

OPPORTUNITIES AND PROBLEMS IN IMPLEMENTING ELECTRONIC DATA SYSTEMS FOR FINANCIAL MANAGEMENT AND CONTROL IN THE PUBLIC SECTOR

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Abstract: The methodological and normative framework of the internal control is constantly developed and enriched, as a result of external and internal challenges and the accumulated experience in the organizations. Internal Control - Integrated Framework (ICIF) of the Committee of Sponsoring Organizations of the Treadway Commission (COSO) laying the foundations and principles of the modern understanding of internal control, also got a new edition in 2013. One of the goals of change is its rules to comply with the requirements of the Sarbanes-Oxley or SOX Act. The normative base of the financial control in the organizations from the public sector in Bulgaria is adequate to the elements and principles of the updated version of ICIF, but its implementation shows some shortcomings due to the formal attitude to the requirements and the lack of an appropriate "tone at the top" in some organizations. The article emphasizes the need for electronization of control systems in public organizations. The possibilities of some cloud-based software products and electronic platforms for improving the efficiency and transparency of control are presented.

Keywords: internal control, public administration, electronization.

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Introduction

The basic principles of internal control in public sector organizations were introduced in 1992, when the Committee of Sponsoring Organizations of the Treadway Commission (COSO) published the Internal Control - Integrated Framework (ICIF). In Bulgaria, these principles were introduced with the adoption of the Financial Management and Control in the Public Sector Act in 2006. Financial controllers were appointed and the procedure for certification of internal auditors was determined. Numerous trainings for officials have been conducted, regulations have been adopted, instructions have been issued on the role of the heads of public sector organizations regarding the development and implementation of financial management and control systems (FMCS). Although the normative documents did not directly mention the COSO and the ICIF models, these systems followed their logic. ICIF was revised and reissued in May 2013 and entered into force on 15 December 2014. This means that the principles for the organization and implementation of internal control are not imperative, but are developed and enriched. In order to respond to the changes made, the FMCS need to be rethought as principles, enriched as content and reorganized as practical systems, i.e. to be modernized. One of the ways to do this is their electronization, which, however, in practice encounters difficulties caused by various reasons.

1. Need for modernization of FMCS – international requirements and the Bulgarian response

The original of the Internal Control - Integrated Framework (ICIF) of 1992, which gave a new understanding of internal control in public sector organizations (PSO), was periodically supplemented and updated with additional elaborations and editions by the Committee of Sponsored Organizations (COSO), such as “Integral Control over Financial Reporting - Guidance for Smaller Public Companies of 2006, Guidance on Monitoring Internal Control Systems of 2009 and Internal Control – Integrated Framework, Internal Control over External Financial Reporting: A

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Compendium of Approaches and Examples“ of 2012. The latest edition summarizes the results of a large-scale discussion held in the period December 2011 - March 2012, in which it was recognized that the focus of control had often been limited more to external financial reporting, while non-financial issues and statements had been left in the background. A recommendation was made to strengthen the role of non-financial statements and internal control. The concept of the principles of internal control is further developed and their practical application in the dynamic and risky external environment is sought.

The first guideline for improving the integrated framework is the requirement to codify the criteria that can be used to develop internal control systems and to assess the design and effectiveness of the internal control system. This is done by formulating seventeen principles, each principle being specified by one or more supporting attributes. The second guideline is to expand the internal and non-financial reporting guidelines to support the growing reporting requirements for transactions, non-compliances and non-financial objectives. The third direction is to update the original internal control framework to reflect changes in the business environment and to improve and clarify its application in today's high-risk environment. As a result of the discussion and the proposals made, on 14 May 2013 COSO published the updated version of the Internal Control - Integrated Framework (COSO, May, 2013).

About five years ago, the regulatory framework of internal control was updated in our country, in order to "update the methodology of financial management and control in accordance with the COSO Framework 2013 and the concept of the Three Lines of Defense in the public sector and offer practical solutions to various weaknesses and challenges in the field of financial management and control in the public sector..." (Ministry of Finance, 2020). In fact, the Financial Management and Control in the Public Sector Act (FMCPSA) itself has not been changed as a result of the new ICIF requirements of 2013, and in the reasons for the changes it is emphasized the need for strict compliance with the existing regulatory requirements and the introduction of administrative and criminal liability of PSO leaders who do not comply with the requirements for self-assessment of the status of the FMCS. That is why the changes were palliative, moreover, a number of

organizations that are partially financed from the state or municipal budgets such as community centers, libraries, research institutes, non-governmental organizations and others dropped out of the scope of the PSO and whose budgets are not "included" in the state and municipal budgets within the meaning of the Public Finance Act. Even if we accept the hypothesis that 'inclusion in the budget' means funding from the budget, in practice the Ministry of Finance and the Court of Auditors have excluded these organizations from the scope of their monitoring.

The changes in the FMCPSA, as well as the development of several instructions and manuals of the Ministry of Finance were the result of a public procurement, carried out on the principle of the recently in-house practice, i.e. internal procurement, with the same ministry beneficiary. The announcement of the project itself, entitled "Improving the financial management and control systems and the internal audit function in the public sector", as well as the information about it in the Information System for Management and Monitoring (ISMM) are quite disturbing regarding the indicated deadline for submission of project proposals, deadline for the implementation, deadline for concluding the contract and date of starting the project itself.

Apart from the fact that the latest changes in the FMCPSA are mainly reduced to the elimination of old texts, the developed guidelines and manuals for the most part repeat and further develop the old ones. There are new ones, such as Guidelines for ex-post performance evaluations in public sector organizations (Ministry of Finance, 2020), that were also developed under the aforementioned project. However, they not only did not bring more clarity and did not facilitate the work of PSO employees, but also raised new questions and confusion. In the Guidelines, ex-post performance evaluations are considered as one of the control activities. Obviously, these assessments are not in line with the idea of ex ante control, but are a form of control of results in order to identify problems, gaps and weaknesses that need improvement. It is said that "Ex-post evaluations are carried out through various types of inspections, based on risk assessment and cost-benefit analysis" (Ministry of Finance, 2020). The issues that are not clarified by the above Guidelines and confuse the employees responsible for internal control in the PSO are the following:

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1. What is the relationship between the ex-post evaluation of the implementation and the mandatory ex-post evaluations of the plans developed by a number of PSO?

2. Will ex-post evaluations replace functional analyzes, which also aim to identify problems, gaps and weaknesses that need improvement?

3. Does the performance of ex-post evaluations invalidate the recommendations for applying different self-assessment methods such as Public Expenditure and Financial Accountability (PEFA), the Common Assessment Framework (CAF), Internal Factor Evaluation (IFE) Matrix and other popular techniques that have proven effective?

4. What will be the functions of the recommended good practice of appointing "irregularity officers" and what will be their interaction with financial controllers and other responsible officials involved in internal control?

5. Having proposed the establishment of a special administrative structure (directorate/department) for the subsequent control of the legality and expediency of the implementation of processes, contracts and business operations, don't it have to start from there PSO to be obliged to have written administrative processes according to a certain methodology and to know how to model and optimize them?

6. Is it not too simplistic to understand the cost-benefit analysis as "an assessment of whether or not to carry out an ex-post evaluation of the implementation and to assess (in addition to the risk assessment) the scope and type of checks to be carried out" (Ministry of Finance, 2020) as it is well known that the cost-benefit analysis is more appropriate for investment projects? Shouldn't the decision to apply an ex-post evaluation be subject rather to the principle of "reasonable assurance"?

More questions can be asked not only about this document, but also about other new guidelines and manuals, such as the Guidelines for Risk Management in Public Sector Organizations, whose "novelty" is the recommendation of both three by three and five by five risk assessment matrix (Ministry of Finance, 2020). The more significant problem is that in the above-cited laws and regulations, it is not mentioned anywhere the possibilities, advantages and benefits of the electronization of internal control, one that will not only facilitate the employees involved in the control process, but also to increase its efficiency and transparency.

2. Electronization – the next step for modernization of internal control

Management theory continues to offer ideas for the improvement of management in both business structures and PSO. Naturally, in recent years it has been associated with the opportunities offered by information and communication technologies, data electronization and document management. Therefore, the changes in the COSO Framework - Internal Control Integrated Framework of 2013, aim to introduce practices and procedures to ensure compliance with the Sarbanes-Oxley Act, also known as the Public Company Accounting Reform and Investor Protection Act, and the Accountability, Responsibility and Transparency Act, called Sarbanes-Oxley, Sarbox or SOX (SoxLaw.com, 2021). The Sarbanes-Oxley Act of 2002 regulates internal control rules mainly in three sections - Section 302, Section 404 and Section 802 (Sarbanes-Oxley Compliance Requirements (SOX), 2021). Section 302 of the Act stipulates that senior executives personally certify in writing that the organization's financial statements meet the disclosure requirements and honestly present all material aspects of its financial condition. Section 404 of the Act requires management and auditors to establish internal control and reporting methods to ensure the adequacy of the inspections performed, and Section 802 of the Act is devoted to data management and contains the three rules that affect record keeping. The first deals with the destruction and falsification of records, the second strictly defines the retention period for the storage of records, and the third rule outlines the specific business records that companies must keep, which includes electronic communications. In addition to the financial side of the business, such as audits, accuracy and control, SOX of 2002 also outlines the requirements for information technology (IT) departments regarding electronic records. The Act determines which records must be kept in the archive and how long.

Compliance with SOX in data management includes both business control and SOX IT control. Business controls are those that relate to the accuracy of the data entered in the financial statements. In terms of IT, there are IT general controls (ITGC) and application controls. The objectives of SOX IT controls are to ensure that systems are accurate, complete and

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without errors, as this would affect financial reporting. Modern financial reporting systems are highly dependent on technology and related controls. Any review of internal controls would not be complete without paying attention to information security controls. An uncertain system would not be considered a source of reliable financial information due to the possibility of unauthorized transactions or manipulation of numbers. From this point of view, sections 302 and 404 of SOX also indirectly correspond to the requirements of Section 802 for data management.

Although SOX is adopted primarily to protect investors from fraudulent accounting activities by public companies whose securities are offered on stock exchanges, its provisions are also offered as valid for public sector organizations, i.e. for budget organizations. Therefore, there is talk about the need for compliance of control systems based on COSO recommendations with SOX. Of course, in addition to COSO, there are other organizations that have developed frameworks designed to help improve internal control and compliance with Sarbane Oxley. Such a framework, called COBIT (Control Objectives for Information Technologies) was developed by ISACA, an industrial group focused on IT management and which also provides guidelines for bringing IT processes in line with SOX. Similar recommendations are given by ITGI (Information Technology Governance Institute), which are based on both COSO and COBIT, with a strong emphasis on information security in internal control.

McNally and J. Stephen propose a five-step approach to achieve compliance of the implemented internal control systems with SOX (McNally, June, 2013), namely:

1. Develop awareness, expertise and upgrading
2. Carry out a preliminary impact assessment
3. Provide broad awareness, training and general evaluation of staff
4. Develop and implement a COSO transition plan for SOX

compliance

In the new and updated normative documents, instructions, regulations, guidelines, etc., developed in our country under the project "Improving the financial management and control systems and the internal audit function in the public sector", not enough attention is paid to the relationship between internal control and information and communication technologies. The

protection of archives and information is referred to as the creation of repositories of paper documents stored in large metal cabinets in the administrations. The huge opportunities of ICT for increasing the transparency and efficiency of internal control are not indicated, no recommendations are made to the administrations for the electronization of control.

The electronization of the activities for implementation of the internal control in the PSO is necessary at all levels and in all sub-processes of the control. As the document flow is the largest and most constant during the preliminary control over the assumption of financial obligations and the execution of financial costs, it can start from there with the introduction of electronic control systems. It is also necessary to replace the paper manuals with descriptions of processes and procedures, which are used in practice, with more modern and more efficient electronic means for describing work instructions, basic procedures and standard documents.

The introduction of electronic FMCS or as they are more properly called recently, ICS (Internal Control Systems) requires a certain computer architecture, including expensive servers and software products. This "disadvantage" can be addressed by installing electronic platforms and databases in the "cloud", i.e. on servers.

In Bulgaria, such an electronic system for preliminary control was developed by a team led by the author, under the project "New model for internal control based on cloud technologies", funded by the Operational Program "Competitiveness". As a result of the project, a cloud-based electronic platform for ex-ante control when assuming financial obligations and executing financial costs, called "Cross Control", was created. The software operates through a dynamic module and is offered as a cloud service, and data security is guaranteed through authorized personal access with a personal identification code and / or a valid qualified electronic signature. "Cross Control" is full compliance with the applicable legislation in the country, incl. FMCPA thus provides the administrative structures that have introduced it with the continuity of the process of assuming financial obligations and making financial costs.

In the conditions of social distance, the difficulties related to work with remote access to documents and databases, as well as the document flow between employees and units, proved to be critical for each administration.

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The electronic cloud-based product "Cross Control" allows for the document generation (requests, applications, references, etc.) electronically and for the documents' movement to a specific employee with control functions in a pre-designed way, as the processing to be performed only by authorized employees, who have the right to access with a personal username and password. There is also a possibility for electronic signing of documents, as each action of a user is certified with an electronic certificate.

The screenshot shows a web application interface for creating a financial commitment request. The title is "Заявка за поемане на финансово задължение" (Request for financial commitment) with ID 8123 and status "В подготовка" (In preparation). The form includes a description field, a dropdown for "Заявител" (Applicant) set to "Administrator Proactive", and checkboxes for "Висок приоритет" (High priority) and "Рискова заявка" (Risky request). There are also fields for "Заявка по" (Request type), "Описание" (Description), and "Номер" (Number). A table for "Задължения" (Commitments) is visible at the bottom with columns for "Наименование" (Name), "Сума" (Amount), "Дейност" (Activity), "Параграф" (Paragraph), and "Описание" (Description). A "Въвеждане" (Add) button is next to the table. On the right, there are buttons for "Запазване" (Save), "За печат" (Print), "Отказ" (Cancel), and "Актуализирай съдържание" (Refresh content).

Fig. 1. Cross Control screen for application for financial commitments

The screenshot shows a web application interface for creating a financial expense request. The title is "Искане за извършване на разход" (Request for expense) with ID 8143 and status "В подготовка" (In preparation). The form includes a dropdown for "От" (From) set to "Administrator Proactive", and checkboxes for "Висок приоритет" (High priority) and "Рисково искане" (Risky request). There are also fields for "Доставчик" (Supplier), "Счетоводен документ" (Accounting document), "Описание" (Description), and "Номер" (Number). A table for "Задължения" (Commitments) is visible at the bottom with columns for "Наименование" (Name), "Сума" (Amount), "Дейност" (Activity), "Параграф" (Paragraph), and "Описание" (Description). A "Въвеждане" (Add) button is next to the table. On the right, there are buttons for "Запазване" (Save), "За печат" (Print), and "Отказ" (Cancel). At the bottom, it says "Създаден от: Administrator Proactive, 14.01.2019 13:24:17" and "Приложения (съпътстващи документи)" (Attachments).

Fig. 2. Cross Control screen for application for financial expenses

When working with Cross Control, quick links are made with the budget paragraphs and the availability of funds to finance the declared costs is taken into account. Similar links are automatically made with concluded contracts, as the costs are compared with the envisaged deadlines for implementation and the amounts under the contracts. The product allows the attachment of documents created by external applications such as files in various formats (Word, Excel, PDF, etc.) and allows you to generate reports on a specific characteristic of the document – amount, date, type of costs, budget paragraph, applicant, public procurement, contract, contractor, etc. Critical values can be set in the reports to signal (by coloring or otherwise) when they are reached. When a new document is generated or addressed to a certain employee, the same is automatically notified of the respective event by an alarm message.

The final effect of the introduction of "Cross Control" is: full electronic management of internal document flow; coverage at all levels in the management structure of the administration, including the outsourced units; organization of a complete electronic archive, i.e. archiving and copying / scanning of the documents while preserving the original documents; working with archival ones and convenience when working with them; easy remote access to information files; exchange of documents by e-mail; convenient and easy interface with network and local scanning and printing tools.

The effectiveness of the control is also improved due to the possibilities for quick finding of all registered electronic documents and retrieval of reference information about them, quick access to up-to-date information on the documents' movement and actions on them at each stage of the work, according to the rules for access of the individual employees, the availability of rich supporting information in various forms, available at any time at work and last but not least - the ability to generate any reports related to the spending of funds.

The electronization of internal control can also be sought in terms of scheduling work processes, which in most cases until now was carried out through flowcharts and process maps. Much greater opportunities for business process modeling are provided by products such as Casewice and ARIS Business Architect, which not only outlines who, what, when and how to perform the necessary control activities, but also allows for directly filling

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in a computer screen of a document (checklist, request, application or other) and moving it further also electronically, i.e. for document flow. The use of ARIS Business Architect in describing extensions to electronic FMCS allows and provides fast retrieval of detailed data for each step, regardless of the level of detail, providing information on the sequence in the course of implementation, with a clear definition of the relations manager – employee – resources – responsibilities – result and on the critical / risk factors for the implementation of activities, controls and preventive actions, as well as steps on elimination of detected discrepancies.

These functionalities of the specialized software products for business process modeling allow their optimization, as well as the assessment of the risk associated with the implementation of one or another process.

The use of software products and electronic platforms such as those described above does not put an end to the possibilities for electronization of control. Recently, there has been a lot of talk about the possibilities of the new revolutionary blockchain technology, which began to develop with the advent of cryptocurrencies. It should not be forgotten that a blockchain is actually a system in which records of operations are maintained on several computers that are connected in a peer-to-peer network, i.e. it can be used where there are computer networks that process large databases. With many new applications built on this technology, various solutions such as cloud storage, payment processing and cybersecurity are offered.

The FMCS protocol can also be built on a blockchain. The decentralized nature of the blockchain and transparency makes this technology very suitable for the organization of internal control, especially in large PSOs, which are characterized by a large number of independently running business processes, that at the same time are interconnected by the fact that their course requires spending of budgetary funds, and this implies control. The control activities are many and are carried out by specialists with different professional profiles. With careful implementation and integration of blockchain, the technology can be used to create more effective controls in the PSO. This will increase operational efficiency and effectiveness, improve the reliability and transparency not only of financial reporting, but also of compliance with laws and other regulations. In this way, a real connection

among business processes, goals, subsequent evaluations of implementation and funding can be achieved.

Conclusion

In our current practice of developing various control systems, incl. for those that are electronic and cloud based, we have not encountered serious opponents of the thesis that the electronization of internal control does not make it more operational, more efficient and more transparent. The question arises – why then do Bulgarian PSOs refrain from the application of electronic control systems? Without claiming to be complete, we can point out some of them, such as:

- Gaps in the acts and insufficiently developed regulatory framework. The reason for this statement is given by the in-depth review of the normative documents in force in Bulgaria and requirements set by ICIF and SOX in terms of nature, principles, reference points and organization of internal control;

- Insufficient specialized training of internal and external auditors. This assertion is supported by the fact that the auditors' reports do not contain recommendations regarding the electronization of the internal control of PSO;

- Insufficient competence of the employees in the administration of executive power. There is still fear of using new software products, electronic platforms and cloud based systems. Many employees believe that some data is secure if it is on paper or at least on their personal computer;

- Lack of understanding of the nature and significance of the FMCS by the PSO managers. Many PSOs still do not have the right tone at the top, i.e. managers themselves are not convinced of the need to control all processes and units and do not want the control to be too transparent.

- Lack of technical security. Smaller PSOs do not have sufficient resources to digitalize control, which requires them to be supported through the use of common platforms, cloud based systems and shared electronic networks.

All these obstacles can be overcome but they must first be realized.

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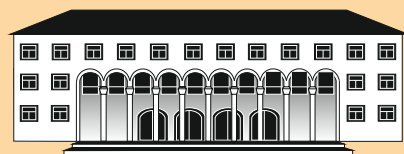
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