MODEL OF THE SYSTEM OF FINANCIAL CONTROLLING IN THE CONTEXT OF RISK MANAGEMENT IN THE PUBLIC SECTOR

MODELO DO SISTEMA DE CONTROLE FINANCEIRO NO CONTEXTO DA GESTÃO DE RISCOS NO SETOR PÚBLICO

MODELO DEL SISTEMA DE CONTROL FINANCIERO EN EL CONTEXTO DE LA GESTIÓN DE RIESGOS EN EL SECTOR PÚBLICO

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ABSTRACT
The study aims at developing a model of financial controlling for the public sector of the Russian Federation with due regard to the requirements of risk management. The methodology includes an analysis of other studies on the topic and the functioning of US and German controlling systems. It is concluded that the model should be based on a single digital platform and include information, analytical, methodological, instrumental, and accounting support. The main conclusion is that a system of financial controlling of economic entities in the public sector ensures better financial planning, accounting, analysis, and control based on the theory and methodology of controlling in the public sector that meets modern requirements. This system also has an effect on financial management in the public sector. The result of the study is an original model of financial controlling for the public sector.

Keywords: government sector; financial controlling; risk management; management decisions; information support.

RESUMO
O estudo visa desenvolver um modelo de controlo financeiro para o sector público da Federação Russa, tendo em devida conta os requisitos de gestão de risco. A metodologia inclui a análise de outros estudos sobre o tema e o funcionamento dos sistemas de controle dos EUA e da Alemanha. Conclui-se que o modelo deve basear-se numa única plataforma digital e incluir suporte informativo, analítico, metodológico, instrumental e contabilístico. A principal conclusão é que um sistema de controlo financeiro das entidades económicas do sector público garante um melhor planeamento, contabilidade, análise e controlo financeiro com base na teoria e metodologia de controlo no sector público que cumpre os requisitos modernos. Este sistema também tem efeito na gestão financeira do setor público. O resultado do estudo é um modelo original de controle financeiro para o setor público.

Palavras-chave: setor governamental; controle financeiro; gerenciamento de riscos; decisões de gestão; suporte de informação.

RESUMEN
El estudio tiene como objetivo desarrollar un modelo de control financiero para el sector público de la Federación de Rusia teniendo debidamente en cuenta los requisitos de la gestión de riesgos. La metodología incluye un análisis de otros estudios sobre el tema y el funcionamiento de los sistemas de control estadounidenses y alemanes. Se concluye que el modelo debe basarse en una única plataforma digital e incluir soporte informativo, analítico, metodológico, instrumental y contable. La principal conclusión es que un sistema de control financiero de las entidades económicas del sector público garantiza una mejor planificación, contabilidad, análisis y control financieros basados en la teoría y metodología del control en el sector público que cumple con los requisitos modernos. Este sistema también tiene un efecto en la gestión financiera del sector público. El resultado del estudio es un modelo original de control financiero para el sector público.

Palabras clave: sector gubernamental; control financiero; gestión de riesgos; las decisiones de gestión; soporte informativo.

1. INTRODUCTION

Economic entities in the public sector are currently in the process of digital transformation (Alekseeva et al. 2023). The role of information technology in management is increasing, and the coverage of key functional activities with automation tools is expanding (Voronina et al. 2023; Babaeva et al. 2023). The large volume and complexity of tasks and high planned results also set many requirements for the completeness and quality of information used for management decision-making. Global economic changes, ever-complicating external environmental conditions, and the intensification of various risks increase the responsibility of economic entities in the public sector for the effectiveness and efficiency of using financial resources (Fedchenko et al. 2023; Khasanova et al. 2023; Kiseleva et al. 2023). The system of financial controls, including risk controlling, is capable of ensuring the consistency of strategic and operational planning at the level of economic entities, the adaptation of their structure to solving complex tasks, and the coordination and integration of functional areas of their activities.

One of the key obstacles to the full implementation of financial controlling by economic entities of the public sector is the formal transfer of the financial controlling methodology developed for the private sector of the economy to the public sector regardless of objective restrictions and goal settings and the lack of an integrated systems approaches and best practices on this issue (Baranova et al. 2023; Vasyukov et al. 2023). Currently, significant efforts are being made to improve financial management, develop a risk-based approach within the management systems of economic entities in the public sector, use new technologies for information transfer, and ensure control and analytical support for business processes (Bochkareva et al. 2023; Mityakov et al. 2023; Loseva et al. 2023). For example, the departmental project of the Ministry of Finance of the Russian Federation "Electronic SMART control (controlling) and accounting of public finances for management decisions" is being implemented, which provides the formation of an integrated electronic environment for automated controlling, analysis, and accounting of public finances by 2027. The formation of financial controlling of economic entities in the public sector ensures better coordination of financial planning, accounting, analysis, control, risk management based on the development of controlling methodology in the public sector, etc., which ultimately contributes to achieving the established goals of the national development of the Russian Federation.

The study aims at building a model of financial controlling in the public sector.

2. LITERATURE REVIEW

In the course of the research, we studied scientific publications on various approaches to the organization and structure of financial controlling in the public sector. Anthony (1965) describes financial controlling as the process "by which managers ensure that resources are obtained and used effectively and efficiently to achieve the organization's objectives". Anthony emphasizes the relationship between financial controlling and financial management. Studying the implementation and impact of controlling in the public sector, Van Helden and Reichard (2019) and Felicio et al. (2021) compare it with the concept of new public management. Bracci (2021) examines the feasibility of risk management tools in the public sector, assigning them a key role in managing the performance of public sector organizations. Brady (2012) highlights the need for accountability, transparency, and maximum results from the use of public finances. Brady claims that financial management in the public sector should not be limited to the mobilization and distribution of public resources.

The role of information support in financial controlling is emphasized by Cerrillo-i-Martíne (2011) and Ward and Mitchell (2004). They point out that there is a direct correlation between good information resources management and critical success factors in both the public and private sectors of the economy. Panagiotopoulos, Protogerou, and Caloghirou (2022) also insist on the need to expand information and communication technologies in the public sector to improve the quality of strategic management.

Rahman et al. (2015) highlight the importance of management accounting in the public sector, given growing concerns about poor public service delivery. The authors believe that management accounting should promote transparency, accountability, and integrity in public sector organizations. Strauss and Zecher (2015) mention the reorientation of financial controlling from the provision of financial information to support management decision-making to the comprehensive development of decision-making systems.

Thus, the model of financial controlling should be based on the use of an integrated systems approach, including such components as financial planning, accounting, analysis, control, and information flow management.

3. METHODS

Within the construction of a model of financial controlling in the public sector, five aspects of financial controlling were shown. In the process of developing the concept, controlling was identified with various concepts according to the US and German models.

First, there are financial controlling and information support for making management decisions. The information function of controlling is understood based on the comprehension of the management system of economic entities. This leads to the development and application of information technologies to improve the efficiency of management systems. For example, the current vector of the development of information systems towards mutual integration is state information platforms: the state-integrated information system for managing public finances “Electronic Budget” and the unified information system in the field of procurement, as well as the electronic SMART control (controlling) system (Figure 1).

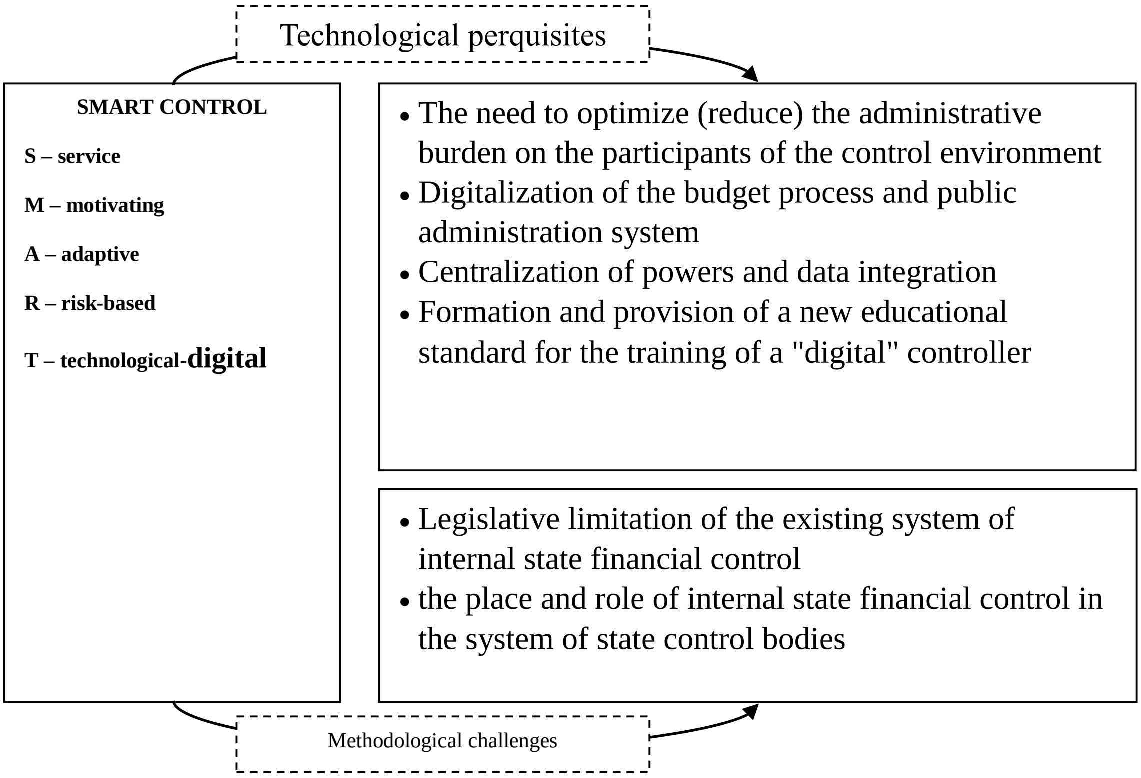

Figure 1. Transformation of control activities: prerequisites and challenges
Source: compiled by the authors

Financial controlling may include information-based procedures and tools used by managers to maintain or change organizational activity or a set of universal tools that provide information for making management decisions and minimizing risks. However, controlling functions should not be limited only to financially measurable activities but must be integrated into a unified management system to achieve sustainable growth goals. This approach is focused on a high level of maturity of the financial controlling system which can ensure the sustainable development of an economic entity in the public sector. The creation of a digital platform for financial controlling based on the concept of peripheral vision, which involves the collection and processing of data in a heterogeneous information environment across hierarchical levels of management, is an urgent task in implementing a model of financial controlling in economic entities of the public sector.

Second, there are financial controlling and management accounting. The task of information support for making management decisions in financial controlling and management accounting is identical. The term "management accounting" is traditionally used in the US and UK. The term “controlling” is not popular in these countries, but is used in Germany (Trushkina, 2015). This feature can be explained by the fact that the US controlling model is characterized by a pragmatic approach, focusing on market and customer requirements, while the German model strives to create a theoretically holistic and integrated management system (Karminskii et al. 2023). Thus, financial controlling is aimed not just at information support for making management decisions but also at systematic communication between functional areas of management and the formation of a unified information base for making management decisions.

Third, there are financial controlling and management coordination. Management coordination is usually identified as one of the most significant functions of controlling (Osipova, 2021). Controlling does not come down to a generalization of already existing management subsystems but represents a coordination-oriented approach to management to achieve the current and strategic goals of an economic entity in the context of global economic changes. Management coordination is designed to guide an economic entity towards a comprehensive and consistent improvement of results, balanced setting of strategic and operational goals, and effective strategic and operational financial planning and distribution of financial resources, covering the information needs of relevant processes. Coordination as a function of financial controlling is also designed to ensure the interconnection and consistency of the elements of the controlling system aimed at the continuity of the management process. We can also highlight the factors that determine specific requirements for financial controlling in the public sector: the need to ensure the transparency of strategic and operational financial planning and the coordination and integration of the goals of an economic entity with the goals of public administration and programs for the socio-economic development of the state (Khlevnaya, 2017). In this connection, special attention is paid to the coordination of management subsystems through the widespread use of information technologies.

Fourth, there are financial controlling and results-based management. The construction of a financial controlling model in the public sector was facilitated by the study of various concepts and approaches based on the idea of results-driven management. For example, such approaches as the enterprise architecture and the AS-TO-BE model are popular in the field of business analytics, allowing to build an effective business and optimize its processes. The field of public administration uses the concepts of program-targeted financing and project management which has recently gained popularity. Depending on the specific tasks, tools such as GAP analysis, benchmarking, balanced scorecard, strategic map, goal tree, and network diagram are used. All of the listed concepts, approaches, and tools are focused on achieving effectiveness and efficiency, i.e., the maximum implementation of planned activities and achieving the planned results and an acceptable ratio between the achieved result and the resources used. The use of methodological tools based only on financial indicators without considering the criteria that evaluate the efficiency of business processes does not allow monitoring the progress of an economic entity in achieving long-term strategic goals (Kaplan, Norton, 1992). In this regard, the model of capability and maturity is of interest which allows to track the development of management quality towards increasing its effectiveness and efficiency, improving business processes (CMMI Levels of Capability and Performance). The system of financial controlling is designed through the comprehensive coverage, information support, and coordination of functional areas and management subsystems to ensure the interconnection, consistency, and coordination of strategic and operational goals to maximize the effectiveness and efficiency of the activities of economic entities in the public sector.

Fifth, there are financial controlling and financial control. Control refers to any actions conducted by management, the board of directors (the highest-level governing body) and other parties in order to manage risk and increase the likelihood of achieving objectives (PEMPAL Glossary of Terms: Internal Control). Control is a critical element of the control loop linked to planning and implementation through the feed forward loop and the feedback loop, respectively (Figure 2).

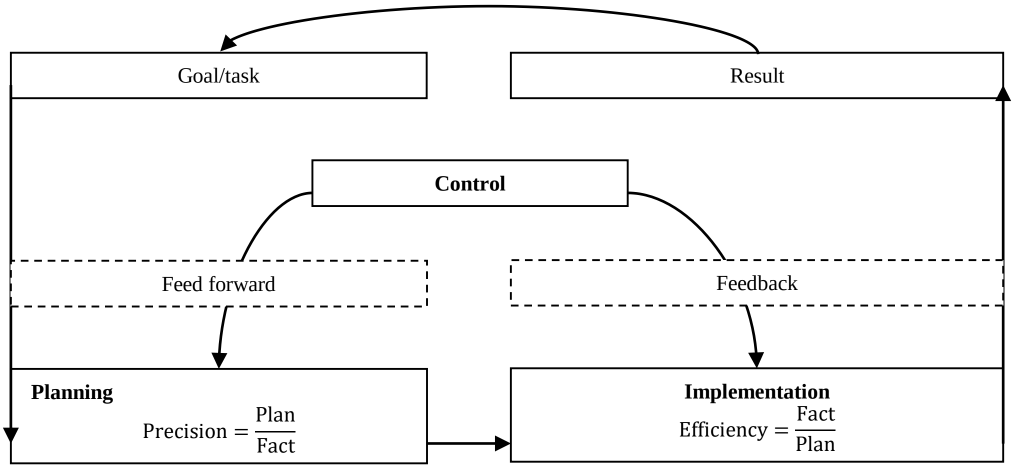

Figure 2. Management control
Source: compiled by the authors

Sometimes financial controlling is identified with management and financial control (Chenhall, 2003) or is regarded as one of the methods of financial management, which is an alternative to financial diagnostics, assessing the results of achieving the goals of corporations in the financial management system (Shebzukhova, 2022). However, financial controlling seems to be a broader substantive category that goes beyond just control. Financial controlling is aimed at information, analytical, and methodological support for making effective management decisions in strategic planning, budgeting, accounting, analysis, control, and risk management in the context of presenting financial and non-financial information that creates a comprehensive and up-to-date picture of the financial and economic activities of an economic entity. An integrated approach ensures the achievement of strategic and operational goals and objectives of an economic entity in the public sector. Therefore, it can be argued that financial controlling contains elements of corporate control which represents the process of coordinating business processes with the goal setting of an economic entity.

There has been a general tendency towards the comprehensive coverage of many functional areas and levels of management of an economic entity. Within the COSO Framework and COSO ERM Framework, internal control and risk management are not considered separately but rather in connection with such components as control environment, information and communication, monitoring, management levels, and implemented functions, i.e., they are not limited to financial aspects of activity (Internal Control – Integrated Framework). A business model for the leadership and management of information technology in an enterprise not only considers the issue of introducing information technology into the management of business processes but also guides economic entities towards systemic leadership and management using interrelated influencing factors (COBIT). Thus, the model of financial controlling affects control and risk management processes. While implementing control and analytical procedures, data is accumulated that can be used in the future by a self-learning information system to identify signals from the internal and external environments, calculate scenario probabilities, and self-regulate the model of financial controlling.

Thus, financial controlling in the public sector should provide instrumental-managerial, information-analytical, and organizational-methodological support for making management decisions in strategic planning, budgeting, accounting, control, and risk management in connection with strategic and operational goals and objectives under the volatility of the internal and external environments (Isaev et al. 2021).

4. RESULTS

Model of financial controlling in the public sector

The system of financial controlling is a complex of interrelated elements: goals, objectives, functional powers, and methodological, accounting, analytical, and instrumental support for the formation of financial responsibility centers in functional and professional areas (Figure 3).

Strategic planning, budgeting, analysis, accounting, control, and risk management cover the subject-object area of financial controlling, including financial resources and budgets of an economic entity, business processes, a balanced scorecard, strategic development plans, and financial responsibility centers. The direct and indirect impact of functional areas of management on the subject-object area of financial controlling is realized through the implementation of financial planning procedures in the context of achieving effectiveness and efficiency, as well as the development and provision of an integrated information and analytical environment for financial controlling. The greatest efficiency of financial controlling in the public sector can be ensured through the formation of a unified digital platform that consolidates planning, accounting, and other data, analyzes and evaluates the results of administrative, management, economic, and financial activities, and represents a comprehensive information and analytical system of financial controlling.

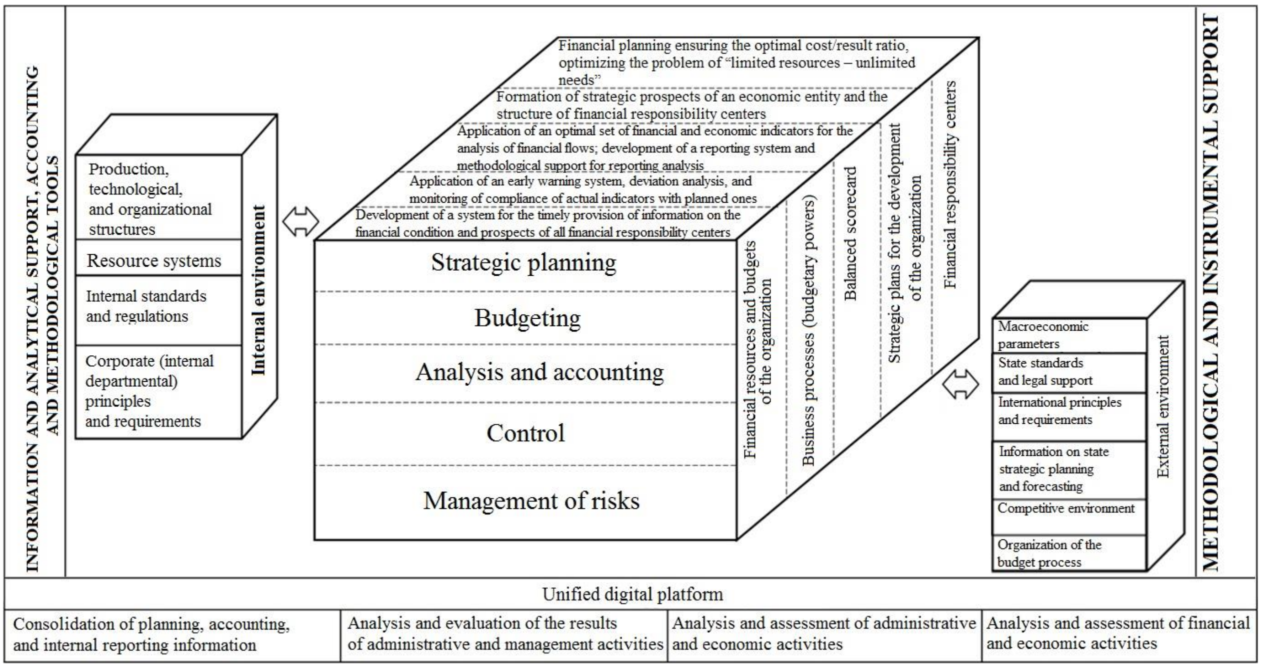

Figure 3. Model of financial controlling in the public sector
Source: compiled by the author

The internal environment is focused on organizing and increasing the efficiency of business processes implemented by an economic entity and reflects the values, culture, knowledge, and results of the organization's activities. The external environment is characterized by system-wide, regulatory legal, and socio-economic restrictions and reflects the influence of the legislative, technological, competitive, cultural, and social environment formed at both the intra- and inter-state levels. Financial controlling in the public sector provides support for internal management processes based on macroeconomic parameters, documented information on state strategic planning and forecasting, state standards and legal support, and international principles and requirements (ESG, Public Financial Management, G20 Corporate Governance Principles and the Organization for Economic Cooperation and Development, etc.). Both the internal and external environments can be analyzed using SWOT analysis and PESTEL analysis.

The goal-setting of financial controlling is based on the need to ensure the effective and targeted use of budgetary funds, achieving established targets, and the high performance of professional duties in functional areas. Goals are divided into specific tasks. In the field of budgeting, this means the efficient use of financial and other resources, increasing financial stability, and creating a sufficient information base for making management decisions. In the field of accounting and control, it is necessary to achieve target performance indicators of the financial and economic activities of an economic entity. The efficient financial controlling of an economic entity is ensured by the integration of a balanced scorecard, financial indicators (analytical support for financial controlling), budget indicators (breakdown by financial responsibility centers), and key performance indicators (KPIs) into the system of financial controlling metrics (Figure 4).

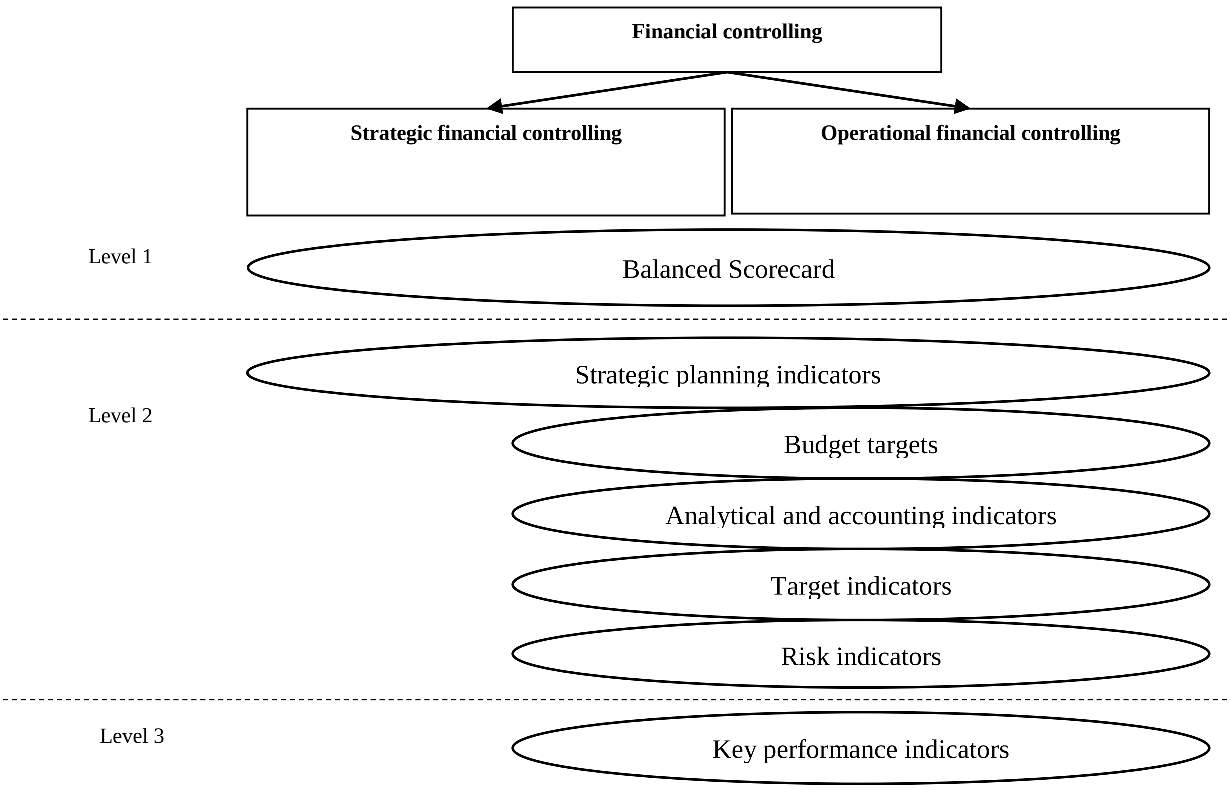

Figure 4. The system of financial controls
Source: compiled by the authors

Risk controlling in the model of financial controlling in the public sector

Factors in the internal and external environments of economic entities determine their stable functioning. Risk management is equally relevant for the public sector, whose economic entities deal with globalization, political changes, man-made disasters, informatization, and rapidly developing technologies. In recent decades, there has been a tendency to introduce risk management in public administration. Risk controlling can be considered an integrated system of information, analytical, and methodological support for risk management: “The key concept of risk controlling increases the productivity of managing strategic and tactical risks of an organization through the creation of a methodological, information, and analytical system that combines elements of planning, accounting, control, and analysis in the area of risk management” (Vaganova 2009) (Figure 5).

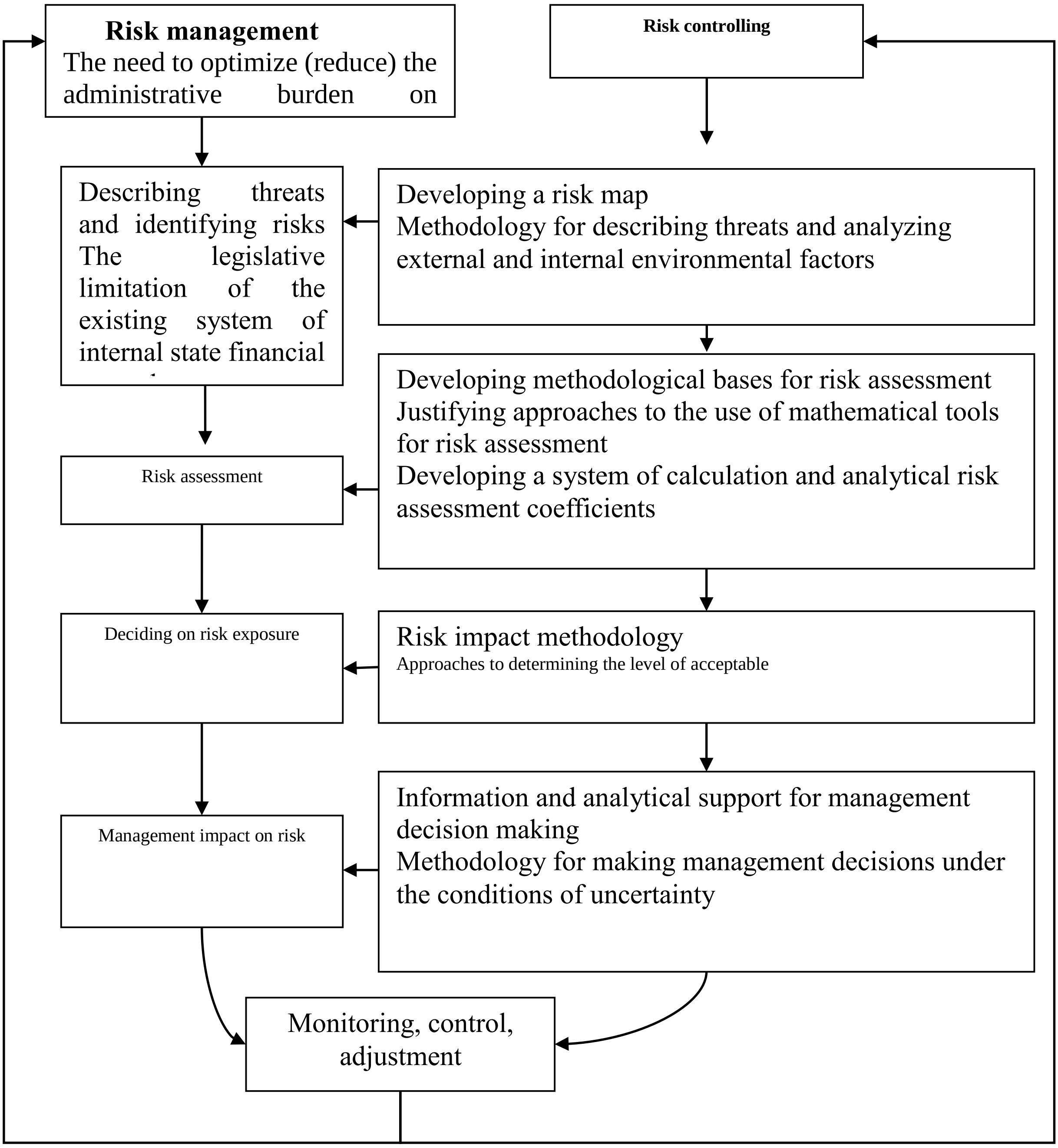

Figure 5. Interaction between risk management and risk controlling
Source: compiled by the authors

Risk controlling should be introduced in seven stages. The first stage is the examination of local regulations in the financial and economic sphere to improve the regulatory framework of an economic entity and identify and eliminate regulatory and compliance risks. The second stage is the analysis of business processes and their improvement from the viewpoint of risk management. The third stage is the development of a risk-controlling methodology. The fourth stage is the interaction between a structural unit, whose competence includes risk controlling, and other structural divisions or managers at different levels providing information and building feedback channels. The fifth stage is the creation of a system of indicators and reports for managers of an economic entity. The sixth stage is granting risk controllers access to internal and external information about the activities of an economic entity, financial, accounting (budgetary) reporting, ongoing projects, strategic goals, and current performance parameters, providing tools for prompt receipt, processing, and presentation. The seventh stage is the assessment of the effectiveness of risk control. The activities of risk controllers are also subject to evaluation, review, and further improvement.

Risk management begins with risk identification, which implies an analysis of internal and external environmental factors. Risk identification can be formalized by drawing up a risk map, i.e., a list of risks grouped according to homogeneous characteristics. In the public sector, economic factors can be regarded as risks classified according to their sources (Solyannikova 2020). After identifying risks, they are assessed, and the tasks of risk controlling are as follows:

– To develop methodological foundations for risk assessment;

– To substantiate the level of acceptable risk.

In the theory of risk management, the methods of quantitative and qualitative risk assessment are used. Qualitative analysis is less labor-intensive but subjective. Quantitative analysis is considered more accurate but is not always applicable. In this regard, calculation and analytical methods of risk assessment calculate coefficients that allow, to a degree, assessing risk and its impact on the activities of an economic entity. In the theory of risk management, coefficients are used to assess the financial risks of liquidity, solvency, financial stability, profitability, and business activity (Solodov 2018; Rybakov et al. 2022). When assessing risks in the public sector, there are coefficients of arrears of taxes and fees and arrears of wages, fiscal risk coefficient (Sorokina 2023), coverage ratios, financial dependence, financial autonomy (Gilyarovskaya 2011), and balance coefficients, and debt burden coefficients (Gorokhova 2015).

A system of coefficients for assessing the risks of an economic entity in the public sector can be determined depending on their type of organization and legal form, as well as their financial and economic activities (Table 1).

Table 1. Approaches to the system of calculation and analytical coefficients for risk assessment
Source: compiled by the authors

Economic entity	Category of risks	System of coefficients
Government body	– Risks of exercising budgetary powers in terms of budget formation and execution – Inner financial risks	– Coefficients assessing budget risks – Coefficients assessing the financial risks of a government institution
State commercial organization	– Commercial risks – Inner financial risks – Risks of budget financing	– Coefficients assessing commercial risks – Coefficients assessing the financial risks of an economic entity, including the risks of budget financing
State non-commercial organization	– Inner financial risks – Risks of budget financing	Coefficients assessing the financial risks of an economic entity, including the risks of budget financing

An acceptable level of risk provides a balance between risk and the possible consequences it entails. By selecting and analyzing parameters, it is possible to ensure an acceptable level of risk and the sustainability of an economic entity in the public sector. Based on the analysis and assessment of risks, a risk heat map is drawn up to identify risks that an economic entity can ignore due to their insignificance and risks that cause critical consequences for performance. The concept of risk response has undergone significant changes. Until the middle of the 20th century, the concept of absolute security (the complete elimination of risk) had prevailed. Almost until the end of the 20th century, the concept of acceptable risk had existed, according to which risk management was reduced to achieving an acceptable level of risk. Since the end of the 20th century, the modern concept of the optimal level of risk has been in force. Consequently, risk controlling should fulfill the following tasks:

– To select and justify an acceptable risk management concept;

– To justify the most acceptable methods of influencing risk (Table 2).

Table 2. Risk response measures
Source: compiled by the authors

Passive		**Active**					
Risk avoidance	Risk acceptance	Preventive		Adaptive			
	Reservation	Insurance	Compensation (guarantee)	Diversification	Limitation	Hedging	

However, not all risk response measures apply in the public sector due to the specific financial mechanism of economic entities in it. For example, risk acceptance does not imply the implementation of active measures but rather the creation of reserves, through which an economic entity covers losses from the realization of this risk in the future. In the public sector, economic entities do not have budgetary powers.

Decision-making is always a choice that determines the further development of an event. Thus, a general algorithm for making management decisions in conditions of uncertainty and risk should consider the information support of management decisions (Figure 6).

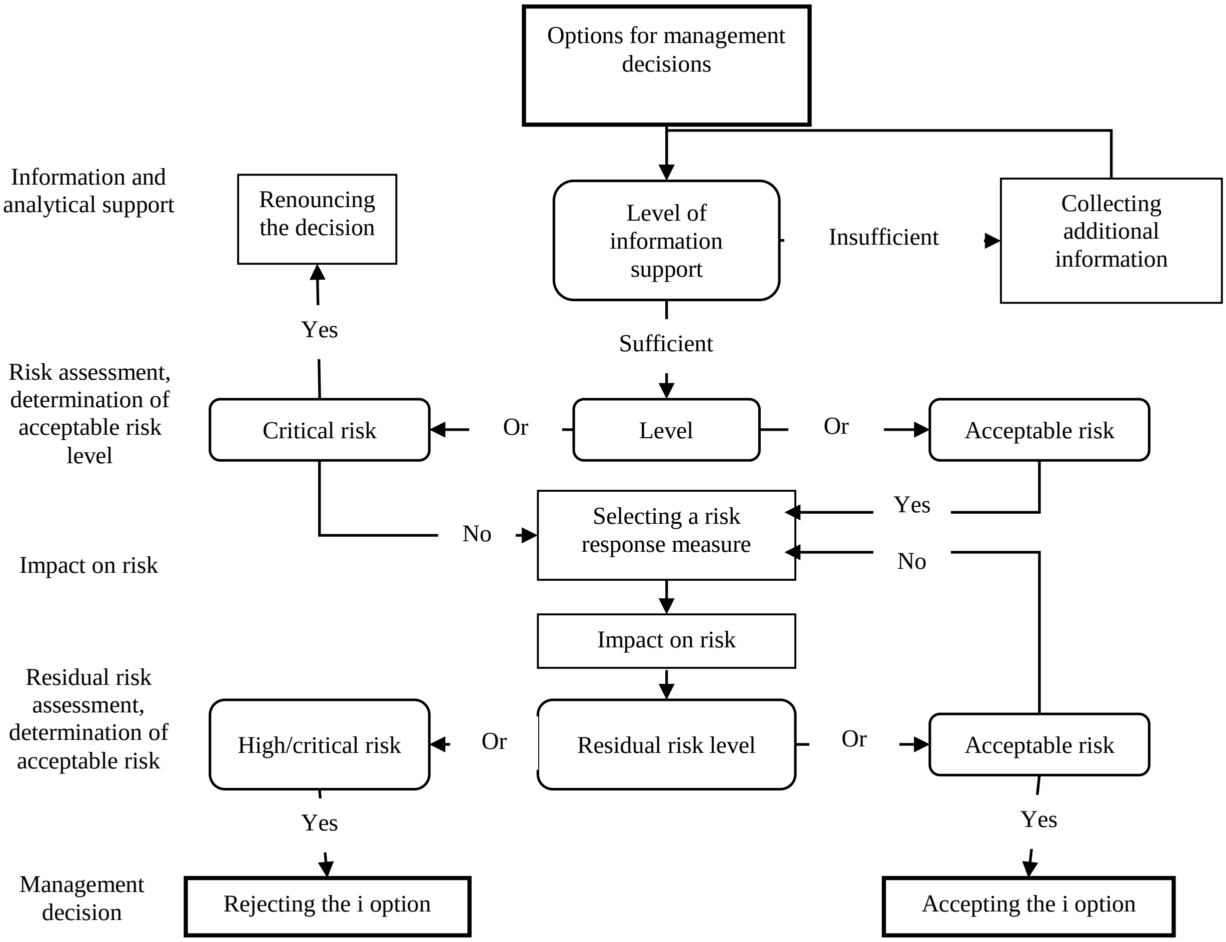

Figure 6. Algorithm for making management decisions under conditions of uncertainty and risk
Source: compiled by the authors

The primary task of risk controlling in the model of financial controlling is to ensure the highest possible level of information security when choosing methods for influencing risks at the stage of making management decisions.

5. DISCUSSION

The model of financial controlling proposed in this study was developed to implement an ambitious project of the Ministry of Finance of the Russian Federation to introduce SMART controlling in the public sector in the context of comprehensive digitalization of the budgeting process. The project involves the creation and implementation of a unified digital platform for public finance controlling based on the “Electronic Budget” subsystem of the state-integrated information system by 2027. Due to this circumstance, we cannot discuss projects from other countries since there are no such analogs. However, these approaches to building a financial controlling model based on an integrated method and considering risk management in the public sector have been reflected in the works by many authors.

Chenhall (2003) equates financial controlling with such categories as the system of management control, management planning, and organizational control. Considering the methodological tools and mechanisms used by managers of economic entities for controlling purposes, Merchant (2007) regards them as a system of management control. These ideas are consistent with our conclusion about the need to build a model of financial controlling based on an integrated approach, including such components as financial planning, accounting, analysis, control, information flow, and risk management.

Such an integrated approach ensures the achievement of strategic and operational goals and objectives of an economic entity in the public sector. In this regard, financial controlling contains elements of organizational control which represents the process of coordinating business processes with the goals set by an economic entity. This conclusion is confirmed by the study by Strauss and Zecher (2013), where the authors trace the evolution of financial controlling from the initial provision of financial information to support management decision-making to the comprehensive development of decision-making systems.

The approach to financial controlling has evolved in accordance with a comprehensive understanding of the management system of economic entities. Thus, Strauss and Zecher (2013) pay special attention to the development and application of information technologies to improve the efficiency of management systems, which is a reasonable approach in the context of the development of government information platforms that compile information about business processes (budget procedures) of economic entities. This allows us to conclude that the system of financial controlling can be divided into organizational and methodological management of business processes, which expands the functional areas of financial controlling and considers the ever-changing internal and external environments of economic entities in conditions of growing uncertainty.

The formation of a modern model of financial controlling based on instrumental and methodological support which considers both quantitative and qualitative criteria and ensures the interconnection, consistency, and coordination of strategic and operational perspectives to maximize the efficiency and effectiveness of the activities of an economic entity in the public sector corresponds to the approach of Kaplan and Norton (1992). Within the balanced scorecard theory, generally accepted in the world practice, the authors prove that the use of methodological tools only based on financial indicators, regardless of the criteria that evaluate the effectiveness of business processes, does not allow fully monitoring the progress of an economic entity in achieving long-term strategic goals.

Our study results further develop some scientific works on the implementation and development of risk management in the public sector. Bracci et al. (2021) view risk management in the public sector as a black box, insisting on the lack of theoretical research in this area. The approaches to calculation and analytical coefficients for risk assessment, risk response measures, and an algorithm for making management decisions under conditions of uncertainty aim at providing methodological support for assessing not only the efficiency but also the effectiveness of the activities of a state organization based on risk management.

6. CONCLUSION

The system of financial controls developed in this article, including risk controlling, is capable of ensuring the consistency of strategic and operational planning at the level of economic entities, the adaptation of their structure to solving complex tasks, the coordination and integration of functional areas of their activities, such as budgeting, analysis, accounting, control, and risk management, as well as business processes implemented within these areas, constant information support for making the best decisions at all levels of financial management of an economic entity in the public sector. An important factor when introducing financial controlling into economic entities of the public sector is the heterogeneity of their organizational and legal forms and the specifics of their functioning.

The model of financial controlling in the public sector is a complex of interrelated elements: goals, objectives, functional powers, and methodological, accounting, analytical, and instrumental support for the formation of financial responsibility centers in functional and professional areas. The greatest efficiency of financial controlling in the public sector can be ensured through the formation of a unified digital platform which is a comprehensive information and analytical system of financial controlling.

To implement the model of financial controlling, risk controlling should be gradually developed with due regard to the financial mechanism of economic entities in the public sector. The main task of risk controlling in the financial controlling model is to ensure the highest possible level of information security when selecting methods for influencing risks at the stage of making management decisions.

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