the Innovation Index	0.9554	High, direct

Source: compiled and built by the authors based on data of Transparency International (2019), E-Government Development (2019), Vision of Humanity (2019), Global Innovation (2019) & Investment attractiveness (2019)



e-government in the country. In Sweden, a decline in innovation has led to a decline in corruption, and in New Zealand, a rise in corruption has led to a decline in innovation. An interesting result was found in Belarus, where the growth of corruption was greatly influenced by the reduction of crime rather than the growth of technology or innovation. In Denmark, a decline in corruption affected a decline in technology.

The results show that a decrease in the innovation index in two countries out of twenty has led to a decrease in corruption, and in one country growth of technology has reduced corruption. The corruption decline in two countries has differently affected the change in financial technology, and in one country the growth of corruption has led to a decline in innovation.

In view of the obtained results, let us consider the digitization of the institutional environment of the state financial control through the interaction of its internal with the external environment, the main components of which are:

- “control-state” (interaction of public financial control bodies with each other and with other public authorities);
- “control-enterprise” (interaction of public financial control authorities with economic entities and households);
- “control-society” (interaction of public financial control bodies with the public);
- “control-European Community” (interaction of public financial control bodies with organizations and governments of European Union countries).

Consider the isolated blocks of digitization of the institutional environment of state financial control in more detail.

### **3.2. Digitization of state financial control in the direction of “control-state”: electronic democracy, parameterization of annual reports of controlling bodies, and blockchain interoperability**

The state of digitization of the institutional environment of state financial control in the direction of “control-state” in Ukraine is unsatisfactory, in particular, in the conditions of deterioration of technical means, lack of new software in the control bodies, the issues of their updating are not considered. As the foreign experience shows, the provision of public services over the Internet strengthens the credibility of governments and reduces the level of corruption. In particular, Uruguay wants to initiate the provision of public services via the Internet, Argentina wants to become a paperless government, Panama is developing a program to place 450 key services on the Internet. In Brazil, the Public Spending Observatory uses extensive analytical tools to identify potential procurement fraud. So, in 2015, over 120,000 contracts were reviewed, of which

violations of 104 million USD were identified in more than 7,500 cases (Moreno, 2017). Considering that the corruption index for Ukraine is high (Transparency International, 2019), digitization will to some extent contribute to overcoming this negative phenomenon.

An important tool in the fight against corruption and the loss of budgetary resources is the digitization of payments from the budget, including social assistance, pensions, and healthcare payments. This is relevant against the background of the fact that physical payments from budgets in developing countries result in the loss of more than 110 billion USD annually. So, the Government of India has saved almost 9 billion USD for less than four years on social welfare payments through electronic transfers of direct payments. In France, within a program designed to combat tax fraud, a permit to use tax revenue data is approved (Wald, 2018). Use of payment data helps to identify suspicious and fraudulent transactions, inconsistency between revenue and expenses, which can reduce budget losses.

In Ukraine, according to the Concept of E-Governance Development, approved by the Cabinet of Ministers of Ukraine, by 2020 the government should switch to electronic interaction with citizens and business and provide them with 100 administrative services through the Internet. However, online help is only available if there is an electronic digital signature that is currently received by less than 5% of the population. The online subsidy application used by every tenth Ukrainian remains the most popular service in Ukraine (Segodnya, 2018).

In terms of economic digitization, the issue of confidentiality of personal data that is accumulated, processed, shared, or stored becomes relevant. Therefore, data breaches are becoming a problem not only for the non-public sector but also for the public one. For example, in 2017, in the USA, data of 143 million Americans was stolen from the *Equifax* database, and in 2015, data of more than 20 million public employees was stolen from the HR database (Boeding, Czerwinski & McConkie, 2019).

The path to the digitalization of state financial control in the direction of “control-state” should lie through the use of information and communication and digital technologies to create a single digital system for accumulation, storage, and exchange of data. The basis of such a system should be an electronic register, which will be formed by the results of control measures and will contain information about the controlled objects and bodies of control. In Ukraine, the Better Regulation Delivery Office has developed a Pilot Module for the State Oversight (Control) System to launch its Integrated Automated System. Herewith, from January 1, 2019, only those controllers who have check-lists of risks of the company’s activity in case of unscheduled inspections can come to the enterprises, and scheduled inspections are carried out in accordance with the

annual schedule, which is published on the website of the inspection portal of the State Regulatory Service of Ukraine, which allows economic entities to find out which control bodies and at what time period will carry out appropriate control measures (Hroisman, 2018).

The development of e-democracy in the institutional environment of state financial control allows for the annual reports of control bodies to be produced in a single, defined format, which is not happening in Ukraine yet. Implementation of the reports of the control bodies in a unified defined format will allow them to be checked and evaluated by a higher control body, contribute to strengthening information interaction between the control bodies, and allow for joint planning of further control measures.

A promising direction for the development of state financial control in Ukraine is the formation of a single information system based on blockchain technology. Blockchain interoperability enables automation of state financial control over the reflection of business transactions in accounting systems. To do this, it is necessary to identify all possible financial transactions in the context of the Chart of Accounts, separately for the budget sector, banking institutions, private business entities, and public organizations. This will allow matching the displayed transaction by both buyer and seller. As a result, reliable accounting records between counterparties will make the process of state financial control more transparent, shorten the time of its carrying out, and allow exchanging information between public financial control bodies and other state institutions.

### **3.3. Digitization of state financial control in the direction of “control-enterprise”: automation of control measures, use of artificial intelligence technologies and cloud computing**

The content of the digitization of state financial control through the prism of “control-enterprise” is to create an information environment capable of ensuring that the control measures cover the controlled objects. However, this is not possible today, one of the reasons is the lack of updated software in the public financial control authorities, as well as outdated equipment. According to a report by the Accounting Chamber of Ukraine for 2017, information technologies and systems in use were introduced in 2004, only 17% of computer equipment can be classified as modern and 46% is worn-out (Accounting Chamber of Ukraine, 2018).

From this, it follows that the lack of updated software and equipment in the public financial control bodies results in a decrease in the level of their interaction with the business environment. According to the Ministry of Economic Development and Trade of Ukraine, there have been a number of changes in the “control-enterprise” environment that would have a positive impact on their

interaction. In particular, electronic-digital documents were introduced in the civil circulation, conditions for the functioning of the institute of authorized economic operators were created, tools for online registration of enterprises as taxpayers were developed (Ministry of Economic Development and Trade of Ukraine, 2018).

The State Fiscal Service of Ukraine has taken a course on information automation of relations with taxpayers. For this purpose, electronic services have been introduced, which simplify tax and customs procedures and improve business conditions. Among them: “Electronic Cabinet”, which contains information about the status of payments with budgets; “Registry Information”, which discloses taxpayer records; “Customs Statistics”; “Know More About Your Business Partner”; “Electronic Reporting”; “Electronic Customs”; “Citizens’ Declaration”; others.

The State Treasury Service of Ukraine for the digitization of relations in the “control-enterprise” system has introduced remote electronic reporting systems for managers and recipients of budget funds “Client of the Treasury – Treasury” and AS “E-Reporting”. New systems of cryptographic security and electronic keys have already been implemented, in particular, “SecureToken-337K”, “CryptoCard-337”, “Almaz-1K”, “Krystal-1”.

In 2018, the State Service of Export Control of Ukraine received a release version of the Electronic System for State Export Control, which was developed with the assistance and funding of the Export Control and Related Border Security Program of the United States Department of State and the Ministry of Foreign Affairs of Estonia. This system enables economic entities to apply electronically to the State Service of Export Control for administrative services. For the State Service of Export Control, this is a real opportunity to carry out state financial control online, to establish constant communication with customs authorities, to provide automation of the mechanism of reporting control.

Recently, cloud-based services, online file storage, database hosting, virtual accounting and financial applications are gaining in popularity at enterprises. This indicates that the business is looking for ways to digitize its business processes. The number of enterprises providing electronic invoices is increasing, so in 2017 their share was 65.5% of the number of enterprises using computer equipment (State Statistics Service of Ukraine, 2019).

Currently, the institutionalization of the institutional environment of state financial control in Ukraine is gradually progressing, as evidenced by the still low rates of purchase of cloud computing services by domestic enterprises, their value in 2017 amounted to 10.3% (State Statistics Service of Ukraine, 2019). At that time, in the European Union, in 2018, the average volume of enterprises used cloud computing services –

27%. According to Eurostat (2018), the largest share of enterprises purchasing them is in Finland (65%), Sweden (58%), Denmark (56%), and the least is used in Romania (12%), Turkey (11%), and Bulgaria (9%). In view of the gap between Ukraine and the EU countries in the share of enterprises that have started using cloud computing technologies, it is necessary to give impetus on the part of the state financial control authorities to use them, to offer services that will require connection to such technologies.

Regarding the future “control-enterprise” digitization, it should be noted that the main technologies used by business entities to which the activities of public financial control bodies need to adapt are software products for big data analytics and processing, applications in clouds, internet stuff, next-generation mobile applications, artificial intelligence (Dell Technologies, 2019).

Artificial intelligence technology is important for public financial control authorities. It is so because in the context of decentralization reforms, the digitization of state financial control becomes even more urgent, as it is necessary to ensure scaling, that is, to enable control measures to be carried out regardless of the geography of the controlled entities. The introduction of artificial intelligence technologies in state financial control will allow assessing the compliance of a controlled entity and accounting data without the physical presence of the auditor.

### **3.4. Digitization of state financial control in the direction of “control-society”: services based on open data, use of interactive methods of information exchange (social networks, television programs, and video blogs)**

The digitization of state financial control in the direction of “control-society” requires systematic changes since single facts of the detection of abuses occurring in the mass media or on the websites of individual control bodies do not ensure bringing the detected violations to their elimination, and as a result, the funds are not compensated.

An analysis of the digitization of the institutional environment of state financial control in the direction of “control-society” showed that the State Service of Export Control of Ukraine has not yet filled the resource on the page created on the social network *Facebook*. However, all public financial control authorities have websites that provide information on financial irregularities identified and publish an annual report. In the conditions of functioning of at least 15 bodies of state financial control, as represented by prof. Sergey Bardash (2016), a single platform that summarizes information about their activities as a whole has not yet created. Now, there is a real problem with the lack of access to the data that needs to be open. A striking example of how businesses and public authorities have

found one of the ways to improve efficiency through access to open data – a public procurement system *Prozorro* is created.

The practice of the countries of the European Union shows that public financial control bodies apply different methods of communication with the public. The State Audit Office of Latvia started work on new public relations initiatives in 2015 and launched a video blog on *YouTube* aimed at informing the public about financial irregularities. Through the blog, the findings are disseminated in a professional news format at the same time as the report of the control measure. This form of informing is gaining popularity in the community and making reports understandable to citizens (State Audit Office of Latvia, 2015). Another direction of establishing public relations, already in Lithuania, is to cover the results of control measures by leading television news channels on regional channels, which enhances the authority of public financial control bodies and helps to gain a high level of public recognition (EUROSAI innovations, 2015).

It is quite difficult to implement the initiative to cover the results of control measures by presenters of television news in Ukraine in conditions when the law does not allow photo and video fixation of the process of implementation of state financial control measures. However, a bill in the Verkhovna Rada of Ukraine (2018) has already been registered that will confer this right. In addition to granting the state financial control authorities the photo and video fixation of the control process, it is proposed to introduce access to automated information and reference systems, registers and databases, which are held by public authorities, which will allow the control authorities to obtain information about the controlled object and expand their capabilities.

### **3.5. Digitization of state financial control in the “control-European Community” direction: electronic tax fraud identification services in international trade**

Digital technologies are changing the environment of state financial control, and now it is necessary to create a single information space not only within Ukraine but also in all European Union countries and countries with which the Association Agreement is signed. In both the European Union and Ukraine, today there is a gap between online and offline public financial control environments. This gap is manifested, for example, in the impossibility to exercise state financial control over the growing volumes of e-commerce. The European Commission has already adopted the Digital Market Strategy, which contains provisions to improve access to digital goods and services, to create an information environment in which digital networks can develop, and to develop digital technologies as a driving force for progress.



At the same time, it is important to ensure access to electronic trading platforms of public financial control authorities for the identification of tax-free zones. The development of digital technologies should help bring the economy out of the shadows and eliminate tax fraud that EU governments are fighting. Currently, the most common frauds in the EU are related to value-added tax. According to the European Commission, losses in the EU Member States amounted to 147.1 billion euros in 2016, which is 12.3% of the total expected revenue from this tax. Value-added tax gap in the EU Member States ranged from 0.85% in Luxembourg to 35.88% in Romania (Taxation and Customs Union, 2019).

In terms of the development of Ukraine's trade relations with EU countries, it is necessary to start actively introducing innovative tax control instruments. Participation in the *Fiscalis* 2020 program, which is an EU cooperation program that creates an environment for the exchange of information and experience among Member States' control systems, should be a promising area of interaction of the system of state financial control of Ukraine. The Ministry of Economic Development and Trade of Ukraine has already identified this need but participation has not yet taken place.

Important achievements throughout the operation of the previous *Fiscalis* programs are the provision of access to a common European information systems communication network to identify tax fraud. This program is important not only for the further development of the system of state financial control in individual countries but also for the institutional development of EUROSAL. In Ukraine, in 2015, a system of electronic administration of value-added tax was introduced to combat tax fraud. Some EU countries such as Italy, Romania, and Poland are introducing a mechanism for the distribution of VAT payments. At the same time, unlike the Ukrainian system of electronic administration of value-added tax, the funds that will be on the VAT accounts in the Polish banks are charged with interest for their use.

In order to combat tax fraud in the EU, information exchange procedures between taxpayers and regulatory authorities are used, including: *KYC* (Know Your Counterparty), *KYT* (Know Your Taxpayer). It is worth noting that the *KYC* and *KYT* procedures are not standardized and may differ depending on the type of taxpayer, their activity, the cost of transactions, and so on. In Ukraine, the State Fiscal Service of Ukraine has launched similar electronic services, which allow finding out additional information about counterparties, but a promising direction should be the centralization of information systems in the EU countries, which will accumulate all data from the Member States, including Ukraine.

#### 4. Discussion

The transformation of the institutional environment of state financial control towards digitization has its strengths and weaknesses, opportunities and threats.

Strengths of digitization of the institutional environment of state financial control are combating corruption, increasing public access to administrative services, counteracting tax evasion, and reducing public administration costs.

The weaknesses of the study are the loss of social taxes by the state in the automation of processes due to the release of labour, the inability to use online administrative services to individuals who do not have access to the Internet.

The possibilities of digitization of state financial control are the provision of free access to information on the results of control measures, transformation of tax administration based on automatic calculation and real-time tax payment, strengthening public control over public spending and its participation in budgeting programs, development of interconnection between the processes of taxation, supply, and marketing.

Threats are increasing cybercrime risks, reducing the number of public and municipal finance employees, insufficiency of personal and corporate data protection.

#### 5. Conclusions

1. Based on restrictive and reproducible approaches to understanding the institutional environment, it is determined that the institutional environment of state financial control is a set of political, economic, social, and legal agreements to identify the constraints on the implementation of control measures and their effective management during mobilization, distribution, and use of public financial resources.

2. Reconciling the interests of subjects of public financial control institutions is the basis for shaping its optimal institutional environment. For this purpose, in Ukraine, it is necessary to overcome the contradictions of the institutional environment of state financial control, in particular, and to resolve the issue of intensifying its digitization since the proper use of financial technologies affects the state of governance and contributes to the reduction of the level of the shadow economy, leads to strengthening of citizens' confidence in the government, counteracting corruption, protecting sensitive data in government databases, reducing government spending and increasing their efficiency.

3. Directions of the digitization of the institutional environment of the state financial control were examined through the prism of relations "control-state", "control-enterprise", "control-society", and "control-European community".

4. The digitization of relations in the direction of "control-state" should be based on electronic democracy, the content of which is the coherence of control powers



between the branches of state power and public financial control bodies. E-democracy should ensure that the annual reports of control bodies are drafted in a single, defined format that is understandable to the public and allows the results of various control bodies to be compared. Blockchain is a technology capable of ensuring the functioning of the public financial control system, the interoperability of which will enable the interaction of the components of its institutional environment.

5. The directions of the digitization of the institutional environment of the state financial control through the prism of the “control-enterprise” relations are the automation of control measures, the use of artificial intelligence technologies and cloud computing. Artificial intelligence technology will allow establishing compliance of a controlled entity and accounting data on a remote basis, and the increasing popularity and practicality of cloud computing at enterprises create the conditions for the use of this technology by control bodies.

6. The introduction of digital technologies in the institutional environment of state financial control in the direction of “control-society” reveals the need to

create services based on open data, use of interactive methods of information exchange (social networks, television programs, and video blogs).

7. Digitization of state financial control should be carried out in the direction of “control-European Community” through electronic services of identification of tax fraud in international trade. To achieve this goal, it is necessary to start actively introducing innovative tax control instruments; the EU countries’ experience of using these instruments should be adopted. Participation in the Fiscalis 2020 program, which is the EU’s cooperation program, should be a promising area of interaction of the system of state financial control of Ukraine.

The development of the institutional environment of state financial control takes place in conditions where the digitization of business, society, individual public authorities or international organizations is faster than domestic control bodies. These results create the prerequisites for the development of the theory of state financial control, as well as the practice of its implementation, which requires appropriate innovative and technological changes.

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