

Conference Paper

Methods and Mechanisms of a Subsystem Formation of Financial Monitoring of Suspicious Operations in Commercial Bank

Kolychev V. D.¹ and Solovov D. V.²

¹National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Kashirskoe shosse 31, Moscow, 115409, Russia

²CB Delta Bank, Moscow, Russia

Abstract

In this paper the peculiarities of the contour formation of the suspicious operations proceeding in commercial bank using AML/CFT (Anti-Money Laundering/Counter-Financing of Terrorism) issues accepted in present time in practical sphere of commercial organizations are presented. The structure of the AML/CFT section in commercial bank is presented which is structuring on the basis of the business-applications infrastructure using special automated bank software. The attention is paid to perspective blockchain technology which is taking wider application during implementation and exploitation of IT-projects related to electronic banks' services.

Keywords: Blockchain, financial monitoring, business-application, front-office, commercial bank, register of remote data, transaction

Corresponding Author:

Kolychev V. D.

VDKolychev@mephi.ru

Received: 11 December 2017

Accepted: 20 January 2018

Published: 13 February 2018

Publishing services provided by
Knowledge E

© Kolychev V. D. and Solovov D.

V.. This article is distributed under the terms of the [Creative Commons Attribution License](#),

which permits unrestricted use and redistribution provided that the original author and source are credited.

Selection and Peer-review under the responsibility of the FinTech and RegTech: Possibilities, Threats and Risks of Financial Technologies Conference Committee.

1. Introduction

The problem of detection and monitoring of suspicious operations is especially actual nowadays according with necessity of the clients of commercial organizations proper identification. Technologies used in this sphere are still being formed, however application of perspective identification methods and technologies enables to reduce risks [3] of liquidity and commercial firm reputation in the fast changing environment and also will contribute to the increasing of common financial sustainability of credit organization.

One of the international tendencies of the control-revision functions of the state development in the sphere of analysis and monitoring of commercial banks' activities is searching and designing of new mechanisms based on application of IT-technologies aiming to prevent illegal activities in the margins of financial subsystem with minimal intervention in private citizens life and organizations operations [4].

 **OPEN ACCESS**

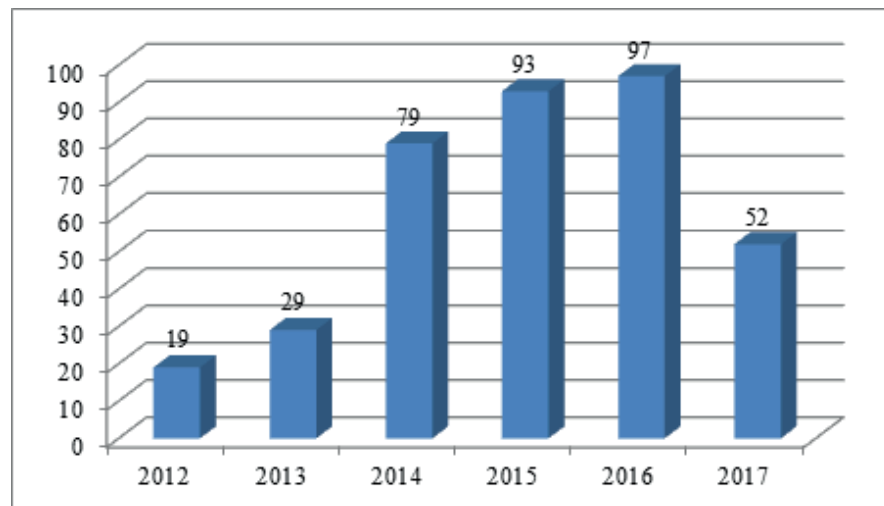


Figure 1: Dynamics of reduction of number of commercial banks in the Russian Federation.

Taking into consideration that the most of illegal operations are processing through the financial-credit sphere [4], the solving of optimizations tasks of commercial banks activity is largely achieved by the application of financial monitoring technologies.

Nowadays technologies of financial monitoring are structured in commercial bank by the help of financial-law categories and also in the form of ordered system of moderation to the financial-economic relationships of counterparties forming effective mechanism, receiving standard fixation in activity of the commercial organization on the basis of anti- money laundering and to counter-financing of terrorist activity (AML/CFT).

In commercial banks solving of the tasks of financial monitoring acquires still big relevance especially during the post-crisis period when the volumes of illegal operations are increasing and also penetration of the money received in the criminal way into financial institutions increases. In the conditions of an acute shortage of liquidity the Russian and foreign financial institutions face a problem of attraction of additional resources which partly could be received as a result of money laundering [3].

The involvement in the doubtful operations, withdrawal of capital, doubtful accounting and financial statements is the main reasons for revocation of licenses of the commercial banks. It should be noted that in 2017, 52 licenses are revoked, in 2016 the Central Bank (CB) revoked the licenses of 97 commercial organizations, in 2015 – 93 licenses, in 2014– 79 licenses, in 2013 – 29 licenses, in 2012 – 19 licenses. Dynamics of reduction of number of licenses is presented in Figure 1, at the same time for the last four years about 350 commercial organizations have been liquidated.

It should be noted that the main criterion having significant effect on process of revocation of license is the high involvement of commercial banks into carrying out of doubtful operations which are the subject to financial monitoring.

2. Material and methods of investigation

2.1. Organizational and methodical maintenance and functional model of financial monitoring department in commercial bank

The main normative documents regulating activity of departments of the commercial banks specializing in the analysis of the doubtful operations falling within the scope of anti- money laundering and counter-financing of terrorist activity (AML/CFT) are the following federal laws and normative legal acts of the Bank of Russia:

- The federal law, dated 8/7/2001 No. 115-FL "About counteraction of legalization (laundering) of income gained in the criminal way and to terrorism financing".
- The federal law, dated 7/10/2002 No. 86-FL "About the Central Bank of the Russian Federation".
- Position of the Bank of Russia, dated 10/15/2015 No. 499-P "Identification of clients, representatives of the client, beneficiaries and beneficial owners for AML/CFT".
- Position of the Bank of Russia, dated 8/29/2008 No. 321-P "An order of submission of data in FFMS - Federal Financial Monitoring Service (Rosfinmonitoring)".
- Position of the Bank of Russia, dated 3/2/2012 No. 375-P "About requirements to rules of internal control of credit institutions for AML/CFT".
- The indication of the Bank of Russia, dated 8/9/2004 N 1485-U "About requirements to preparation and personnel training in credit organizations".
- The indication of the Bank of Russia, dated 8/9/2004 N 1486-U "About qualification requirements to the special officials responsible for observance of rules of internal control for AML/CFT and programs of its implementation in credit organizations".
- Code of Administrative Offences (Administrative Code), Art. 15.27.

The system of financial monitoring existing in Russian credit organizations conforms to the international standards in the fields of creation of the AML/CFT effective system at a separate financial institution [9], which provide existence of four basic elements,

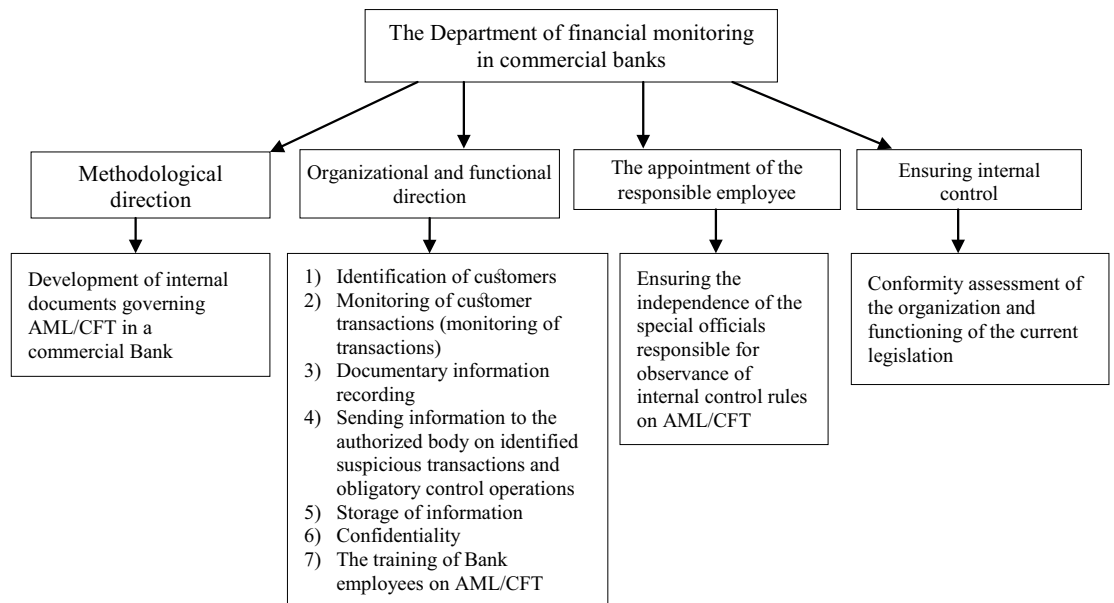


Figure 2: Functional specialization of financial monitoring department in commercial bank.

among them are: 1) organizational and functional component; 2) methodological component; 3) appointment of the special official; 4) organization of system of internal control, Figure 2. Organizational and functional component represents a standard basis of system of financial monitoring of credit institution, it is a set of the internal documents regulating activity of credit institution in the sphere of AML/CFT.

Development of standard and legal foundation of AML/CFT department in the credit organization includes creation of rules of internal control, duty regulations of employees, the statute of the division which are developed on the basis of the state normative-legal base in the sphere of financial monitoring and represent a local legal basis for activity of a commercial bank (as a rule it includes methodological activity of financial monitoring department).

Organizational and functional activity of department of financial monitoring includes a package of measures, aimed at constructing of AML/CFT subsystem in a commercial bank. The following component of system of financial monitoring is a legal status of the responsible (the special official) in the AML/CFT sphere which activity is directed to the organization and providing functionality of internal system of financial monitoring in a credit organization.

The last fourth component of system of financial monitoring is the system of internal control in credit organization which is a complex of control activities by means of which it is possible to estimate efficiency of functioning of financial monitoring system and its compliance with the current legislation. The necessity of existence of effective system

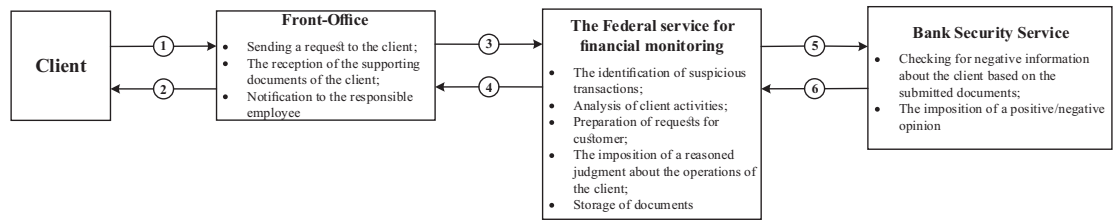


Figure 3: The typical scheme of the sequence of actions of interactions of commercial bank divisions regarding the identification of doubtful operations.

of financial monitoring as component of internal control is caused by the interest of a commercial bank to exclude any participation in illegal activities for laundering of criminal income or financing of terrorism.

We will consider in more details the scheme of work of the organizational and functional direction taking into account structural features of information exchange of divisions. The typical scheme of the sequence of the operations performed in divisions of a commercial bank regarding the identification of doubtful operations, in particular identification of the client at the request of a commercial bank is presented in Figure 3.

Explanations of Figure 3 contain the description of iterative interaction of divisions when performing a complex of the operations related to the analysis of information and identification of the client:

1. the request of the client to bank, granting/refusal in providing documents;
2. informing client about an opportunity of banking services provision;
3. information request about the client through the bank service of financial monitoring;
4. submission of information from service of financial monitoring about the client;
5. forwarding the client’s documents to the security service of bank for verification;
6. providing information from the bank security service as a result of verification.

The detailed flowchart of an algorithm of identification of the client and the analysis of information, taking into consideration a factor of existence of suspicious operations from the client is presented in Figure 4. The description of the client identification procedure and the analysis of information taking into consideration a factor of existence of suspicious operations:

1. Receiving a request for verification of the client in the existing client database of a commercial bank;

2. If the client is absent in the database, it is necessary to provide a check on the client possible AML/CFT threat:
If the threat of actions of AML/CFT is absent, it is necessary to make assessment of solvency of the potential borrower;
If the threat of actions of AML/CFT is present, detailed verification of information about the client and requests of additional documents in authorized divisions begins;
3. If by results of a detailed verification of the client of participation in AML/CFT there are no suspicions, the check of a client credit history is provided by requesting the databases of credit histories - BCH (Bureau of credit histories), otherwise in case of confirmation of participation in AML/CFT activity the client rejects the services and the collected facts are reported to the authorized organizations (authorities).

In Figure 5 the expanded scheme of interaction of participants of monitoring process and the analysis of suspicious operations in a commercial bank, taking into consideration interaction between the institutional agents on the basis of collecting the most completed and authentic information about participants of the realized transactions, is presented.

Attracting additional public authorities to the analysis of informational massifs, it is possible to build the system of information monitoring, using various criteria to correspond the operations to the amount of doubtful and trackable ones.

It should be noted that from the point of view of financial monitoring service of a commercial bank the operations in a zone of special attention are: illegal cashing, the withdrawal of capital abroad, identification of beneficiaries, identification of public officials, determination of the true nature of the client business and the purposes of his visit to the bank.

Figure 6 shows the criteria for classifying banking transactions categorized as suspicious.

2.2. Application of blockchain technology for identification of suspicious operations in a commercial bank

As it is shown in Figure 5 the volume of information circulating in AML/CFT subsystem of commercial bank, taking into consideration analyzable information concerning with carried-out transactions, is essential as it affects also the external databases in relation to credit organization.

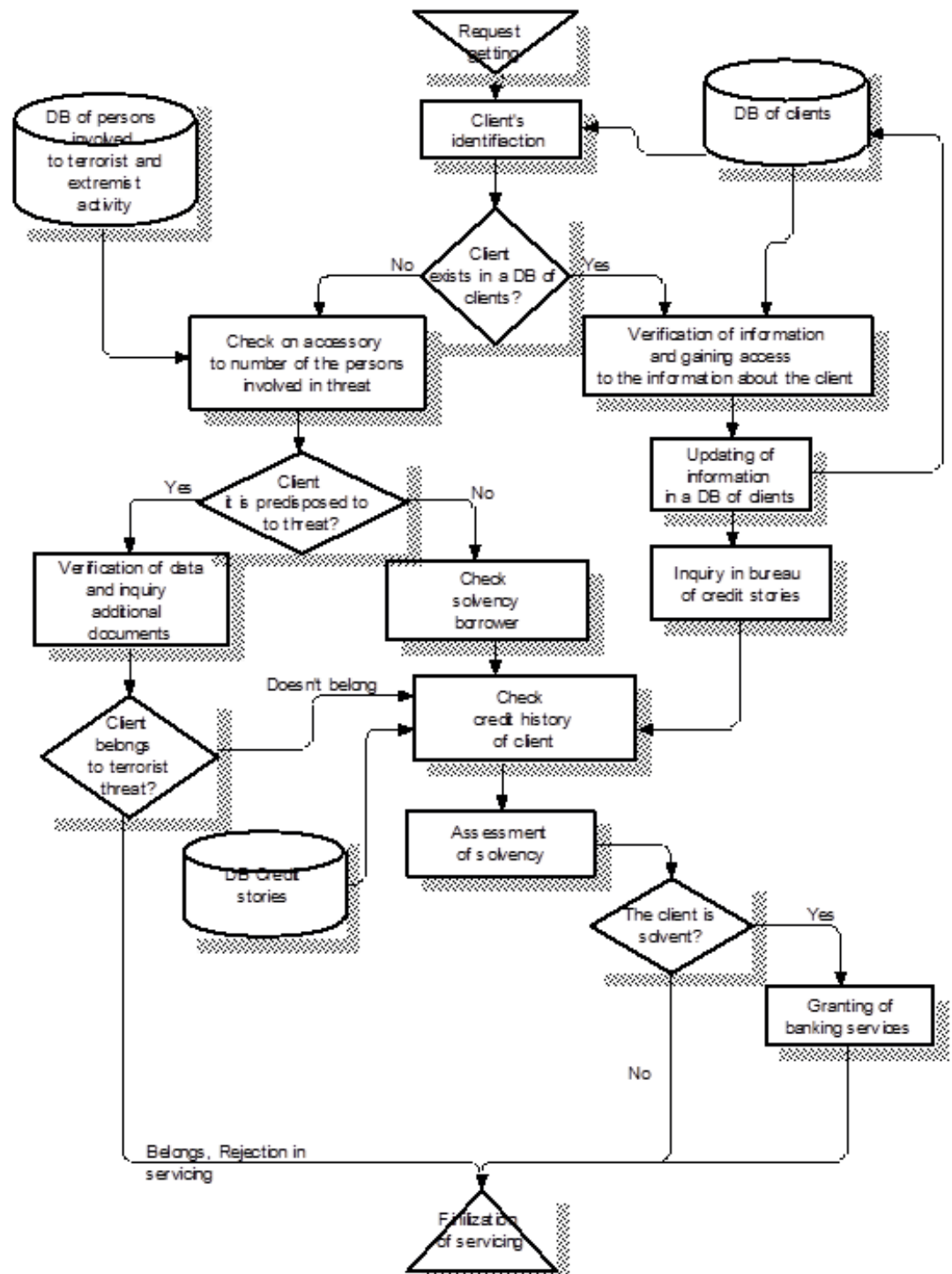


Figure 4: Identification of the client and the analysis of information taking into consideration the existence of the factor of suspicious operations.

Application of the integrated blockchain technology [1, 2] in a commercial bank enables in timeliness manner consider and concentrate diverse information within the margins of distributed data-processing center.

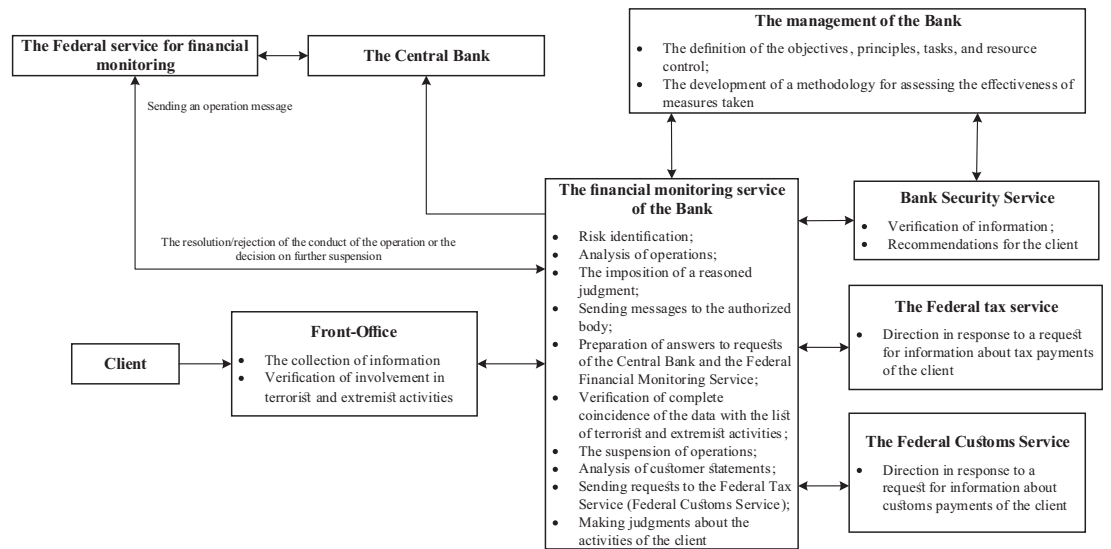


Figure 5: The system of interaction of financial monitoring process participants on the example of service of commercial bank financial monitoring.

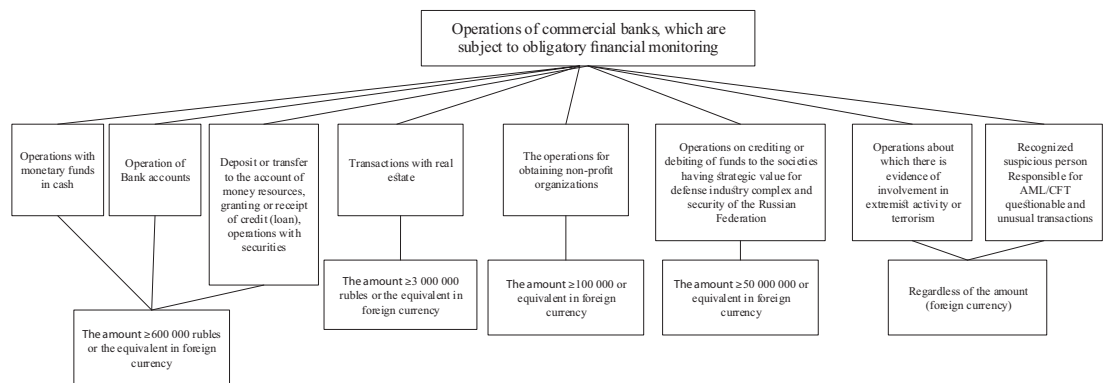


Figure 6: Criteria of reference of financial transactions to the suspicious category and subject of obligatory control.

It is necessary to say that the blockchain technology [5] for the banking sector applications is relatively new which up to the present is in implementation, Figure 7.

Blockchain [1, 5] (from the English blockchain – “a circuit of blocks”) is the technology of distributed databases based on permanently prolongable chain of records. It is sustainable against falsification, revising, cracking and theft of information.

Nowadays, applying new business models on the basis of the commercial organizations, the specialized consortia, aimed at integration of efforts and increasing in efficiency of blockchain technology applied at commercial banks, especially from the development of modern IT infrastructure point of view [8] are formed.

In 2015, 45 largest international banks have created the consortium “R3” which is engaged in the development of blockchain technology application in the financial sector.

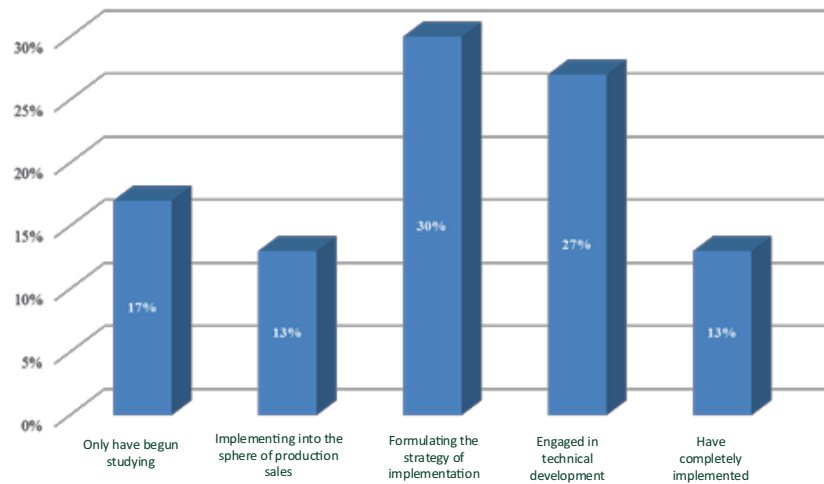


Figure 7: Dynamics of blockchain-technology implementation in the banking sector in 2015-2017.

Until the end of 2017 80% of world credit institutions are planning to implement technology of the distributed registers in their activity.

The possible sphere of blockchain technology application in the commercial structures is a technology of user identification in a distributed database that is especially relevant for carrying out transactions with mini-and micro payments.

Identification of users is especially demanded in relation to necessity of monitoring of suspicious operations in the sphere of AML/CFT.

3. Results

Therefore, a perspective task in the context of blockchain technology implementation in a commercial bank is the creation of the reliable procedure of identification of bank clients, allowing potential decrease of the amount of user verifications during multiple requests to the credit organization.

Verification of the client by tens and hundreds of banks, participants of the system, could automatically simplify it for other participants by using the blockchain. In Figure 8 the set of the operations which are carried out by the services of commercial banks on the basis of blockchain technology and without results of its implementation is presented.

In case of blockchain technology used by a commercial organization verification of the client by several credit institutions will allow to significantly reduce risks of performance of suspicious operations with financial means.

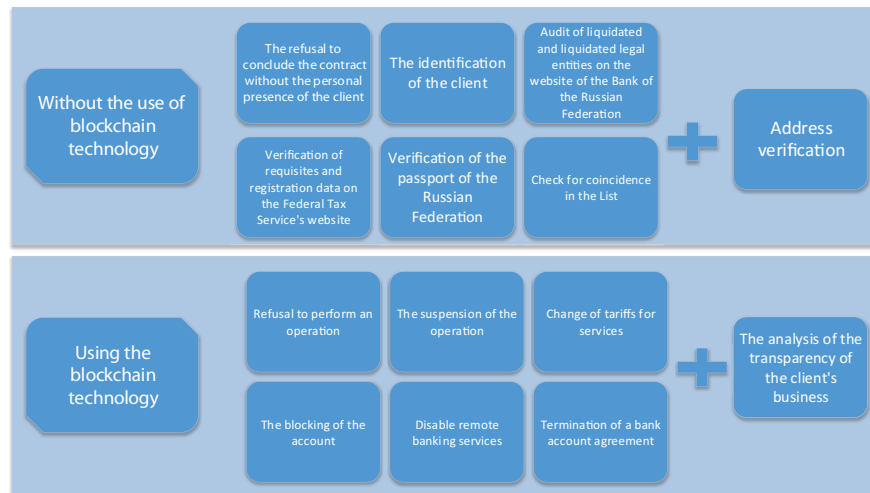


Figure 8: The list of the operations which are carried out in a commercial bank using blockchain technology and without its application.

At the same time it is possible to optimize organizational structure of the banking sector, having reduced the number of affiliated offices of the commercial banks.

The scheme of optimization of functioning of commercial bank structure without blockchain technology and with its application, is presented in Figure 9.

By using blockchain technology for commercial bank it is possible to gain positive economic effect in the following directions [8]: decreasing of the commission volume for operations performed by the bank acquirer, increasing the reliability and safety of operations, decreasing the transaction costs of process of realization of bank customer service, increasing efficiency of each transaction and obtaining competitive advantage due to the development of the corresponding infrastructure.

4. Discussion

Nowadays blockchain is considered as a structure of data which implementation enables to carry out bank operations on the basis of the distributed transactions mechanism, making available structure to all participants of the transaction, in particular to the organizations realizing control and monitoring in the sphere of AML/CFT.

When using blockchain technology it is also necessary to invent the mechanism of choosing of the participant of a decentral network for proceeding of new unit formation operation of the structure and including it in the body of the transactions sent to a decentral network, incorporating new unit in the register and the subsequent distribution of the copy of the database to all participants.

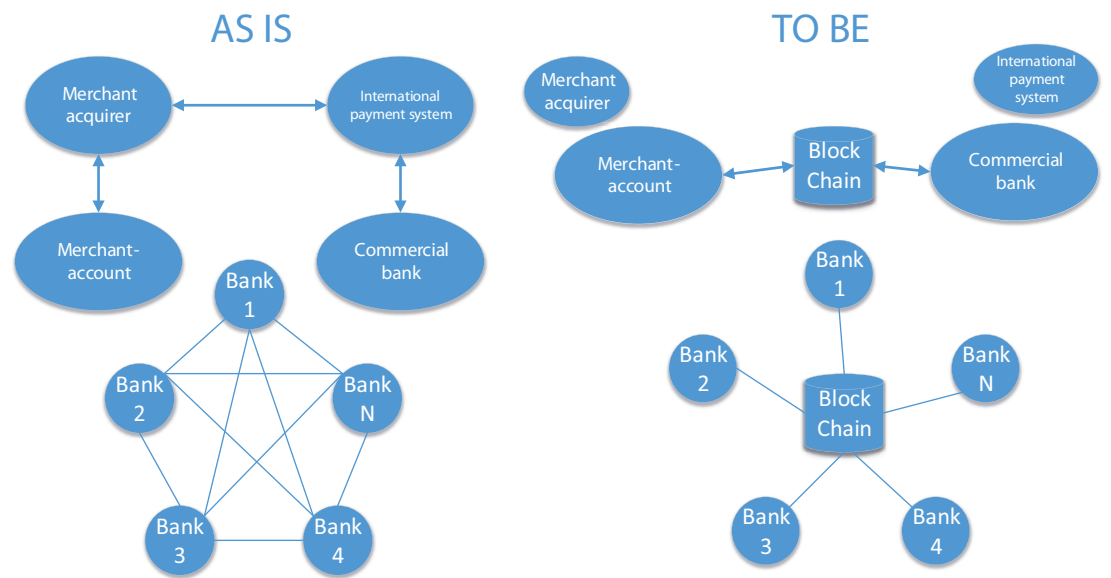


Figure 9: The scheme of optimization of functioning of commercial bank structure without blockchain technology implementation and with its application.

The Fintech association which is actively developing in recent time includes a number of commercial banks developing a number of standards and the principles of blockchain technology used in the banking sector, in particular methods of keys data structuring to assess information, storages of access rights and documents.

The application of such distributed decentralized structures, in a combination with moderate centralization enables to effectively exchange financial messages on a basis of blockchain structure.

Transformation of the centralized structure of data storage to the distributed representation, the Figure 10, will allow in the long term the provision of the fast algorithms of information search based, for example, on use of quantum algorithms [6] and the computers realizing the corresponding calculations that significantly expands the scope of blockchain technologies [8].

In the same time process of blockchain technology implementation in a commercial bank is concerned with necessity of the solution of the following set of tasks: it is necessary to develop the mechanism of customization and access rights distribution between the elements of the decentralized system, taking into consideration the adding of new participants of transactions and possession of the appropriate segments. At the same time the financial monitoring department of a commercial bank could be positioned as an element of the relevant distributed structure.

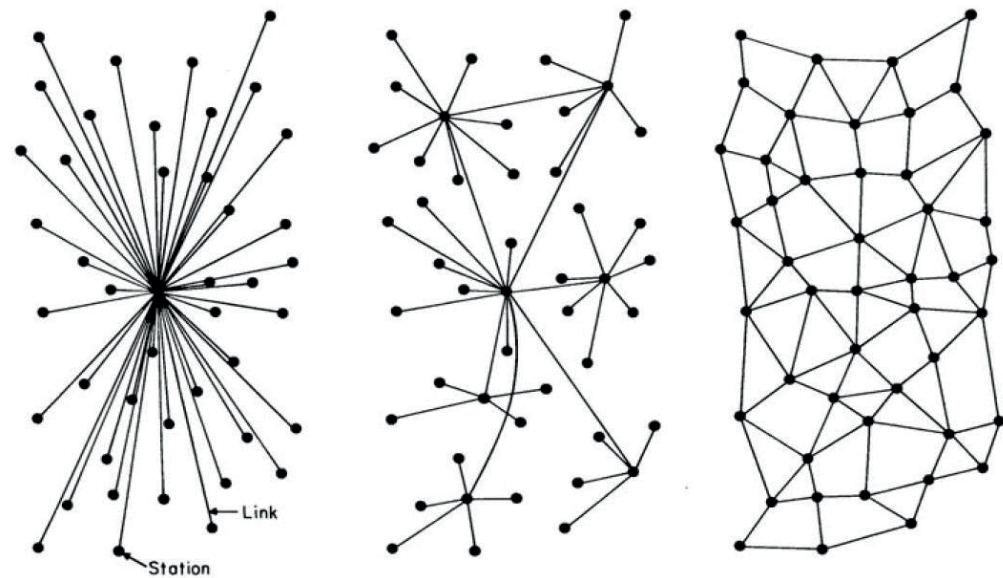


Figure 10: The choice of informational system of organizational structure based on the centralized, decentralized and distributed schemes (the graph node – processing knot, an arch – the tie between processing knots during the creation of the network information structure).

The technology of implementation will request the transformation of business processes, taking into consideration emergence of risks of interaction in the distributed system, with necessity of management of service of the distributed register.

It is also necessary to note some weaknesses during the implementation of blockchain technology in a commercial bank: there are multiple entry points for the end user, regarding the permission of mistakenly performed operations, there is a risk of impossibility of consensus achievement among participants of the decentralized network after emergence of an alternative chain of blocks, there are open questions about cryptographic protection in generating of the existing keys.

5. Conclusion

In this article approaches to formation of AML/CFT subsystem in commercial bank on the basis of procedures of all participants of bank transactions are suggested.

Functions and features of AML/CFT department, its formation and functioning in a commercial bank, taking into consideration the necessity of identification of doubtful operations, are formulated.

Criteria of operations considered suspicious and being the subject of obligatory control in the AML/CFT system are formulated and presented.

The described mechanisms and methods of AML/CFT subsystem formation in a commercial bank, taking into consideration the prospects of blockchain technology

implementation, result in necessity of preparation or professional retraining of the corresponding specialists on the basis of commercial banks and higher educational institutions as there is the acute shortage of experts in the market in the respective hi-tech sphere of activity in the present moment of time [7].

The blockchain technology is being formed at the moment, however, its implementation in a subsystem of financial monitoring of a commercial bank is the hi-tech decision when forming IT infrastructure of the modern commercial organization, which increase its capitalization and competitiveness.

It is necessary to mark that now activities for development of the information protocol of a decentral network which could be used for productive maintenance by the financial organizations are being implemented.

Acknowledgements

This work was supported by Competitiveness Growth Program of the Federal Autonomous Educational Institution of Higher Education National Research Nuclear University MEPhI (Moscow Engineering Physics Institute).

References

- [1] Melanie Swan. Blockchain. Blueprint for a new economy. O'Reilly. 2015. 240 p.
- [2] Popper Nataniel. Digital gold: tall tale of bitcoin: The lane with English – M.: LLC I.D. Wilyams, 2016 – 368 pages.
- [3] Assessment of risks of money laundering and financing of terrorism at the national level. FATF guideline. Moscow International training and methodology center for financial monitoring. 2013. 106 p.
- [4] Data and statistics in AML/CFT sphere. FATF guidelines. Moscow International training and methodology center for financial monitoring. 2015. 109 c. Web-access: <http://www.fatf-gafi.org/publications/fatfrecommendations/documents/aml-cft-related-datastatistics.html>.
- [5] Virtual currencies: Key definitions and potential risks in AML/CFT sphere. FATF report. Moscow. International training and methodology center for financial monitoring. 2014. 28 p.
- [6] Tsukanov A.V. NV centers in diamond. Part III: Quantum algorithms, scaling, and hybrid systems. Russian Microelectronics. 2013. T. 42. V. 1. pp. 1-15.

- [7] Kolychev V.D., Prokhorov I.V. Application of IT-technologies in visualization of innovation project, life-cycle stages during the study of the course "management of innovation projects". AIP Conference Proceedings. Volume 1797, 5 January 2017, number of article. 030010
- [8] Lukashin S. *The bank's clerk on a blockchain. Experience of introduction of DLT technologies in bank.* [Presentation] in IV international forum ABA-2017. Moscow, 18-19 of october 2017.
- [9] Zubkov V.A., Osipov S.K. International standards in the sphere of anti-money laundering and counter-terrorism financing. Moscow. Jurisprudence publishing. 2012. 367 p.