

**DEVELOPING A CONTROLLING SYSTEM AS A FACTOR IN IMPROVING THE
QUALITY OF PUBLIC ADMINISTRATION**

**DESENVOLVER UM SISTEMA DE CONTROLE COMO FATOR DE MELHORIA
DA QUALIDADE DA ADMINISTRAÇÃO PÚBLICA**

**DESARROLLAR UN SISTEMA DE CONTROL COMO FACTOR DE MEJORA DE
LA CALIDAD DE LA ADMINISTRACIÓN PÚBLICA**

Elena Fedchenko
Financial University under the Government of the Russian Federation

Natalia Savina
Financial University under the Government of the Russian Federation

Timur Timkin
Financial University under the Government of the Russian Federation

Inna Lipatova
Financial University under the Government of the Russian Federation

Alexandra Vinogradova
Financial University under the Government of the Russian Federation

Scientific Editor: José Edson Lara
Organization Scientific Committee
Double Blind Review by SEER/OJS
Received on 20/03/2023
Approved on 22/08/2023



This work is licensed under a Creative Commons Attribution – Non-Commercial 3.0 Brazil

Abstract

Being a management tool, controlling can ensure the consistency of operational and strategic planning within the public sector, adapt the inner structure to solve complex problems, coordinate and integrate functional areas of activity and ongoing processes, and maintain constant information support for making managerial decisions at all levels of the organization. The issues of forming a controlling system in the public sector are insufficiently studied. The article offers practical recommendations for the implementation of a controlling system in the public sector. The study addresses the functional and organizational features of economic entities in the public sector (federal ministries, federal agencies, federal services, legislative and judicial authorities, and state non-profit organizations). As a result, the authors have concluded that the introduction of a controlling system in the public sector is relevant for various organizational and legal forms but should consider the functional powers performed. The paper presents a typical profile of the functional structure of controlling in the public sector. The study results are intended for executive authorities when they implement a controlling system in accordance with the departmental project of the Ministry of Finance of the Russian Federation “Electronic SMART control (controlling) and public finance accounting for management decisions”.

Keywords: controlling system; public sector; new public administration; SMART control (controlling).

Resumo

Sendo uma ferramenta de gestão, a controladoria pode garantir a consistência do planejamento operacional e estratégico do setor público, adequar a estrutura interna para resolver problemas complexos, coordenar e integrar as áreas funcionais de atividade e os processos em andamento, e manter um suporte constante de informações para a tomada de decisões gerenciais no todos os níveis da organização. As questões da formação de um sistema de controle no setor público são pouco estudadas. O artigo oferece recomendações práticas para a implementação de um sistema de controle no setor público. O estudo aborda as características funcionais e organizacionais de entidades econômicas do setor público (ministérios federais, órgãos federais, serviços federais, autoridades legislativas e judiciárias e organizações estaduais sem fins lucrativos). Como resultado, os autores concluíram que a introdução de um sistema de controle no setor público é relevante para várias formas organizacionais e legais, mas deve considerar os poderes funcionais desempenhados. O trabalho apresenta um perfil típico da estrutura funcional da controladoria no setor público. Os resultados do estudo destinam-se às autoridades executivas quando implementam um sistema de controle de acordo com o projeto departamental do Ministério das Finanças da Federação Russa “Controle eletrônico SMART (controle) e contabilidade das finanças públicas para decisões de gerenciamento”.

Palavras-chave: sistema de controle; setor público; nova administração pública; Controle SMART (controle).

Resumen

Al ser una herramienta de gestión, el control puede garantizar la consistencia de la planificación operativa y estratégica dentro del sector público, adaptar la estructura interna para resolver problemas complejos, coordinar e integrar áreas funcionales de actividad y procesos en curso, y mantener apoyo de información constante para la toma de decisiones gerenciales en todos los niveles de la organización. Los problemas de formación de un sistema de control en el sector público no están suficientemente estudiados. El artículo ofrece recomendaciones prácticas para la implementación de un sistema de control en el sector público. El estudio aborda las características funcionales y organizacionales de las entidades económicas del sector público (ministerios federales, agencias federales, servicios federales, autoridades legislativas y judiciales y organizaciones estatales sin fines de lucro). Como resultado, los autores han concluido que la introducción de un sistema de control en el sector público es relevante para diversas formas organizativas y jurídicas, pero debe considerar los poderes funcionales realizados. El artículo presenta un perfil típico de la estructura funcional del control en el sector público. Los resultados del estudio están destinados a las autoridades ejecutivas cuando implementan un sistema de control de acuerdo con el proyecto departamental del Ministerio de Finanzas de la Federación Rusa "Control electrónico SMART (control) y contabilidad de finanzas públicas para decisiones de gestión".

Palabras clave: sistema de control; sector público; nueva administración pública; Control SMART (controlando).

1. INTRODUCTION

The economic entities of the public sector are facing the task of ensuring the breakthrough development of the Russian Federation. The intensification of efforts to achieve the goals of national development leads to the search for new conceptual approaches to management in the public sector. The role of information technology in management is increasing; the coverage of key functional areas by automation tools is also expanding (Kuziemski & Misuraca, 2020). There are growing requirements for the activities of civil servants (Gusarova, 2021) and the content and quality of information used to make managerial decisions (Isaev, 2022). Global economic changes and difficult environmental conditions increase the responsibility of top management in the public sector for performance and efficiency (Choi & Park, 2021; Fedchenko & Gusarova, 2021) and the use of financial and other resources (Felício et al., 2021).

Controlling in the public sector is a system of tools, technologies, and processes for ensuring and coordinating the functions of managing the activities of state bodies and state

organizations. A controlling system helps increase the efficiency, transparency, and objectivity of information about the processes and results of such activities, eliminate risks in the short and long term (Bracci et al., 2022), and improve the effectiveness of management decisions (Babatunde & Dandago, 2014). Being a management tool, controlling can ensure the consistency of operational and strategic planning within the public sector, adapt the inner structure to solve complex problems, coordinate and integrate functional areas of activity and ongoing processes, and maintain constant information support for making managerial decisions at all levels of the organization.

The issues of forming a controlling system in the public sector are poorly understood, there are no unified conceptual approaches to determining its content, and the instrumental base of controlling has not been formed. G. Hofstede (1981) criticizes the formal transfer of the theoretical and methodological aspects of controlling developed for the private sector of the economy to the public sector regardless of its specifics, objective restrictions, and goal setting.

P. Panagiotopoulos, A. Protogerou, and Y. Caloghirou (2022) study the issues of strategic management in the public sector. The scholars argue that the existing structures in the public sector focus either on exogenous sources of dynamism or on the critical role of public managers in promoting strategic initiatives without examining the internal processes of organizational changes. Van Helden and Reichard (2019) and T. Felício, A. Samagaio, and R. Rodrigues (2021) dwell on the implementation and impact of controlling in the public sector and compare it with the concept of *New Public Management*. Despite obvious prospects of controlling, they mention an extremely small number of studies and publications in this area. The corresponding scientific literature contains important information on feasible implementation and various factors that affect controlling systems in public organizations. However, there is a large knowledge gap on how to implement and improve the existing controlling systems in public organizations (Choi & Park, 2021; Lartey et al., 2020; Moisés Toapanta & Enrique Mafla Gallegos, 2020).

Our study considers approaches to implementing a controlling system in the public sector for various organizational and legal forms with due regard to the functional powers performed. In addition, we aim at developing practical recommendations for the formation of a typical functional and organizational structure of a controlling system in the public sector.

2. Methods

To achieve the study objective, we analyzed the features of goal-setting and functioning of various economic entities in the public sector of the Russian Federation (federal ministries, federal agencies, federal services, legislative and judicial authorities, and state non-profit organizations). Based on the study of the assigned powers, we determined the features of the goal-setting and functioning of organizations in the public sector, which should be considered when implementing a controlling system. Given the functions that fall under the jurisdiction of federal ministries, their goal-setting focuses on the development of state policy and legal regulation. The goal-setting of federal services is based on control and supervision in the established sphere. The goal-setting of federal agencies aims at providing public services and managing state property. Executive authorities implement and maintain the process of public administration, act as administrators of budgetary funds in the exercise of their powers, and “have immeasurably large financial, logistical, and other types of resources [...] in comparison with other types of public authorities” (Kuzyakin & Kuzyakin, 2015, p. 21).

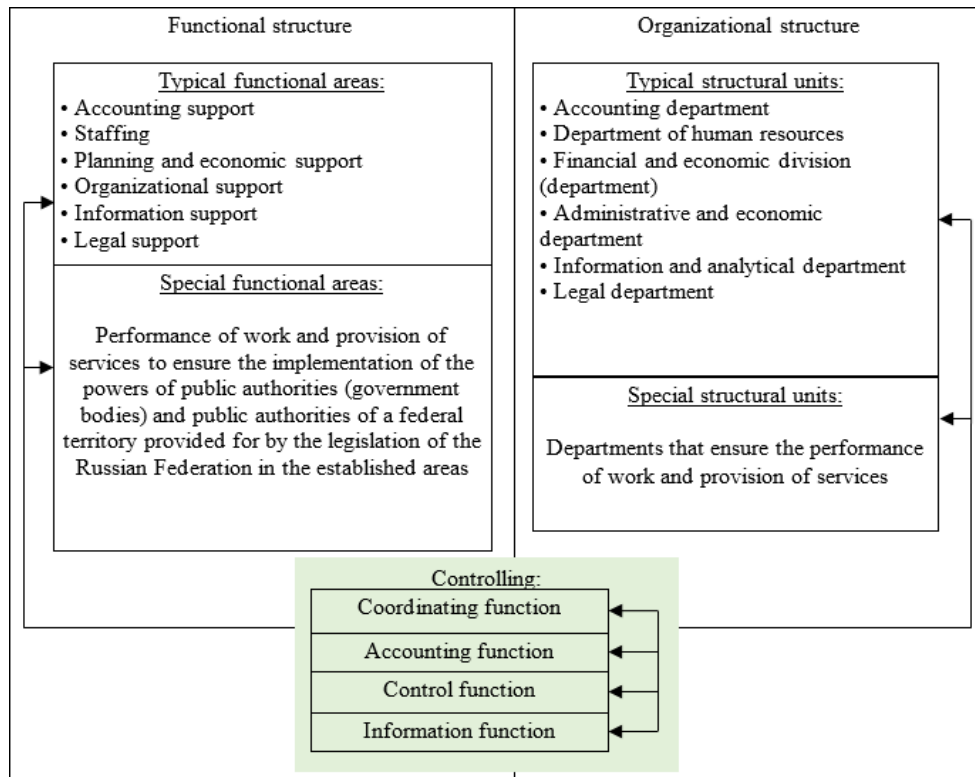
Non-profit organizations in the public sector of the Russian Federation, including state corporations and state institutions, have their own specific features. State corporations (“Rosatom” State Atomic Energy Corporation, “Rostec” State Corporation for Assistance to Development, Production, and Export of Advanced Technology Industrial Product, etc.) are established by the Russian Federation based on a property contribution to fulfill social, managerial, or other socially significant functions. State institutions are created for the implementation of managerial, socio-cultural, or other non-commercial functions by the Russian Federation or a constituent entity of the Russian Federation. These institutions can be divided into three types: public, budgetary, or autonomous.

Despite the division of powers, certain functions of ministries are also performed by services and agencies, some functions of services are transferred to ministries and agencies, and the functions of agencies can be shared by ministries and services. Indeed, there is a problem of blurring the powers of federal executive bodies and violating the principles of separation of powers. The functions that are specific to a certain government body (depending on the assigned powers) determine the features of a special functional area of a controlling system and differ

from those of federal ministries, federal agencies, federal services, and legislative and judicial authorities. In turn, the functions focused on the implementation of financial and economic activities by a government body (accounting, staffing, etc.) are typical of all such bodies. The allocation of special and typical functional activities of a government body affects the formation of structural units (branches, departments, offices, etc.) that form its organizational structure.

As a rule, ministries form divisions and departments, federal services and federal agencies function as branches and departments, and courts establish colleges and divisions. Accordingly, a controlling system as an element of the functional and organizational structure of a government body is integrated into standard and special functional areas, as well as standard and special structural divisions, ensuring informational and analytical interaction between them. Thus, the approach to building a controlling system is universal for all government bodies, regardless of their type. However, the functioning of this system is focused on the priorities of functional areas, which determines the specifics of controlling for different types of government bodies.

The functional structure of controlling is integrated with the organizational structure, uniting a system of organizational units: specialized structural units (officials) empowered to implement controlling tasks using appropriate tools and technologies. The functions performed by organizations allow one to determine both typical functional areas (accounting, personnel, planning and economic, organizational, information, and legal support) and special (defining fundamental differences) functional areas (Figure 1).



*Compiled by the authors

Figure 1. The relationship of a controlling system with the functional and organizational structure of public institutions

For example, the special functional areas of public institutions in the field of higher professional education include the provision of educational services. Accordingly, the organizational structure includes faculties that organize and departments that carry out the educational process. Public institutions in the field of healthcare comprise outpatient, inpatient, treatment, and diagnostic units for the provision of medical services. Organizational units implement controlling as a function of management and act as its carriers.

To build a high-quality controlling system, it is necessary to distribute tasks and powers within structural units (Timkin, 2021). When defining tasks and powers within a structural unit, it is necessary to follow certain principles.

1. A structural unit is headed by the responsible executor who should implement the powers assigned. This person should have all the information within the framework of the regulatory and methodological support required for the execution of such powers. Their responsibilities also include controlling. The responsible executor should have the necessary

documentary and information bases, strictly follow the requirements of the governing documents and instructions, and develop proposals for improving the organization of work.

2. If there is no main executor, it is possible to assign a second responsible executor. This assignment is necessary to ensure the connection between responsible executors without losing effectiveness in the implementation of activities. In this case, the distribution of powers within structural units and the relationship issues can be presented in the form of a process table (Table 1).

Table
Processes of a structural unit within the sector of public administration

No.	Legal basis	Responsible executor	Co-executor	Result	Planned/reporting period	Implementation period
<i>Task 1</i>						
...						
Process 1.1						
1.1.1						
...						
Process 1.x						
1.x.1						
...						

*Compiled by the authors

This table can help to ensure the relationship of tasks of structural units, functional areas between individual actors, and employees of the organizational structure, improve activity planning, and allocate labor and time resources most efficiently. A process table is an effective tool for operational management, planning, preliminary, current, and subsequent control and monitoring, which are conducted by the heads of structural units and the top management of an organization in the public sector.

3. RESULTS

After studying the formation of the functional structure of controlling, we propose to divide the implementation process into several stages.

Stage 1 is diagnostic. It evaluates the current management system used by an organization in the public sector and justifies the need to improve it with the introduction of a controlling system. The decision on the advisability of using controlling and forming its

structures involves a critical assessment of the state and results of activities, identification of problems, and analysis of the prerequisites for the transformation of the management system. The task of this stage is to substantiate the need for controlling within the concept of a new management system for the public sector.

The factors that determine the expediency of controlling are changes in the goals of activity or their conflict with management processes, the use of outdated methods and tools for planning and budgeting, the inconsistency of the accounting and reporting system with the needs of internal consumers, unreliable and limited initial information, and other factors that entail financial risks or worsen the financial management of an economic entity, which leads to a failure to achieve the goals and objectives of strategic development. For government bodies (organizations), it is relevant to assess the quality of state (municipal) services, the efficient use of state resources and state property, and the dynamics of overdue receivables. In relation to government bodies, the decision on the introduction of controlling is determined by the need to fulfill program tasks within the framework of state strategic planning (state programs and their structural elements). In particular, it is necessary to ensure transparency in resource management and reasonableness in budget allocation, increase the effectiveness of monitoring the use of budgetary funds, and form a unified electronic system for accounting and analyzing public finances at all levels of public administration (Ministry of Finance of the Russian Federation, 2022).

This stage considers the current management system and operational processes in a government body (organization) and reveals their weaknesses, sets controlling tasks considering the need to change the management system, and defines the profile and requirements for a controlling system and its functional structure.

To provide methodological support, evaluate the management system in government bodies (organizations), and decided on the introduction of controlling, it is recommended to use appropriate tools (questionnaires, testing, etc.). In particular, the use of questionnaires as the simplest form of collecting information allows one to form an idea of the basic management processes of a government body (organization) and to formulate a judgment about prospects for the use of controlling tools and technologies in the main functional areas (Horvath & Partners, 2005; Osipov, 2019).

For testing (survey), it is necessary to consider the following key aspects: strategic planning; the application of procedures for cascading strategic indicators to structural units and personnel; the consistency of strategic goals and objectives decomposed by structural units; structuring costs by financial responsibility centers and their different types (codes for classifying budget expenditures); permissible deviations (significant or insignificant) of actual and planned costs; procedures for evaluating the effectiveness of responsibility centers; the availability of tools to motivate personnel to achieve strategic goals and objectives; the application of tools and technologies of process budgeting; procedures for assessing strategic and operational risks.

The result of this stage is the implementation of a controlling system and the definition of its conceptual provisions. Typical mistakes at this stage are as follows: the introduction of controlling procedures in a crisis state (mainly public commercial organizations); the lack of justification for the need to readjust organizational and managerial processes; the use of controlling from the bottom up (from certain tools).

Stage 2 is preparatory. It is connected with the functional structure of controlling. During this stage, it is required to determine the profile of the functional structure of controlling in a government body (organization), solve the main organizational issues of implementing controlling functions, and establish a system of legal and methodological regulation for applying the controlling mechanism. The task of this stage is to form methodological and legal support for the controlling mechanism in a government body (organization).

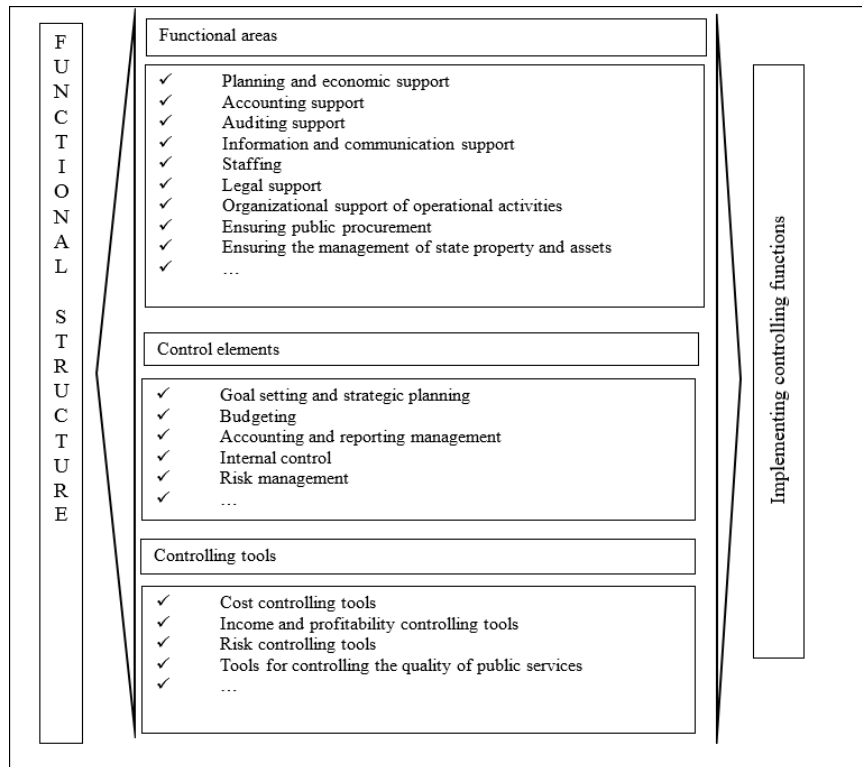
The second stage develops local acts regulating the functional structure of controlling consistent with its organizational structure, determines a system of target performance indicators cascaded to structural units, ensures strategic planning and budgeting processes, and defines the system of controlling tools by functional areas and elements.

While determining the profile of the functional structure of controlling (the main task of this stage), it is advisable to separate the following blocks: institutional (representing the functional areas for which structural units are formed and in relation to which the controlling mechanism is applied), process-based (reflecting the elements of management covered by the controlling cycle), and instrumental (including a set of methods, documentary forms, systems of indicators, classifications, etc. used in controlling). The composition of the functional areas

does not have significant differences for public sector units, representing the main areas of management united by homogeneous tasks and functions being implemented. Government bodies (organizations) have common functional areas of resource support (personnel, financial, information, and communications), as well as accounting, planning, economic and legal support, and organization of operational activities. There is also a possibility of identifying special areas that ensure public procurement, investment activities, and management of state property and assets.

Control elements in the public sector unite a set of actions and procedures that are homogeneous and performed in the course of management processes, in relation to which controlling tools are applied. When forming the profile of the functional structure of controlling for a government body (organization), it is recommended to cover the main management processes: goal setting, strategic planning, budgeting, internal control, accounting and reporting management, and risk management. It is also relevant to identify additional processes, including stimulation and motivation, internal monitoring, analysis, and evaluation.

Controlling tools are characterized by forms and types that have different purposes and focus on various functional areas and elements. A toolkit that can be integrated into the functional structure of controlling includes strategic and operational planning tools, cost-controlling tools, profitability-controlling tools, risk-controlling tools, etc. In light of the above, a typical profile of the functional structure of controlling in the public sector is demonstrated in Figure 2.



*Compiled by the authors

Figure 2. The typical profile of the functional structure of controlling in the public sector

The preparatory stage results in the definition of the profile of the functional structure of controlling, as well as the sufficiency of legal and methodological support in the public sector. Common mistakes at this stage are as follows: the excessive regulation of procedures for applying controlling tools; the selection of internal information from departments that do not keep records or prepare financial (accounting, statistical) reports; the formation of methodological support to fix deviations.

Stage 3 aims at strengthening the position of controlling, as well as implementing management tasks and processes using the controlling mechanism. The task of this stage is to implement the main controlling functions in accordance with the tasks set.

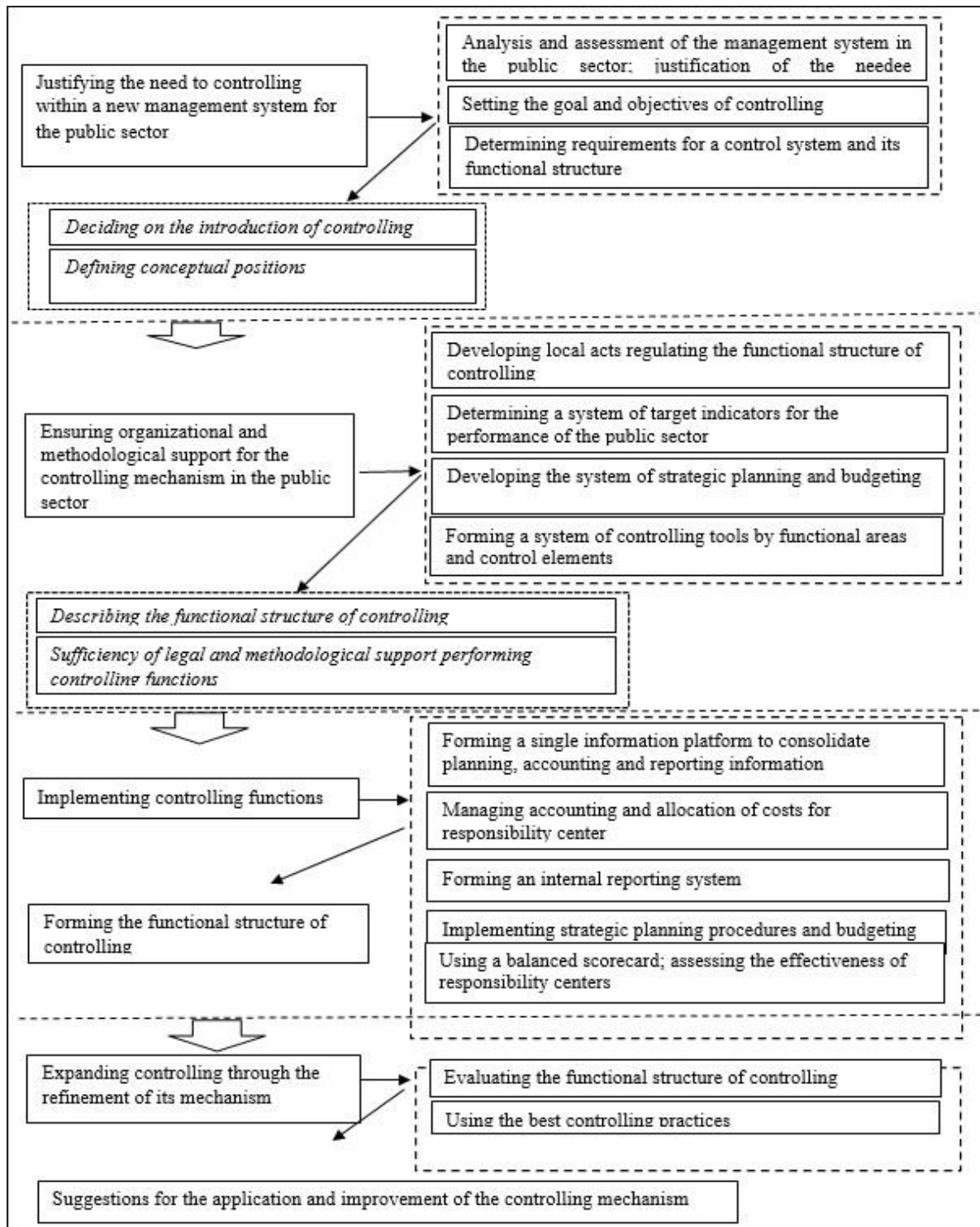
During this stage, the following tasks are performed: to form a single information platform that consolidates planning, accounting, and reporting information; to create a management accounting system in the context of financial responsibility centers (public services and operational processes); to integrate the system of planned and control indicators into the management process; to build an internal reporting system, including online; to

implement strategic planning and budgeting procedures (including the setting and decomposition of strategic goals and objectives, managing the achievement of goals by departments of a government body (organization), budgeting and cost estimates); to distribute costs by value objects (processes and financial responsibility centers); to provide authorized units with access to databases, input-output of information from software, and preventing unauthorized access to such information sources; to assess the effectiveness of responsibility centers based on a system of strategic benchmarks.

The main stage results in the formation of a functional structure of controlling corresponding to the accepted profile, ensuring the transformation of management processes and the transition to a new management system in a government body (organization). Common mistakes at this stage are as follows: the distribution of costs by functional areas (financial responsibility centers and various types) in the absence of income analysis; the excessive regulation of planning, budgeting, and internal control procedures; the risk of duplication or mutual conflict of controlling functions; the inconsistency of methodological tools used in various functional areas.

Stage 4 is final and designed to assess the functional structure of controlling and determine the directions for its improvement. The task of this stage is to substantiate the feasibility of expanding controlling in relation to functional areas with due regard to the refinement of controlling tools and technologies. This stage assesses the functional structure of controlling and its impact on the quality of controlling in general, reuses effective practices for the implementation of controlling functions, and develops proposals and recommendations for improving the efficiency of controlling in the public sector.

In general, the stages of forming the functional structure of controlling are presented in Figure 3.



*Compiled by the authors

Figure 3. The stages of forming the functional structure of controlling in organizations of the public sector

4. DISCUSSION

The results obtained confirm modern scientific opinions on the appropriate application of controlling principles and tools in the public sector. L.M. Garcia-Sanchez and B. Cuadrado-Ballesteros (2016) associate new public financial management tools with increasing the efficiency of their use. R.S. Basloom, M.H.S. Mohamad, and S.M. Auzair (2022) highlight the importance of using information technology, quality human resources, and innovative methods in public administration. R.F. Speklé, F.H.M. Verbeeten, and S.K. Widener (2021) study the existing practices of controlling in the public sector.

We did not find a sufficient number of scientific papers on the implementation of a controlling system in the public sector. The results of this study are close to the conclusions of M.L. Vasyunina et al. (2023), who emphasize the need to develop tools, technologies, and processes for a controlling system in the public sector. N.A. Nuhu, K. Baird, and R. Appuhami (2019) consider changes in the public sector to increase their efficiency. Our conclusions regarding the influence of organizational and functional features of economic entities in the public sector further develop these studies.

The gradual introduction of a controlling system in the public sector to improve the quality of public services and the efficiency of public entities is covered by the studies of I.A. Angelina and I.V. Popova (2018) and A.M. Karminskii, S.G. Falko, and A.A. Zhevaga (2021). The scholars consider the stages of introducing controlling into the management of commercial enterprises.

5. CONCLUSION

Thus, various approaches to the development of a controlling system are equally relevant for various organizational and legal forms. However, a controlling system is built over the priorities of specific functional areas. For public institutions, the priority is work performance and provision of services to implement the powers of government bodies and public authorities of a federal constituent entity in established areas of activity provided for by the legislation of the Russian Federation. For state corporations, the main objective is the implementation of social, managerial, or other socially significant functions.

The best organizational structure is built over a functional structure that includes typical and special functional areas. The limitations of this study are that the stages of implementing a controlling system in the public sector represent the initial stage of its life cycle. Further research in terms of the effective formation and implementation of a controlling system in the public sector are as follows: the integration of management processes into the electronic environment; the creation of the motivation system for financial responsibility centers (employees) to achieve the strategic goals of some activity; the formation of a single information platform that consolidates data and reporting on the processes and results of activities by functional areas and centers of financial responsibility; the introduction of tools that allow for the rapid assessment and visualization of information on the state and movement of resources, the level and dynamics of costs and profitability, and the achievement of strategic goals and tasks.

Acknowledgments

The article is based on the results of research funded by the state assignment of the University of Finance on the topic "Theory and Methodology of Controlling in the Public Sector".

REFERENCES

- Angelina, I. A., & Popova, I. V. (2018). Etapy vnedreniya kontrollinga v upravlenie predpriyatiem v usloviyakh sotsialnoi otvetstvennosti biznesa [The stages of introducing controlling into enterprise management in the context of social responsibility of business]. *Economics: Yesterday, Today and Tomorrow*, 8(3A), 268-278.
- Babatunde, S. A., & Dandago, K. I. (2014). Internal control system deficiency and capital project mis-management in the Nigerian public sector. *Procedia – Social and Behavioral Sciences*, 164, 208-221. <https://doi.org/10.1016/j.sbspro.2014.11.069>
- Basloom, R. S., Mohamad, M. H. S., & Auzair, S. M. (2022). Applicability of public sector reform initiatives of the Yemeni government from the integrated TOE-DOI framework. *International Journal of Innovation Studies*, 6(4), 286-302. <https://doi.org/10.1016/j.ijis.2022.08.005>
- Bracci, E., Mouhcine, T., Rana, T., & Wickramasinghe, D. (2022). Risk management and management accounting control systems in public sector organizations: A systematic literature review. *Public Money & Management*, 42(6), 395-402. <https://doi.org/10.1080/09540962.2021.1963071>
- Choi, S., & Park, S. (2021). Exploring performance paradox in public organizations: Analyzing the predictors of distortive behaviors in performance measurement. *International Review of Administrative Sciences*, 89(2), 501-518. <https://doi.org/10.1177/00208523211054876>

- Fedchenko, E. A., & Gusarova, L. V. (2021). Standartizatsiya vnutrennego finansovogo audita glavnykh administratorov byudzhetykh sredstv [The standardization of internal financial audit of chief administrators over budgetary funds]. *Upravlencheskii uchet*, 7-2, 374-380.
- Felício, T., Samagaio, A., & Rodrigues, R. (2021). Adoption of management control systems and performance in public sector organizations. *Journal of Business Research*, 124, 593-602. <https://doi.org/10.1016/j.jbusres.2020.10.069>
- Garcia-Sanchez, I. M., & Cuadrado-Ballesteros, B. (2016). New public financial management. In A. Farazmand (Ed.), *Global encyclopedia of public administration, public policy, and governance* (pp. 1-18). Cham: Springer. https://doi.org/10.1007/978-3-319-31816-5_2323-1
- Gowda, K. R. (2023). Artificial Intelligence in the Modern Economy: Transformations, Applications, and Future Prospects. *Review of Artificial Intelligence in Education*, 4(00), e08. <https://doi.org/10.37497/rev.artif.intell.educ.v4i00.8>
- Gusarova, L. V. (2021). Sistema KPI v otsenke effektivnosti deyatelnosti sotrudnikov Federalnogo kaznacheistva [The KPI system in evaluating the performance of employees of the Federal Treasury]. *Upravlencheskii uchet*, 9, 530-536. <https://doi.org/10.25806/uu9-22021530-536>
- Hofstede, G. (1981). Management control of public and non-profit activities. *Accounting, Organizations and Society*, 6(3), 193-211. <https://doi.org/10.1016/0361-3682%2881%2990026-X>
- Horvath & Partners. (2005). *Kontseptsiya kontrollinga: Upravlencheskii uchet. Sistema otchetnosti. Byudzhetirovanie* [The concept of controlling: Management accounting. Reporting system]. Moscow: Alpina Biznes Bruks, p. 34.
- Isaev, E. A. (Ed.). (2022). *Kontrolling v gosudarstvennom sektore: Teoriya i praktika* [Controlling in the public sector: Theory and practice]: Student's textbook. Moscow: Prometei, 790 p.
- Karminskii, A. M., Falko, S. G., & Zhevaga, A. A. (2021). *Kontrolling* [Controlling]: Student's textbook. Moscow: ID "FORUM": INFRA-M, p. 246.
- Kuziemski, M., & Misuraca, G. (2020). AI governance in the public sector: Three tales from the frontiers of automated decision-making in democratic settings. *Telecommunications Policy*, 44(6), 101976. <https://doi.org/10.1016/j.telpol.2020.101976>
- Kuzyakin, S. V., & Kuzyakin, Yu. P. (2015). *Administrativnoe pravo Rossiiskoi Federatsii* [Administrative law of the Russian Federation]: Student's textbook for bachelors. Odintsovo: ANOO VO OGU.
- Lartey, P. Y., Kong, Y., Bah, F. B. M., Santosh, R. J., & Gumah, I. A. (2020). Determinants of internal control compliance in public organizations; using preventive, detective, corrective and directive controls. *International Journal of Public Administration*, 43(8), 711-723. <https://doi.org/10.1080/01900692.2019.1645689>
- Ministry of Finance of the Russian Federation. (2022). Departmental project "Electronic SMART control (controlling) and accounting of public finances for making management decisions". https://minfin.gov.ru/ru/performance/projects/electronic_SMART_control/
- Moisés Toapanta, S., & Enrique Mafla Gallegos, L. (2020). *An approach to optimize the management of information security in public organizations of Ecuador*. London: IntechOpen. <https://doi.org/10.5772/intechopen.88931>

- Nuhu, N. A., Baird, K., & Appuhami, R. (2019). The impact of management control systems on organizational change and performance in the public sector: The role of organizational dynamic capabilities. *Journal of Accounting & Organizational Change*, 15(3), 473-495. <http://dx.doi.org/10.1108/JAOC-08-2018-0084>
- Osipov, S. V. (Ed.). (2019). *Kontrolling: Teoriya i praktika: Uchebnik i praktikum* [Controlling: Theory and practice: Textbook and workshop]. Moscow: Izdatelstvo Yurait, p. 28.
- Panagiotopoulos, P., Protogerou, A., & Caloghirou, Y. (2023). Dynamic capabilities and ICT utilization in public organizations: An Empirical testing in local government. *Long Range Planning*, 56(1), 102251. <https://doi.org/10.1016/j.lrp.2022.102251>
- Rattan, P. (2023). Cultivating Agricultural Evolution: Revolutionizing Farming Through The Power of AI And Technology. *Review of Artificial Intelligence in Education*, 4(00), e010. <https://doi.org/10.37497/rev.artif.intell.educ.v4i00.10>
- Speklé, R. F., Verbeeten, F. H. M., & Widener, S.K. (2021). No dyadic control systems and effort direction effectiveness: Evidence from the public sector. *Management Accounting Research*, 54, 100769. <https://doi.org/10.1016/j.mar.2021.100769>
- Silva, A. de O., & Janes, D. dos S. (2023). Challenges And Opportunities of Artificial Intelligence in Education in A Global Context. *Review of Artificial Intelligence in Education*, 4(00), e01. <https://doi.org/10.37497/rev.artif.intell.educ.v4i00.1>
- Silva, R., Noronha, M., & Ferraro, D. M. J. (2023). Determinants of Edtech Success: An Empirical Analysis of Dynamic Capabilities and Key Facilitators. *Review of Artificial Intelligence in Education*, 4(00), e016. <https://doi.org/10.37497/rev.artif.intell.educ.v4i00.16>
- Timkin, T. R. (2021). Sistematizatsiya zadach i uchet rezultatov kak osnova effektivnogo vnedreniya kontrollinga v organizatsiyakh sektora gosudarstvennogo upravleniya [The systematization of tasks and accounting of results as the basis for the effective implementation of controlling in organizations of the public sector]. *Kontrolling*, 3(81), 39-41.
- van Helden, J., & Reichard, C. (2019). Making sense of the users of public sector accounting information and their needs. *Journal of Public Budgeting, Accounting & Financial Management*, 31(4), 478-495. <https://doi.org/10.1108/jpbafm-10-2018-0124>
- Vasyunina, M. L., Kosov, M. E., Shmigol, N. S., Lipatova, I. V., Isaev, E. A., Medina, I. S., & Guz, N. A. (2023). Development and implications of controlling in the public sector. *Emerging Science Journal*, 7(1), 207-227. <https://doi.org/10.28991/ESJ-2023-07-01-015>