

# Development and Implications of Controlling in the Public Sector

Margarita L. Vasyunina <sup>1\*</sup>, Mikhail E. Kosov <sup>1, 2, 3</sup>, Nataliya S. Shmigol <sup>1</sup>,  
Inna V. Lipatova <sup>1</sup>, Eli A. Isaev <sup>1</sup>, Irina S. Medina <sup>1</sup>, Natalya A. Guz <sup>1</sup>

<sup>1</sup> Financial University under the Government of the Russian Federation, Moscow, Russia.

<sup>2</sup> Plekhanov Russian University of Economics, Moscow, Russia.

<sup>3</sup> HSE University, Moscow, Russia.

## Abstract

Controlling is essential for public organizations to deliver optimal performance. However, the existing literature lacks sufficient knowledge to help organizations implement better strategies to enhance control. Therefore, this study examined the concept of control in the public sector, its impact on organizational efficiency, and a key focus on implementation. This study adopted a mixed approach (qualitative and quantitative) to study control in the public sector. The literature review was used to gather qualitative data, and a survey was conducted among the managers working in Russian public organizations to determine their responses to controlling practices. The results were compared and analyzed to provide implications and recommendations. It was noted through the results that control in public organizations depends on various factors like controlling approaches and tools, organizational culture, the autonomy of management, and functional control of organizations. Each of these aspects contributes positively toward control and improves public organizations' efficiency. Therefore, these aspects should be the core focus of public organizations to ensure greater control and efficiency. This research targeted this area to bridge the gap and determine the concept of controlling the Russian public sector. However, this research also has a limitation in that it has surveyed only 102 managers from different Russian public organizations.

## Keywords:

Public Sector; Controlling;  
Performance; Public Funds;  
Quality of Cost Management;  
Efficiency;  
Performance-Oriented Budgeting.

## Article History:

Received:	26	July	2022
Revised:	04	October	2022
Accepted:	12	October	2022
Available online:	07	November	2022

## 1- Introduction

Controlling is an important part of organizations as it helps them enhance their efficiency and performance. A controlling system is necessary for state bodies and public sector organizations to ensure their competitiveness, sustainable functioning, development, transparency, accountability, and controllability of the results of the public sector activities under the new operating conditions [1]. Additionally, these conditions are associated with increased internal and external uncertainty factors of the environment, global economic changes, new conceptual approaches to the role of the state and public organizations in the economy, building an informational and digital economy, the informatization and digitalization of management processes, and the importance of a quick response to ongoing changes [2]. Therefore, these factors can be effectively controlled through an adequate system. Without effective controlling, there is a high chance that competitiveness, performance, transparency, and other key aspects of public organizations are undermined due to their high complexity and large organizational size. Some of the key corporate concepts that flow smoothly into the public sector are:

- Using the cost-benefit analysis in relation to the budgetary financing of public sector organizations;
- Expanding the volume of paid public services and commercializing the financial and economic activities of budgetary and autonomous institutions;

\*CONTACT: vasyuninam@internet.ru

DOI: <http://dx.doi.org/10.28991/ESJ-2023-07-01-015>

© 2023 by the authors. Licensee ESJ, Italy. This is an open access article under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<https://creativecommons.org/licenses/by/4.0/>).

- Introducing corporate governance tools in the public sector (New Public Management (NPM), New Public Administration, Neo-Weberian State, Good Governance);
- Changing the public sector budget (financial) reporting system in favour of the accrual method and international standards;
- Developing a market-oriented public service management system with elements of internal and external pricing and costs;
- Contracting with private providers;
- Developing performance indicators, including financial and non-financial indicators, service output indicators and benchmarks, and new practices;
- Budgeting decentralization, and delegation;
- Connecting budgets with financial and non-financial results;
- Changing the system of internal and external control;
- Providing state (municipal) services on a competitive basis, using the improvement of wages and incentives for civil servants, including KPI;
- Expanding the interaction between citizens and the state in public administration.

These complex factors make it necessary to use *control as a strategic management tool* and result-based management, which allows for the flexibility and efficiency of strategic and operational planning, timely support, and adjustment of managerial decision-making. Controlling provides a set of measures aimed at creating, developing, and maintaining the competitive advantages of public sector organizations through coordination, integration of functional areas of activity, and management tools at all stages of production and sale of services [3]. These features contribute to the effective development of public sector organizations in increasingly complicated market conditions. The existing literature has provided significant insight into different factors affecting the control systems in public organizations; however, a significant gap exists in the literature as there is a lack of knowledge on how to implement and enhance existing control systems in public organizations [4–6]. This study focuses on bridging this gap and teaching managers of public organizations to overcome the existing challenges in enhancing control in their respective organizations. Therefore, considering the importance of controlling in public organizations, this study aims to examine factors influencing controlling in public organizations and how its implementation can be enhanced to accomplish the desired business goals.

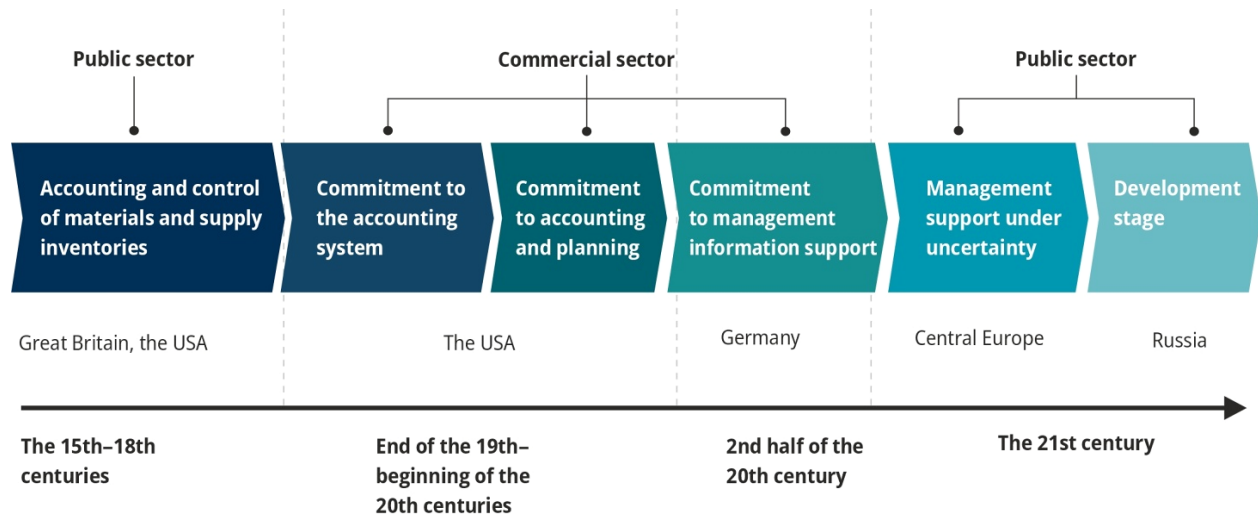
The structure of this research is as follows: After the introduction, which gives a background on the study, a literature review is provided. The literature review examines various existing research papers and studies conducted on control in the public sector to determine the existing challenges and gaps. The gaps and problems are then used to frame the hypotheses for the study. Further, the research methodology is presented, which discusses the method adopted for data collection and analysis. Through the use of these methods, the study has reached its results and findings. Based on these research findings, managerial implications are discussed that can help managers in public sector organizations implement effective controlling strategies for enhancing performance. Finally, the study discusses the paper's contribution to the ongoing literature and ends with a conclusion that lays down the key research findings and future direction for research in the concept of controlling in the public sector.

## 2- Literature Review

Control is considered a mechanism for implementing economic entities' strategic and operational goals, ensuring the rational use of resources with an optimal ratio of risk levels and financial stability. Chenhall [7], Van Helden & Reichard [8] noted the obvious promise of control in the public sector. The focus is on the issues of management accounting and management control in public sector organizations.

Using controls in the public sector is appropriate as a strategic management tool that provides flexibility and efficiency in strategic and operational planning, timely support, and adjustment of managerial decision-making at all stages of the "life cycle" of public services. Barretta & Busco [9], studying governance technologies in the public sector, propose to focus research on the institutional and political factors influencing the construction and dissemination of control in public sector networks. Jokipii [10] analyzed the determinants and consequences of internal control based on the theory of contingencies and noted the need for additional research on implementing this theory for internal control in the controlling system. The scientific works of Van Helden & Reichard [8], and Van Helden & Uddin [11] also deserve attention. In these publications, the authors underline the comparability of research results on certain aspects of management accounting, management control in the corporate sector, and performance-based management in the public sector based on the analysis of a significant number of relevant references (about 130 references in the first article and more than 50 references in the second article).

In Russia, until the 2000s, controlling was considered a cost management process and included the functions of planning, budgeting, and cost accounting. Having passed the stages of information orientation (the 1970s-1980s) and coordination (the 1990s) [6, 12], currently, control is defined as a system of information and analytical support and coordination to provide top management with information for making managerial decisions. Thus, according to Karminsky et al. [13], controlling is an internal consulting service for advising an economic entity's management. Figure 1 shows the main steps in the development of the theory of control.



**Figure 1. The evolution of the theory of controlling**

Table 1 gives a comparative description of the American, German and Russian schools of controlling.

**Table 1. Comparative characteristics of scientific schools of controlling**

Criteria	American school	German school	Russian school
Target Orientation of Controlling	Commitment to accounting	Commitment to information and coordination	Commitment to management support
Contents of Controlling	Ensuring the organization's manageability through planning, accounting, and control	Ensuring the rationality of the organization's management to achieve the planned results	Informational and analytical support for the management to achieve the goals of the organization's activities in a volatile external environment.
Management horizons	Operational management	Operational and strategic management	Operational and strategic management
Dominant Controlling Function	Accounting and controlling	Informational and analytical	Informational and analytical
Key representatives of the school	J. Brooks Heckert, James D. Willson, Charles T. Horngren, A. Fisher.	Albrecht Deyhle Hans-Ulrich Küpper & Jürgen Weber, Albrecht Becker.	Falko S.G., Karminsky A.M., Ivashkevich V.B., Danilochkina N.G.

Thus, the studies of the German school are more focused on information support for middle and top managers. The approaches of the American school are concentrated mainly on external users (owners, investors, contractors). The modern Russian concept of controlling (after the 2000s) is being developed to provide the best target indicators in the long term and informational and analytical support for operational management. Representatives of the Russian school of controlling (Danilochkina, Necheukhina, Grishunin, Falko, and others) pay due attention to the instability, volatility, and riskiness of the external environment. Timely identifying and eliminating the risks of an organization's activities is one of the controlling tasks.

The most recent literature illustrates that a fundamental level of attention has been paid to these three aspects of the set problem, although only separately. The problem was investigated incompletely. Specific research gaps are clear in the inadequate elaboration of how these aspects correlate. Also, a significant lack of literature focuses on these aspects cumulatively to discuss their combined effect on control management in the public sector. Besides this, another critical gap in the literature is that public organizations vary based on their function, type of service/product, and other institutional factors. There is a lack of information on the control risks posed by different types of public organizations. Another clear literature gap is the uncertainty of how to assuage and overcome the existing challenges and problems of controlling public sector organizations. These problems are critical and complex as they affect the performance of management in public firms and, thus, negatively affect their overall productivity and performance. In this regard, this study probes into these issues qualitatively, quantitatively, and systematically to fill the above gaps, using both broad international experience and Russia as a case study.

### 3- Problem Statement

The implementation of control strategies remains a major challenge for organizations as a large part of the existing literature is based on analysing the problem, and little focus has been given on the solutions. Controlling in public organizations is based on various factors that make control strategies more challenging and complex to implement. Thus, there is a significant lack of knowledge on effective implementation strategies to handle public sector organizations' control management. Controlling is a critical part of all organizations, and thus, there is a need for a deep understanding of the concepts so that the existing issues can be eliminated and the performance of the organizations can be enhanced. However, a major problem in this regard is that the existing literature does not provide complete in-depth knowledge of the different factors like instability, volatility, and riskiness of the external environment that affect organizational control. However, some studies have focused on these aspects individually. Due to this, the existing literature fails to give clear and concise guidance on the strategies adopted for enhancing the control management of public organizations.

### 4- Development of Research Hypotheses

Therefore, the following six hypotheses were raised.

**Hypothesis 1 (H1):** The implementation of controlling in the public sector is associated with several circumstances that determine the features of approaches, tools, and methods for controlling.

First, systemic differences in public sector management are associated with the characteristics of the production of the public goods based on budgetary, financial support, regulatory pricing, the presence of territorial boundaries of consumption, and the impossibility of applying the traditional market equilibrium and state model regulation of the volume of supply. According to Maslov et al. [14], business administration is complicated by the specifics of the “production” process [15] and the difficulty of measuring the final result, including the characteristics of the service (product), value for the consumer, and the impact on social processes (outputs, outcomes, impacts). In this regard, constructing a controlling mechanism for public sector entities is associated with prominent features in ensuring production efficiency management. Planning, analysis, and control of economic activity provide a multidimensional measurement of the consequences of the production and distribution of public goods based on assessing the budgetary, economic, and social efficiency.

Second, the public sector structure unites units of various institutional sectors of the economy [16]:

- The General Government Sector, represented by state bodies, public non-budgetary funds governing bodies, and non-market non-profit producers financed and controlled by public authorities and engaged in the production of goods and services of the collective or individual consumption free of charge or at prices that cannot significantly impact the magnitude of supply and demand (insignificant prices);
- The Financial Corporations Sector and Nonfinancial Corporations Sector – market producers that ensure the production of goods and services for profit, and the owner’s powers regarding which the public administration sector entities exercise control;

This classification is associated with certain assumptions related, for example, to the dualism of the positions of state budgetary and autonomous institutions. Having the status of non-profit organizations, these institutions act as subjects of market production in the implementation of income-generating activities and the collection of fees, which significantly impacts the demand for relevant services [16].

To study the architecture of controlling in the public sector concerning the conditions of the Russian Federation, we consider it appropriate to single out:

- Public authorities;
- State institutions that assume obligations to perform the functions of state bodies and produce goods and services that are not a source of financial benefits (profit), acting as recipients of budgetary funds and having the right to accept and fulfil budgetary obligations on behalf of a public legal entity (hereinafter – state non-profit organizations);
- State unitary enterprises engaged in the market production of goods and non-financial services for profit-making. These subjects are carriers of typical characteristics of organizing business and managerial processes inherent in the institutional units of the respective sub-sectors of the public sector of the economy.

Third, the organization of the managerial process in the public sector is carried out in the context of multi-vector goal-setting. Controlling in the public sector is subject, on the one hand, to the common values of economic entities – ensuring the efficiency of activities, maintaining economic and financial stability, and creating competitive advantages, and, on the other hand, the need to improve the quality of public administration, solve socio-economic problems,

ensure national security, and implement global and national development goals [17]. The system of controlling tasks in state bodies and organizations reflects the issues of the preservation of state assets, the targeted and efficient use of state resources, the quality of public services, and the reliability and transparency of information about the status of the state treasury, etc. These issues generally determine the efficiency of the public sector and the quality of public administration. Controlling in non-financial public corporations operating on a commercial basis additionally focuses on profitability, cost, profit optimality, fulfilment of obligations, etc., reflecting the quality of corporate governance.

Fourth, the public sector is continuously transforming under organizational and managerial innovations. Strengthening innovation development is a principle stipulated by the OECD Declaration on Innovation in the Public Sector as a necessary condition for effective public administration [18]. The activation of digital technologies, the improvement of the information base, and the development of methodological approaches to reporting and analysing the public sector entities' performance dictate the appropriate priorities and initiatives in organizing managerial processes. For example, the actual tasks of controlling – expanding the disclosure of information about the performance and risks of an economic entity, the use of tools for harmonizing statistical, financial, and management accounting, adjusting approaches to the valuation of tangible and intangible assets, etc. – are dictated by the need to ensure fiscal (budgetary and tax) transparency as a promising area for responsible public finance management [19].

Examples of international practice of controlling in state bodies and public and non-profit organizations allow us to specify several provisions that have a restraining effect on the development of control in the public sector (as opposed to the corporate environment). Thus, according to Weber & Schäffer [20] and Weber et al. [21], “the tools of a market economy cannot be easily transferred to the public sector and need to be differentiated from the standpoint of tasks, management, responsibility, and legal framework.” Hofstede [22] argued that “the development of a comprehensive controlling system requires intensive multi-year efforts of the entire management.” Kapoguzov [23], in turn, stated that the introduction and implementation of controlling procedures incur high intra-system transaction costs. The Court of Accounts of Baden-Württemberg argued in its advisory opinion that reporting is the central element of controlling state bodies, and the relevance of reporting is ensured under effective feedback from the manager (a decision-maker) [24].

**Hypothesis 2 (H2):** Features of implementing control in the public sector manifest in various functional areas of management.

1. *Goal-setting*: An important role in the composition of controlling activities is played by the definition and construction of a hierarchy of goals, their assessment, and control of the degree of their achievement. Some methodological features draw attention to the goal-setting of the state bodies' activities. It is normatively established that the definition of aims and tasks should be based on socially significant benchmarks that reflect the influence of the relevant state body on the implementation of Sustainable Development Goals, national strategic goals and objectives, and regions' socio-economic development priorities. National and federal projects and state programs are the main sources of setting strategic goals. In some cases, aims and tasks are subject to interagency coordination, which is especially important for implementing strategic planning documents [25].
2. *Strategic planning*: Concerning public sector entities, a significant lag in the development of strategic planning methodology is recognized, which is to some extent associated with the popularity of the theoretical thesis about the impossibility of strategic planning in the non-profit sector: “The concept of strategy may be alien to public sector organizations” [26, 27]. Under these conditions, one of the key tasks of controlling state bodies and organizations is to ensure and maintain the position of strategic planning as a management function aimed at effectively responding to changes in the external environment and appropriate adaptation of strategic planning models and tools to the conditions of non-profit activities.

Controlling in the field of strategic planning performs the following tasks:

- Building an effective system of strategic planning and adapting it to changes in exogenous and endogenous factors;
- Ensuring the development of documents of various statuses;
- Forming a system for motivating employees to achieve strategic goals and objectives, including coordinating information on goal-setting between structural divisions and territorial bodies of state authorities and organizations;

Controlling is intended to ensure the coordination of goal-setting of strategic planning documents with national development goals, state programs, and national (federal) projects. It helps create a mechanism to motivate employees of all links (responsibility centers) to achieve strategic aims and tasks, overcome the barrier between resource provision and strategy implementation, ensuring transparency of information about strategic goals and the risks of not achieving them. The instrumental base of controlling is aimed at forming the strategic priorities of a public sector entity, defining and cascading its aims and tasks, structuring indicators for evaluating performance, generating initiatives, and designing tools to achieve strategic goals.



The directions for controlling the strategic planning of the state bodies and organizations' activities are presented in Table 2. The general controlling scheme in terms of the strategic planning of the public sector entities' activities is shown in Figure 2.

**Table 2. Directions of controlling in the field of strategic planning of the state bodies and organizations' activities**

Directions of controlling	State bodies				Public profit organizations			Public, non-profit organizations			
	Mission				Mission			Mission			
Strategic goal-setting	State body's strategic plan (activity plan) (+ strategic chart)				Organization's strategy			Organization's development program (strategy)			
	Public policy	Aims	Tasks	Key results (Under state programs, national and federal projects, etc.)	Strategic priorities	Aims	Tasks	Strategic priorities	Aims	Tasks	Expectation effect (key results)
Decomposition of aims and tasks	State body's road map				Performance targets and indicators (balanced scorecard)			Performance targets and indicators (balanced scorecard)			
	Performance targets and indicators										
Managing goal achievement	State body's road map (+ strategic chart)				Measures and results			Measures and results			
	Measures (strategic actions)		Stages (terms)	Results							



**Figure 2. The general controlling scheme of strategic planning for the public sector entities**

**3. Budgeting:** The task of controlling is to set up a budgeting system that provides a close correlation between resource provision and indicators of efficiency (performance) of activities, considering an economic entity's organizational and financial structure. This task reflects the trends in the public sector development over the past two decades. The starting point in implementing this task is choosing between functional (activity-based costing) and process (activity-based budgeting) approaches combined with a centralized, decentralized, or mixed structure.

In our opinion, the process approach is recognized as the most appropriate for the conditions of effective cost management for state structures and organizations. "Research shows that significant rationalization opportunities and quality improvement (in the sense of the better performance of the set tasks) can only be achieved through process-oriented approaches" [28]. This process approach is based on an analytical study of the processes occurring in the system. The budget system in state bodies and organizations is constructed concerning the separation of processes that ensure the execution of the main actions, processes associated with the performance of managerial functions in each area, and processes aimed at improving and modernizing products, services, technologies, etc. Regarding the state apparatus, it is relevant to determine the main processes carried out by structural divisions that define the type of activity, and partial processes, performed by two or more structural divisions. It is also necessary to determine routine processes, carried out at the grassroots level, characterized by the constancy of implementation and a standardized

result, and project-based processes, carried out at the middle and higher levels with a unique result. The cost result is formed by consolidating costs for selected processes into the cost budget of the structural unit, followed by moving up the hierarchical structure and type of activity. Accordingly, the types of activities and their components, processes of various levels, are considered the bearers of costs and the object of budgeting [29, 30].

The budgeting process in public organizations can correspond to one of the options common with the corporate sector: centralized, decentralized, or mixed structures. In our opinion, a mixed approach is most common in non-profit activities in the public sector. Budgeting targets are formed centrally and used by structural units to form the relevant budgets. Miroshnikova & Shornikov [31] concluded the maximum implementation of the advantages characteristic of centralized and decentralized models while applying a mixed approach: the focus of budgeting on achieving goals, high detailing of information, and motivation of grassroots structural units for the results of activities.

The directions of controlling budgeting in state bodies and organizations are shown in Figure 3.



**Figure 3. Controlling in the field of budgeting in state bodies and organizations (Compiled by the authors)**

**Hypothesis 3 (H3):** Controlling in the public sector increases public administration efficiency by improving control and diagnostic, organizational, and methodological tools and procedures.

Controlling ensures the implementation of the control functions of management, participating in the formation of the control environment and coordination of control actions, enabling us to create a response system to the likelihood of negative consequences arising during the provision of public services and the exercise of state powers. The task of controlling is to create an internal control system consistent with strategic and operational planning, which allows for evaluating the progress and results of implementing planned and target parameters.

The organization of control actions and procedures is highly regulated by a set of official directives and external standards that ensure the regulation of the order, procedures, tools, and officials' powers during control. External standardization of control is a tool for forming a unified methodological, instrumental, and organizational basis for the control environment of the public sector, which allows for the transition to a unified electronic system for generating accounting and reporting data. The normative description of operational processes, technologies, and internal control tools increases the degree of controlling unification among public sector entities. However, it reduces the degree of its impact on the quality of control actions and procedures carried out in public sector entities.

The organization and effectiveness of control actions and procedures carried out by structural units (officials) of state bodies and organizations in certain areas (in particular, in financial activities and the implementation of budgetary

procedures) are the subject of verification. It is examined by internal and external state control bodies during control and expert-analytical activities and by other authorized bodies while assessing the quality of financial management. In particular, the state financial control bodies check the organization and quality of internal financial control and internal financial audits conducted by state bodies in the framework of executing budgetary powers, proceeding from the issues of the sufficiency of internal legal support, the quality of planning control and audit activities, the compliance of the organization of internal financial control (IFC) and internal financial audit (IFA) to the provisions of regulatory acts, including ensuring the independence of the subjects of the VFA, the effectiveness of audit activities, the achievement of the IFC and IFA goals, the impact of the IFC and IFA on the achievement of performance indicators) [32]. In this regard, it becomes relevant to provide an internal assessment of the quality of control actions carried out to ensure the legality, expediency, and effectiveness of the implementation of operational actions and procedures. A low assessment of the reliability of internal control in state bodies and organizations is a manifestation of imperfect controlling.

The advantage of the instrumental base used by controllers when performing internal control tasks is associated with analyzing and assessing deviations of actual indicators from the strategic and current perspectives. The choice of tools is determined by the controller's tasks and is limited by the specifics of the activity. The results of studying controlling in public sector entities focus on the following:

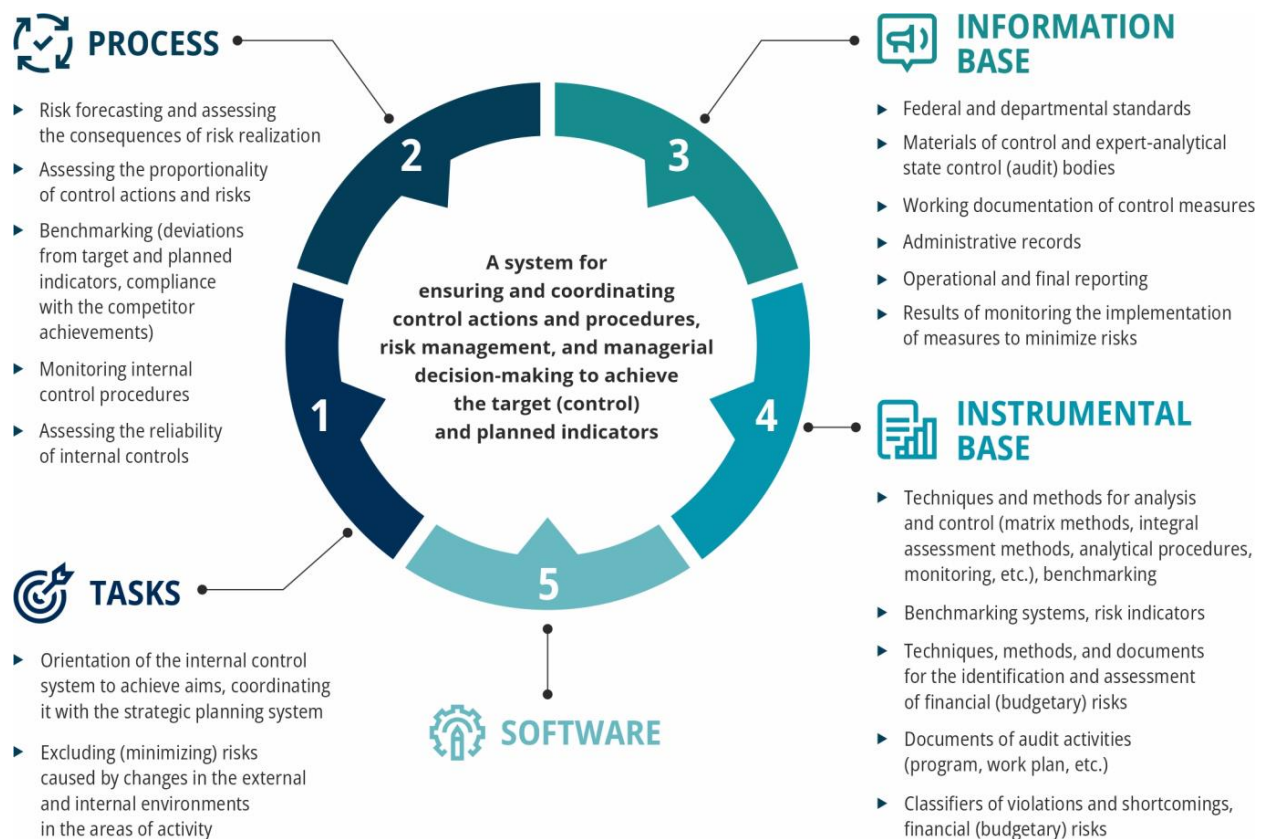
- Universal methods of deviations that provide for the determination and assessment of the deviation of the actual values of parameters (financial, organizational structure, time) from the planned or target values, followed by the determination of corrective measures [13, 33, 34];
- Recommendations for the use of SWOT analysis, which makes it possible to conduct a comparative assessment of an entity's position regarding state organizations, including relative to competitors [35];
- Analysis of overhead costs focused on identifying options to reduce the costs of providing public services and reasonable pricing (calculation of cost recovery standards) [5, 36–38];
- Positive results of using statistical process management tools, including the use of control charts as a tool that allows for visualization and evaluation of the variability of processes and results (which is especially relevant regarding the state bodies' activities) [14, 39];
- The perspective of benchmarking the actual values of state bodies' performance with control values [40] was formed on the basis of "exemplary" results. The external reporting system of public sector entities is based on the presentation of information in a unified and conventional format. This can be exemplified by the reports of state bodies on the implementation of action plans. Their quality is the subject of frequent criticism because of the lack of completeness and content of the information provided, which reduces the objectivity of the assessment and the validity of managerial decisions [32]. The use of non-standard reporting forms and algorithms hinders the possibility of digitalization of analytical support for management processes and integration into a single electronic system for generating accounting and reporting data. The task of controlling the formation of an internal reporting system that meets the needs of the top management is supplemented by the requirement to consider the requests of external users to increase the role of external reports in management processes;
- The possibility of recognizing internal financial audits as elements of financial controlling in state bodies and individual state organizations is not without reason. The modern architecture of internal financial audit includes a set of tools and processes aimed at assessing the reliability of internal financial control, ensuring the reliability of accounting (budget) reporting, and improving the quality of financial management. The internal financial audit makes it possible to form a set of measures to improve the quality of internal financial control, eliminate budget risk factors, reduce their significance, and ensure the effective use of budget funds and state property.

The general controlling scheme of internal control over the activities of state bodies and organizations is shown in Figure 4.

Based on the above, the concept of controlling in the public sector can be defined as a system for providing and coordinating management functions in public sector entities, which is characterized by the target orientation toward solving national problems and achieving socially significant effects stipulated in state strategic planning documents. It implies wide coverage of management processes by federal and departmental standards and regulations, enabling standardizing the processes of preparing reporting data and forming a system of standard algorithms for managerial decisions. It is also characterized by the possibility of consolidating and comparing information on costs and results for similar types of public services and procedures (operations) related to the exercise of state powers, for subsequent costing and economic justification of their cost, and by the inclusion of market instruments (risk management, business analysis, outsourcing, etc.), reflecting changes in the institutional environment of public administration in the management process. According to the research, in German public organizations, about 45% of efforts and time is



spent on direct controlling tasks, and 55% is directed to implement related tasks. Simultaneously, the execution of tasks concerning control accounts for about 18% of the time resource, 10% for planning, and the rest of the time is assigned for reporting and methodological support of management processes [24].



**Figure 4. Controlling in the field of internal control over the state bodies and organizations' activities**

The concept of controlling in the public sector provides for a single digital platform; consolidation of planning, accounting, and reporting information; standard formats for data analysis and presentation; measurement and evaluation of the results of financial and economic activities of entities; and a unified internal reporting system.

**Hypothesis 4 (H4):** Cultural control positively affects the intrinsic motivation of the employees working in a public sector organization.

Organizations deploy cultural controls to encourage mutual employee monitoring. The chosen shared norms, beliefs, behaviors, and traditions form the foundation of an organizational culture. Statements of a code of ethics, the leadership's attitude, and the implementation of providing feedback among employees are a few examples of cultural control in the public sector. By strengthening the emotional ties between employees and the business, cultural control is predicted to promote employee connectivity. This control agrees with SDT theory, which contends that the desire for relatedness can be satisfied when an employee feels a sense of belonging to his workplace or to other employees. When this demand is satisfied, intrinsic motivation should rise [35].

**Hypothesis 5 (H5):** Controlling the employees' actions positively affects the performance of public sector organizations.

Action control is a management control that ensures that staff members behave in the organization's best interests. Organizations use preventative and detective controls to lower risks and accomplish corporate goals [36]. Action controls can take the shape of administrative and physical constraints on employee conduct, such as the usage of computer passwords, access restrictions at the workplace, and authorization restrictions for making decisions. Electronic job monitoring systems are likely to make employees feel more stressed and less empowered on an individual level. When the controlling and informing components of the Motivation Crowding Effect theories are connected to action control, the controlling aspect will predominate. According to SDT theory, action control will also reduce employee autonomy, which will result in a drop in intrinsic motivation [37, 38]. However, the installation of action control will put pressure on the staff to complete certain tasks from the outside. Activity control will also

improve employee performance in public sector firms since it is linked to the relationship between an action and its result, such as better approval, attempts to eliminate procedural errors, and awards.

**Hypothesis 6 (H6):** Management controls are significantly influenced by management autonomy in public organizations.

Action controls like laws, rules, local policies, and SOPs transmit crucial information about how tasks should be carried out, which is typically advantageous for the clarity of managers' roles. Action controls direct behavior and makes management jobs easier. As a result, managers will likely be better educated about their roles if a wider range of action restrictions are implemented rather than a smaller set of rules. The attention effect and the disincentive to discretion cause managers to become even more aware of rules as action control tightness increases, which improves their job clarity [39, 40].

Figure 5 shows the research model and hypothesis framework for this study.



**Figure 5. Research model and hypothesis framework**

Research method and design are important for completing research as they are the blueprints that can be used to accomplish the research aim. The selection of the right research design and approach is critical as they should align with the research. Based on the nature of this study, a descriptive research design has been selected that explains the relationship between different variables. Here, descriptive research design helped in examining the impact of control methods in public organizations on performance. Besides this, a mixed approach has been chosen to conduct this study. This means that the research used both qualitative and quantitative methods to collect and analyze the data. For the qualitative approach, the data were collected through a literature review, while quantitative data were gathered through surveys of the managers of public sector organizations in Russia. The data were analyzed thematically and statistically to determine the trends of control and the problems faced by the organizations. Based on the data analysis, the implementation of control strategies is proposed at the end to enhance the performance of public sector management.

## 5- Data Analysis and Result

The survey was conducted with 102 participants working as managers in various Russian public organizations. The primary reason for conducting the survey was to determine the impact of control practices in public organizations in Russia. In this regard, responses were recorded through a questionnaire, and the results were analyzed statistically (see Appendix I).

### 6-1- General Characteristics

The results of the survey showed that about 90% of the managers were male, whereas only 10% were female. Also, the age range of the managers was between 25 and 40 and above. It was noted that about 60% of the managers were above the age of 40, while the rest were between 25 and 40. Additionally, most managers had attained education up to a master's and more than ten years of experience. Table 3 shows the demographics of the participants.

**Table 3. Demographic characteristics**

	N	%
<b>Gender</b>		
Female	10	9.804
Male	92	90.196
<b>Age</b>		
25 to 40 years old	40	39.216
More than 40 years old	62	60.784
<b>Education Level</b>		
Bachelors	19	18.627
Diploma	6	5.882
Doctorate	13	12.745
Masters	64	62.745
<b>Experience</b>		
5 To 10 Years	9	8.824
Less than five years	27	26.471
More than 10 Years	66	64.706

### 6-2- Descriptive Statistics

The study focused majorly on two areas: implementation of control practices and the impact of control on organizational efficiency. It can be noted from Table 4 that most of the participants supported the statements inquired in the questionnaire. The mean value of the responses is greater than 3, and the standard deviation is less than 1 for almost all the responses. These findings show that the managers working at different Russian public organizations agreed on the impact of control on the efficiency of the organizations.

**Table 4. Descriptive statistics**

<b>Descriptive Statistics</b>							
	N	Mean	Var.	Std. Dev.	Min.	Max.	Range
<b>Implementation of Controlling</b>							
IC1	102	4.216	0.963	0.981	1	5	4
IC2	102	4.127	0.647	0.804	2	5	3
IC3	102	3.882	0.738	0.859	2	5	3
IC4	102	4.039	0.929	0.964	1	5	4
IC5	102	3.745	0.984	0.992	1	5	4
IC6	102	3.647	0.944	0.971	1	5	4
<b>Impact of Control on Efficiency</b>							
ICF1	102	4.196	0.872	0.934	1	5	4
ICF2	102	3.882	0.976	0.988	1	5	4
ICF3	102	4.314	0.653	0.808	1	5	4
ICF4	102	4.196	0.832	0.912	1	5	4
ICF5	102	4.118	0.798	0.893	1	5	4
ICF6	102	4.157	0.866	0.931	1	5	4
ICF7	102	4.245	1.098	1.048	1	5	4

### 6-3- Reliability and Validity

The reliability and validity of the results were also tested during the study. The values of Cronbach's alpha are above 0.6 for both the relationships, which shows that the results are reliable and valid (Table 5).

**Table 5. The reliability and validity of the results**

Reliability Statistics		
	Cronbach's Alpha	N of Items
Implementation of Controlling	0.687	6
Impact of Controlling on Efficiency	0.778	7

### 6-4- T-Test

One-sample T-test was used to determine the significance of the difference in the samples and to assess the hypotheses. It can be noted from the T-test that the t-values are greater than 0 and beyond the range of one standard deviation. This means that there is significant evidence against the null hypotheses set in the study. Therefore, based on the results of the T-test, the alternative hypotheses set for the study are validated (Tables 6 and 7).

**Table 6. One-sample statistics**

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Implementation of Controlling	102	3.943	0.581	0.058
Impact of Controlling on Efficiency	102	4.158	0.611	0.061

**Table 7. One-sample test**

One-Sample Test						
Test Value = 3						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Differences	
					Lower	Upper
Implementation of Controlling	16.378	101	0.000	0.943	0.829	1.057
Impact of Controlling on Efficiency	19.144	101	0.000	1.158	1.038	1.278

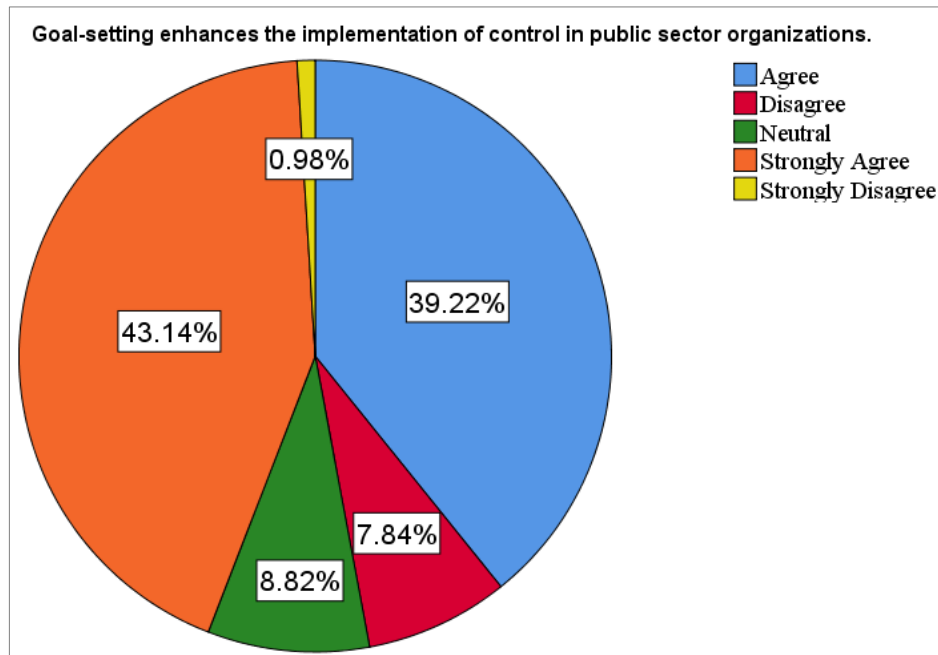
### 6-5- Implementation of Controlling

Implementation of control practices was examined closely in the study to determine their importance for a public organization. It was noted that most respondents agreed that public organization control could be enhanced through smart tools and techniques. Besides this, responses to another question about the functional control of public organizations were majorly positive (Table 8). It was noted in the study that implementation of controlling holds the most importance in public organizations, which can be enhanced through different steps like goal-setting, strategic planning, and the use of advanced implementation techniques like technological tools. These aspects were missing in past studies, and thus, they failed to aid in guiding the organizations with a step-by-step procedure to enhance control systems. However, this gap is effectively covered by this study.

**Table 8. Implementation of control in the public sector is enhanced by the use of smart tools and techniques**

	Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	Agree	31	30.4	30.4
	Disagree	5	4.9	35.3
	Neutral	3	2.9	38.2
	Strongly Agree	61	59.8	98.0
	Strongly Disagree	2	2.0	100.0
<b>Total</b>	102	100.0	100.0	-

Goal setting was the major aspect that the respondents considered highly effective in enhancing control practices (Figure 6). This is due to the notion that, through clear goals, organizations can effectively implement control standards. It was noted that without proper goal setting, organizations could go off the track during control procedures, which decreases the effectiveness and efficiency of the system. Hence, goal-setting is essential to attain the best outcomes from control systems.



**Figure 6. Goal setting enhances the implementation of control in public sector organizations**

Similarly, another aspect that was examined during the study was strategic planning. More than 70% of the respondents either agreed or strongly agreed with the idea that strategic planning can lead to weak control in case of an improper focus (Figure 7). This shows that the managers believe that it is important to enhance strategic planning for better control.



**Figure 7. Strategic planning can lead to weak control if it is not properly focused**

#### **6-6- Impact of Controlling on Efficiency**

The study also examines the impact of control in public organizations on improving efficiency. It was noted in the findings that most respondents believed that controlling enhances different functions of the public organization and, thus, enhances the overall efficiency (Table 9).



**Table 9. The impact of controlling on efficiency**

Controlling ensures that the functions of the public sector organizations are efficient in their respective roles					
		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	Agree	36	35.3	35.3	35.3
	Disagree	6	5.9	5.9	41.2
	Neutral	6	5.9	5.9	47.1
	Strongly Agree	53	52.0	52.0	99.0
	Strongly Disagree	1	1.0	1.0	100.0
	<b>Total</b>	102	100.0	100.0	

In addition to this, it was noted that the autonomy of the management is highly important for implementing enhanced control. This can also be noted from the survey results, where only a few respondents disagree with this notion. Overall, the survey results denote that better control leads to enhanced efficiency of public organizations (Table 10).

**Table 10. The survey results**

Autonomous management is likely to implement enhanced control practices					
		Frequency	Percentage	Valid percentage	Cumulative percentage
Valid	Agree	42	41.2	41.2	41.2
	Disagree	2	2.0	2.0	43.1
	Neutral	6	5.9	5.9	49.0
	Strongly Agree	49	48.0	48.0	97.1
	Strongly Disagree	3	2.9	2.9	100.0
	<b>Total</b>	102	100.0	100.0	

## 6- Research Analysis and Discussion

This study conducted a qualitative and quantitative analysis to validate the hypotheses. One of the major findings of the study was that the concepts of controlling the public organizations provided by the existing literature were also supported by the quantitative analysis. Therefore, qualitative and quantitative results are aligned to provide the same recommendations for improving control practices in public organizations. The major contribution of this research is that it focused on the Russian public sector to enhance the control practices and improve their efficiency. Table 11 shows the comparative analysis of the study based on qualitative and quantitative analysis. In addition to this, this study has provided a step-by-step procedure to help the organization implement effective control systems. This is a critical area that was lacking in previous studies. Also, the inclusion of technology for controlling public organizations is a key aspect of this study. It was noted in the results that most people in public organizations believe that the use of modern technology can significantly enhance control systems and improve organizational performance. In this regard, this study has provided significant insight into this area, which can help organizations plan and implement technological systems for controlling according to their needs. Hence, this study has provided details considering the modern needs of public organizations, with a focus on implementation, so that existing challenges can be handled effectively.

**Table 11. Comparative analysis**

Standard of comparison	Existing literature (accumulated scientific knowledge)	New scientific results obtained in this study (an increase in scientific knowledge)
H1	Budget, financial support, and innovation significantly benefit the control practices in public sector organizations.	Smart tools and technology are important methods for enhancing control in the public sector.
H2	The feature of implementing control in organizations based on goal-setting, strategic planning, and budgeting is highly critical for enhancing control.	Goal-setting and strategic planning are the most important in controlling public organizations more effectively.
H3	Improving the control and diagnostics improve organizational efficiency through auditing and monitoring.	Effective implementation of control strategies like budgeting enhances control and organizational efficiency.
H4	The working environment has a significant impact on the motivation of employees, which enhances their efficiency.	A controlled organizational culture based on equality and justice can significantly improve organizational performance and efficiency.
H5	Administrative and physical action controls enhance organizational efficiency.	Controlling the actions of employees, to a certain extent, is beneficial for organizational efficiency.
H6	The autonomy of management has a major link with enhanced organizational control and efficiency as autonomous management can make effective decisions.	Autonomous management can make smart decisions without being restricted to acting within specific limits, which enhances control and efficiency.

### 7-1- Results, Implications, and Recommendations

It can be noted from the results of the study that control practices are highly important for public organizations to enhance their efficiency. Goal-setting and strategic planning have to be the focus of the organizations to ensure that the control practices are effectively implemented so that the organization can work with optimized potential. Besides this, smart tools and technologies can play a significant role in enhancing organizational control, which will improve administrative efficiency. In Russia, most managers believe that through the autonomy of management, control can be enhanced, which will lead to better performance. In addition to this, the control of the actions of the employees is also essential, to a specific extent. Excessive controls can harm the organizational culture, leading to a negative effect on organizational efficiency. Hence, based on the findings of the study, the following recommendations are made to public organizations:

- Management should be provided greater autonomy to enhance control;
- Smart tools and technologies should be used to improve controlling practices;
- Employees' actions should be controlled to the extent that they benefit the organizational efficiency;
- Organizational culture should be controlled to provide equality and justice so that efficiency can be enhanced;
- Goal-setting and strategic planning should be at the core of public organizations to enhance controlling strategies.

### 7-2- Limitations and Further Research

Although this research has provided a deep insight into different aspects of controlling public sector organizations, it has some limitations. One of the major limitations of this research is the limited sample size, which could have been a source of bias/inaccuracy in the data. Due to this, it is important to conduct future research with an enhanced sample size so that more reliable results can be produced. Besides this, control in public-sector organizations is based on various complex factors, including the motivational factors of the employees. This is an important area that has not been fully explored in this study. Therefore, future research should include this critical area to provide more insights into the control of public sector organizations and improve their efficiency. In general terms, the concept of controlling in the public sector in the main management areas is provided in Table 12.

**Table 12. Performance comparison of controlling in state bodies and organizations (Compiled by the authors)**

Functional areas	State bodies	Public non-profit organizations	Public profit organizations
Goal-setting	<p>The aims and tasks are reflected in the state body's activity plans and reports on its implementation; formed proceeding from the goals and objectives of strategic planning documents; structured according to the directions of state policy and functions corresponding to the area of competence. Aims and tasks may be subject to interdepartmental agreement. Although qualitative-quantitative formulations of goals and objectives are used, they can be supplemented with target indicators of resource provision.</p> <p>Goal achievement assessment is used to assess the state bodies' effectiveness.</p>	<p>Aims and tasks are reflected in the programs (strategies) of the organization's development; they are formed based on the priorities of socio-economic development in the long term and structured according to key areas of activity and problems. Although qualitative formulations of goals and objectives are used, target indicators may be absent.</p> <p>Goal achievement assessment is used in grant state support.</p>	<p>Aims and tasks are reflected in the organization's strategies; they are formed based on the priorities of socio-economic development, considering global and national industry market trends.</p>
Strategic planning	<p>The main tool is an activity plan, which is formed according to the requirements of regulatory legal acts. Aims and Tasks reflect socially significant results and final effects (mainly in qualitative characteristics).</p> <p>Target indicators are cascaded by management levels. Target indicators include indicators of state programs, national and federal projects;</p> <p>Activities are connected to the expected (quantitatively measurable) results.</p> <p>The controller is entrusted with developing and adapting the strategic planning system, and the methodological definition of planning tools and methods is provided. Participation in budget planning is implied. There is a system of motivation to achieve the parameters of the plans, facilitating planning processes. It is an element of strategic controlling.</p>	<p>The main tool is a development program, which is formed in the manner and forms established by the state body that performs the functions of the founder (or a state organization); Aims and Tasks are focused on immediate results (in quantitative and qualitative characteristics).</p> <p>An adapted balanced scorecard system is used; the first component in the BSC is the "consumers." The cascading of targets across management levels is limited. The financial component is based on indicators of the financial provision of public services. Activities are connected with the expected results (quantitatively measurable). The Controlling Service performs the following tasks: development and adaptation of the planning system, the methodological definition of planning tools and methods, a system of motivation to achieve the plan parameters, and facilitation of planning processes. It is an element of strategic controlling.</p>	<p>The main tool is a strategy formed in the manner and the form established by the organization. Aims and Tasks are focused on immediate results (mainly in quantitative characteristics); ROI, EVA, CF, and BSC scorecards are used. In the BSC, the first position is taken by the financial component. Target indicators are cascaded for all levels of management. The financial component is based on indicators of cost-effectiveness, profitability, and fulfillment of obligations to transfer income to the budget. Activities are connected with the expected results (quantitatively measurable). The controlling service performs the following tasks: development and adaptation of the planning system, the methodological definition of planning tools and methods, a system of motivation to achieve the parameters of the plans, and facilitation of planning processes.</p> <p>It is an element of strategic controlling.</p>
Budgeting	<p>Cost-benefit planning is the central element of controlling in the functional planning area. Process-oriented budgeting tools are applied.</p>	<p>Cost-benefit planning is the central element of controlling in the "planning" functional area. The organization of budgeting is mainly based on a mixed model. Special techniques and budgeting tools ("bottom-up," "top-down," "counter flows," etc.) are applied.</p>	<p>Cost-benefit planning is the central element of controlling in the "planning" functional area. Special techniques and budgeting tools ("bottom-up," "top-down," "counter flows," etc.) are applied. The organization of budgeting is mainly based on centralized and mixed models.</p>

Functional areas	State bodies	Public non-profit organizations	Public profit organizations
Internal control	It is carried out in a single standardized control environment. The organization and effectiveness of control actions and procedures are the subjects of an external assessment of the authorized state control bodies (audit). It provides for identification and analysis of deviations from target indicators of state bodies' activity plans, state programs for which the state body is the responsible executor or co-executor, federal and departmental projects; assessment of the risk of failure to achieve strategic goals; analysis and assessment of deviations from current planning indicators; ensuring the quality of reporting for external and internal users. Internal financial audits meet the task of financial controlling. There is a wide scope of benchmarking.	It is carried out in a single standardized control environment. The organization and effectiveness of control actions and procedures are the subjects of an external assessment of the authorized state control bodies (audit). It provides for identification and analysis of deviations from target indicators in strategic planning documents, the assessment of the risk of failure to achieve strategic goals; analysis and assessment of deviations from current planning indicators; assessment of the reliability of internal control; ensuring the quality of reporting for external and internal users. Internal financial audits meet the tasks of financial controlling (for organizations receiving budget funds)	It is carried out in a general control environment regulated by federal law. It provides for identification and analysis of deviations from target indicators in strategic planning documents, the assessment of the risk of failure to achieve strategic goals; analysis and assessment of deviations from current planning indicators; assessment of the reliability of internal control; ensuring the quality of reporting for external and internal users.

## 7- Conclusions

The process of developing control in the public sector is based on some principles that reflect the methodological and organizational foundations for constructing control as a system. The set of principles requires their distribution by functional blocks:

- An analytical block: the principle of progressiveness, the principle of continuity, the principle of elasticity, the principle of flexibility, and the principle of inertia.
- An information block: the principles of publicity and transparency; the principle of reliability; the principle of timeliness; and the principle of feedback;
- A methodological block: the principle of consistency, the principle of integrity, the principle of unity of methods, the principle of sustainability, the principle of scientific validity, and the principle of multi-functionality;
- A managerial block: the principle of efficiency; the principle of prompt response; the principle of systematic monitoring; and the principle of the variability of decisions.

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 public organizations to increase the operational flexibility, transparency, and objectivity of information about the processes and results of those activities, eliminate risks in the short and long terms, and improve the efficiency of management decisions.

The study of the issues of controlling in the public sector raises the question of the prospects for expanding the traditional approach to new areas of management and the possibility of using controlling tools in the framework of departmental interaction (conditionally referred to as departmental controlling). Expectation effects – changes in costs, results, and processes – are associated with the formation of a unified information system for assessing the effectiveness of the state bodies' and organizations' activities, pricing, and formation of standards for reimbursement of costs for the provision of public services on the basis of cost accounting; the use of performance indicators; and the effectiveness of using budgetary funds during the justification of budgetary allocations and budgeting apportionment.

The prospects for control in the public sector are associated with its presentation as a system that enables implementation processes and procedures in several areas.

1. Coordination and informational-methodological support of planning, providing for the formation of a system of aims and tasks for the long term in compliance with the development strategy and taking into account the influence of factors of the external and internal environment, the determination of a system of target indicators making it possible to assess the degree of achievement of the set goals and follow the formed strategy, the selection of principles and methods of planning, the determination of tools for harmonization of operational and strategic plans, and plans formed within the framework of various responsibility centers, and the development of unified forms of plans and regulations (standards) for their preparation;
2. The coordination of strategic and operational activities is based on collecting data on current activities at responsibility centers (structural divisions) and functional areas in the common information and analytical system, monitoring and controlling the results of current activities using indicators of compliance with strategic goals, developing methods and tools for assessing the risks of failure to achieve the goals and indicators stipulated in the organization's development strategy and strategic plans, and elaborating the forms of current and consolidated reporting and regulations for its preparation;
3. Streamlining the procedures for monitoring and assessing risks based on determining a set of criteria and indicators for assessing the risk intensity of operations and procedures carried out in various functional areas; collecting and exchanging actual data on the financial condition, production, and other structures; violations and shortcomings committed by responsibility centers; developing standards and tools for identifying and assessing risks; and establishing an algorithm of actions to minimize and overcome risks.

As part of the research, a methodological framework for constructing controlling systems was formed based on the typology of managerial decisions, which will help develop recommended formats (standard algorithms) of actions that correlate with certain typical economic situations and interrelated facts of economic activity. The structure of systemic controlling components was formed. The composition of the elements of controlling tools was detailed, considering the key areas, which are defined as goal-setting, strategic planning, budgeting, and internal control, which will significantly increase the efficiency of managerial decision-making processes in the public sector.

The following should be noted as significant trends that can be identified as promising areas for the modernization of management mechanisms in the entities of the public administration sector:

- The formation of multi-level controlling systems providing for the allocation of external and internal contours, where the external contour is a set of information flows associated with the implementation of the main managerial strategy for the activity of the public sector entity. This strategy is determined by the composition of the tasks and powers assigned to the entity while implementing national interests. The internal sector generates systematized information distributed by the register elements; this information characterizes the activities of individual structural units of the public sector entity, that is, structural units, subordinate institutions, or controlled institutions that are part of the internal structure of the public administration entity within the framework of which interrelated managerial decisions are made;
- The plasticity of the tools used suggests that the set of controlling tools should correlate with the target orientation of the ongoing processes and undergo a transformation in a timely manner;
- The introduction of elements of a risk-based approach, the application of which involves selecting indicators considered the most significant control points that allow for assessment of the threat and organization of a timely and adequate response to a negative high-risk situation, providing management personnel with information for making appropriate decisions;
- The introduction of economic forecasting elements, allowing for the calculation of the amplitude of indicator fluctuations and the formation of normal value zones and increased risk zones, in relation to which critical values should be distinguished (critical minimum or critical maximum);
- The development and implementation of technologies that provide for the automatic generation of information containing recommended formats (typical algorithms) of actions and decisions of managerial personnel in response to certain economic situations, usually of a high-risk nature, makes it possible to differentiate the mechanisms for responding to a situation by choosing the most appropriate option, corresponding to the degree of indicator deviation from normal values;
- The creation of a digital controlling system that forms the digital space of a group of interrelated public administration sector entities (in the case of long-term or permanent interaction) ensures that any component of the system can easily receive the necessary information prepared by the controlling entity in response to a request or provide automatic generation of this information in compliance with search requests (filters).

The following methodological approaches to the formation of a controlling system in the public sector are distinguishable as conceptually new ones:

- A systematic approach to controlling in the public sector provides a set of agreed-upon tools, methods, algorithms, and procedures aimed at coordinating and maintaining the organization's basic management functions with the participation of responsibility centers, cost centers, strategic development centers, and an accounting center aimed at assessing objectivity and transparent presentation of performance results, elimination of risks associated with the internal and external environment in the short and long terms;
- A process approach to controlling in the public sector, focusing on the process of supporting the resource management of a public sector entity, aimed at improving the efficiency of activities and the implementation of strategic goals and objectives based on the integration and coordination of the main functional elements of the management system;
- A risk-based approach to controlling in the public sector, implemented through an integrated management support mechanism focused on achieving the strategic and operational goals of an economic entity through early diagnosis of risks and the development of a response system based on feedback despite uncertainty in the external and internal environment.

## 8- Declarations

### 8-1- Author Contributions

Conceptualization, M.V. and M.K.; methodology, M.K.; software, M.K.; validation, I.M.; formal analysis, N.G.; investigation, M.V. and I.M.; resources, M.V.; data curation, N.G.; writing—original draft preparation, I.L. and N.G.; writing—review and editing, N.M. and E.I.; visualization, M.K.; supervision, E.I.; project administration, E.I.; funding acquisition, not applicable. All authors have read and agreed to the published version of the manuscript.

### 8-2- Data Availability Statement

The data presented in this study are available in the article.

### 8-3- Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

### 8-4- Institutional Review Board Statement

Ethical review and approval were waived for this study due to the fact that human interaction was limited with anonymous interviewing and therefore human subjects were not affected in any way.

### 8-5- Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

### 8-6- Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

## 9- References

- [1] 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. doi:10.1016/j.jbusres.2020.10.069.
- [2] 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. doi:10.1080/09540962.2021.1963071.
- [3] Grossi, G., Kallio, K. M., Sargiacomo, M., & Skoog, M. (2020). Accounting, performance management systems and accountability changes in knowledge-intensive public organizations: A literature review and research agenda. *Accounting, Auditing & Accountability Journal*, 33(1), 256–280. doi:10.1108/AAAJ-02-2019-3869.
- [4] 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. doi:10.1080/01900692.2019.1645689.
- [5] 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*. doi:10.1177/00208523211054876.
- [6] Moisés Toapanta Toapanta, S., & Enrique Mafla Gallegos, L. (2020). An Approach to Optimize the Management of Information Security in Public Organizations of Ecuador. Fault Detection, Diagnosis and Prognosis, Intech open, London, United Kingdom. doi:10.5772/intechopen.88931.
- [7] Chenhall, R. H. (2006). Theorizing Contingencies in Management Control Systems Research. *Handbooks of Management Accounting Research*, 163–205, Elsevier, Amsterdam, Netherlands. doi:10.1016/s1751-3243(06)01006-6.
- [8] van Helden, J., & Reichard, C. (2019). Management control and public sector performance management. *Baltic Journal of Management*, 14(1), 158–176. doi:10.1108/BJM-01-2018-0021.
- [9] Barretta, A., & Busco, C. (2011). Technologies of government in public sector's networks: In search of cooperation through management control innovations. *Management Accounting Research*, 22(4), 211–219. doi:10.1016/j.mar.2011.10.002.
- [10] Jokipii, A. (2010). Determinants and consequences of internal control in firms: A contingency theory-based analysis. *Journal of Management and Governance*, 14(2), 115–144. doi:10.1007/s10997-009-9085-x.
- [11] van Helden, J., & Uddin, S. (2016). Public sector management accounting in emerging economies: A literature review. *Critical Perspectives on Accounting*, 41, 34–62. doi:10.1016/j.cpa.2016.01.001.
- [12] Necheukhina, N. S. (2010). Modeling Accounting Events in the Controlling System at Industrial Enterprises. Ph.D. Thesis, Perm National Research Polytechnic University, Perm, Russia.
- [13] Karminsky, A. M., Falko, S. G., Zhevaga, A. A., & Ivanov, N. Yu. (2021). *Controlling: A Textbook*. Forum Publishers, INFRA-M, Moscow, Russia.
- [14] Maslov, D. V., Dmitriev, M. E., & Ayvazyan, Z. S. (2018). Selected Aspects of Public Administration Transformation: Processes and Quality. Analytical Review. Available online: [https://www.csr.ru/uploads/2018/02/Gosupravlnie\\_Web.pdf](https://www.csr.ru/uploads/2018/02/Gosupravlnie_Web.pdf) (accessed on August 2022). (In Russian).



- [15] OECD. (2002). Glossary of Key Terms in Evaluation and Results Based Management. The Organisation for Economic Co-operation and Development (OECD), Paris, France. Available online: <https://www.oecd.org/dac/evaluation/2754804.pdf> (accessed on August 2022).
- [16] De Clerck, M. S., & Wickens, T. (2019). Government Finance Statistics Manual 2014. International Monetary Fund, Publication Service, Washington, United States. Available online: <https://www.imf.org/external/Pubs/FT/GFS/Manual/2014/gfsfinal.pdf> (accessed on August 2022).
- [17] Idris, J. (2021). Indonesia's Public Administration Reform Policy. *Journal of Hunan University Natural Sciences*, 48(3).
- [18] OECD Legal Instruments. (2019). Declaration on Public Sector Innovation. The Organisation for Economic Co-operation and Development (OECD), Paris, France. Available online: <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0450> (accessed on August 2022).
- [19] Hughes, R., Josephs, T., Karolova, V., Krivenkov, V., & Ljungman, G. (2014). Russian federation: Fiscal transparency evaluation. International Monetary Fund, Publication Service, Washington, United States. doi:10.5089/9781498348058.002.
- [20] Weber, J., & Schäffer, U. (2008). Introduction to Controlling. Schäffer-Poeschel, Stuttgart, Germany. (In German).
- [21] Weber, J., Schäffer, U., & Binder, C. (2016). Introduction to controlling: exercises and case studies with solutions. Schäffer-Poeschel, Stuttgart, Germany. (In German).
- [22] Hofstede, G. (1981). Management control of public and not-for-profit activities. *Accounting, Organizations and Society*, 6(3), 193–211. doi:10.1016/0361-3682(81)90026-X.
- [23] Kapoguzov, E. A. (2009). German Experience of Modernization of Public Administration: Lessons for Russia. *World economy and management*, 9(4), 183-190. (In Russian).
- [24] Baden-Württemberg, R. (2007). Advisory statement of the Baden-Württemberg Court of Auditors on the profitability of the NSI project in the state administration. LT-DRS. BW 14/1084 VOM 27.3. 2007. (In German). Available online: <https://www.rechnungshof.baden-wuerttemberg.de/de/veroeffentlichungen/beratende-aeusserungen/165966.html> (accessed on August 2022).
- [25] Bratchenko, S. A. The Quality of Public Administration: The Content of the Concept. *Bulletin of the Institute of the Russian Academy of Sciences*, 6, 80–94. doi:10.24411/2073-6487-2020-10071.
- [26] Kriemadis, T., & Theakou, E. (2007). Strategic Planning Models in Public and Non-Profit Sport Organizations. *Choregia*, 3(5), 25–37. doi:10.4127/ch.2007.3.2.25-37.
- [27] Niven, P. R. (2008). Balanced scorecard: Step-by-step for government and non-profit agencies. John Wiley & Sons, Hoboken, United States. doi:10.1002/9781119197287.
- [28] Horvath, V. (2005). Concept of controlling: Managerial accounting. Reporting system. Budgeting. Horvath & Partners, Munich, Germany.
- [29] Ledenev, S. V., & Petrukhina, I. A. (2003). Management Accounting and Controlling in the Public Service: Problems and Prospects. *Economic Analysis: Theory and Practice*, 9(1), 45-57.
- [30] Rubtsov, S. (2021). Accounting for “Controlling”. Contradictions in the Theoretical Foundations of Managerial Accounting and Management in German Business Administration. (In Russian). Available online: [https://www.cfin.ru/rubtsov/acc\\_for\\_con.shtml](https://www.cfin.ru/rubtsov/acc_for_con.shtml) (accessed on August 2022).
- [31] Miroshnikova, T. K., & Shornikov, F. V. (2020). Research of Budgeting Models for State Educational Institutions. *Proceedings of the Southwestern State University. Series: Economics. Sociology. Management*, 10(6), 185–186.
- [32] Blinova, T. V. (2019). Report of the Accounts Chamber of the Russian Federation on the Results of the Expert and Analytical Measures “Analysis of the Achievement by Federal Executive Bodies of the Internal Financial Audit Goals and the Impact of Their Results on Improving the Economy and Efficiency of Using Budget Funds in 2016–2018.”. Available online: <https://ach.gov.ru/upload/iblock/94c/94c3bb7832f1299608967f07f83da330.pdf> (accessed on August).
- [33] Lian, Y., Gao, J., & Ye, T. (2022). How does green credit affect the financial performance of commercial banks? Evidence from China. *Journal of Cleaner Production*, 344, 131069. doi:10.1016/j.jclepro.2022.131069.
- [34] Osipov, S. V. (Ed.). (2019). Controlling: Theory and Practice: A Textbook and Practicum. Yurayt Publishing House, Moscow, Russia.
- [35] Homburg, G., Reinermann, H., & Lüder, K. (1997). University controlling. Public Administration Research Institute, Speyer, Germany. (In German).
- [36] McGuire, L., Prior Jonson, E., Perryman, S., & McKeown, T. (2021). Benchmarking government: Report on government services (RoGS)–25 years on. *Australian Journal of Public Administration*, 80(4), 987-1001. doi:10.1111/1467-8500.12496.

- [37] Van Helden, G. J., & Huijben, M. (2014). Controlling overhead in public sector organizations. *International Journal of Public Sector Management*, 27(6), 475–485. doi:10.1108/IJPSM-07-2013-0102.
- [38] Jäkel, T. (2015). *Benchmarking in Public Administration: A European Country Comparison*. National Research University Higher School of Economics, Myasnitskaya Ulitsa, Moscow, Russia.
- [39] Busse, R., Geissler, A., Quentin, W., & Wiley, M. (2011). *Diagnosis-related groups in Europe: moving towards transparency, efficiency and quality in hospitals*. *Diagnosis related groups in Europe: moving towards transparency, efficiency and quality in hospitals*, European Observatory on Health Systems and Policies Series, Open University Press, Maidenhead, United Kingdom. Available online: [https://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0004/162265/e96538.pdf](https://www.euro.who.int/__data/assets/pdf_file/0004/162265/e96538.pdf) (accessed on August 2022).
- [40] Solonin, S. I. (2014). *The Control Chart Method*. Ural Federal University named after the first President of Russia B. N. Yeltsin, Yekaterinburg, Russia.

## Appendix I: Questionnaire

### Introduction

This questionnaire is designed for research purposes. It will take only 10 minutes to complete. Your precious responses will help in understanding the concept of controlling, implementation of controlling, and its efficiency.

### Part A: Demographic Characteristics

Please tick on the following characteristics.

1. Please Specify your Gender

- ☐ Male  
☐ Female

2. Please Specify your Age

- ☐ 25 to 40 years old  
☐ More Than 40 Years old

3. Please mention your Education Level

- ☐ Diploma  
☐ Bachelors  
☐ Masters  
☐ Doctorate

4. Indicate your Years of Experience

- ☐ Less than 5 years  
☐ 5 to 10 years  
☐ More than 10 Years

### Part B: Implementation of Controlling and Its Efficiency

1: Strongly Agree 2: Agree 3: Somewhat Agree 4: Disagree 5: Strongly Agree

S. No.	Implementation of Controlling	1	2	3	4	5
IC1	Implementation of control in the public sector is enhanced by the use of smart tools and techniques.					
IC2	The structure of the public sector organizations affects the implementation of control.					
IC3	Effective implementation of control enhances the efficiency of management and organization.					
IC4	Goal-setting enhances the implementation of control in public sector organizations.					
IC5	Strategic planning can lead to weak control if it is not properly focused.					
IC6	Budgeting ensure that the financial aspects of the organization are controlled and thus, enhances efficiency.					
S. No.	Impact of Control on Efficiency	1	2	3	4	5
ICF1	Controlling ensures that the functions of the public sector organization are efficient in their respective roles.					
ICF2	Strong monitoring and analysis of the costs and time schedule improve organizational control and hence, its efficiency.					
ICF3	Benchmarking and auditing are the key control techniques in the public sector that can significantly improve efficiency.					
ICF4	Cultural control is important for employees in the public sector organization to enhance efficiency.					
ICF5	Strong control of employees' actions and duties also improves organizational performance.					
ICF6	Autonomous management is likely to implement enhanced control practices.					
ICF7	Autonomy of the management is beneficial for organizational control and efficiency.					