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Conceptual Foundations of Risk Management within the Economic Security Framework of an Enterprise

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Abstract

Timely risk prevention is a key factor in ensuring the sustainable development of an enterprise. Global changes in supply chains, coupled with local financial conditions, are currently among the main factors destabilizing business operations. This article examines the theoretical and methodological foundations of risk management at the enterprise level and proposes a management model based on G.B. Kleiner's tetrad theory. Drawing on an analysis of various definitions of "risk management," the author offers a definition that incorporates both process and systems approaches and addresses strategic and tactical management levels. A neosystemic paradigm based on the tetrad model was used to develop the risk management model within the economic security system, identifying three levels of tetrads and four subsystems. The proposed enterprise risk management model enables a systematic approach to addressing economic security issues. The study highlights the importance of an integrated approach to risk management that considers theoretical foundations, practical aspects, and methodological, universal, and local factors. The proposed model can be used to design strategies for enterprise and industry sector development, thereby contributing to the long-term sustainability of the economy.

Keywords: risk management, tetrad model, neosystemic paradigm, enterprise sustainability

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企业经济安全体系内风险管理的概念框架

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摘要

企业可持续和发展的最重要因素是及时预防风险。全球供应链变化加上当地的融资条件，是目前破坏企业活动稳定的最重要因素。本文章考察了企业风险管理的理论和方法基础，并提出了基于克列伊涅尔 TETRAD 理论的管理模型。分析“风险管理”一词的各种定义之后作者提出了自己的定义，其中考虑到流程和系统方法而战略和战术水平的管理。采用新系统性范式，在经济安全体系中建立了风险管理模型。它是基 TETRAD 模型构建的：区分出三个层次的四分体和四个子系统。提出的企业风险管理模型允许采用系统的方法来解决经济安全问题。该研究强调，风险管理需要采取综合方法。而且要考虑理论基础、实践方面以及一般方法论、普遍和地方因素。所提出的模型可用于制定企业和行业综合体的发展战略，从而有助于经济的长期可持续发展。

关键词：风险管理，TETRAD 模型，新系统范式，企业可持续

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Introduction

The relevance of research on economic security is determined by the tight interrelation and direct impact of its parameters on the efficiency of an enterprise's performance. Systematization, timely diagnostics, and forecasting of factors that reduce economic security are essential conditions for the stable operation of an enterprise. From the standpoint of financial stability and economic efficiency, it is therefore important to examine the analytical and organizational – economic mechanisms that underpin economic security. Among these mechanisms, risk management remains the most critical.

The research objectives were achieved in several successive stages. At the first stage, the author conducted a comparative analysis of existing definitions of risk management in the scientific literature. This made it possible to identify the key drivers behind the evolution of scientific approaches to the essence of this category and provided the theoretical basis for further analysis. At the second stage, the author proposed an original interpretation of risk management within the enterprise's economic security framework, drawing on both process and systems perspectives. At the third stage, existing research approaches to enterprise risk management were evaluated. At the fourth stage, a neosystemic model of enterprise economic security management based on risk management principles was developed. Each stage contributed to achieving the overall research goal, forming a methodological sequence from theoretical exploration to practical model development.

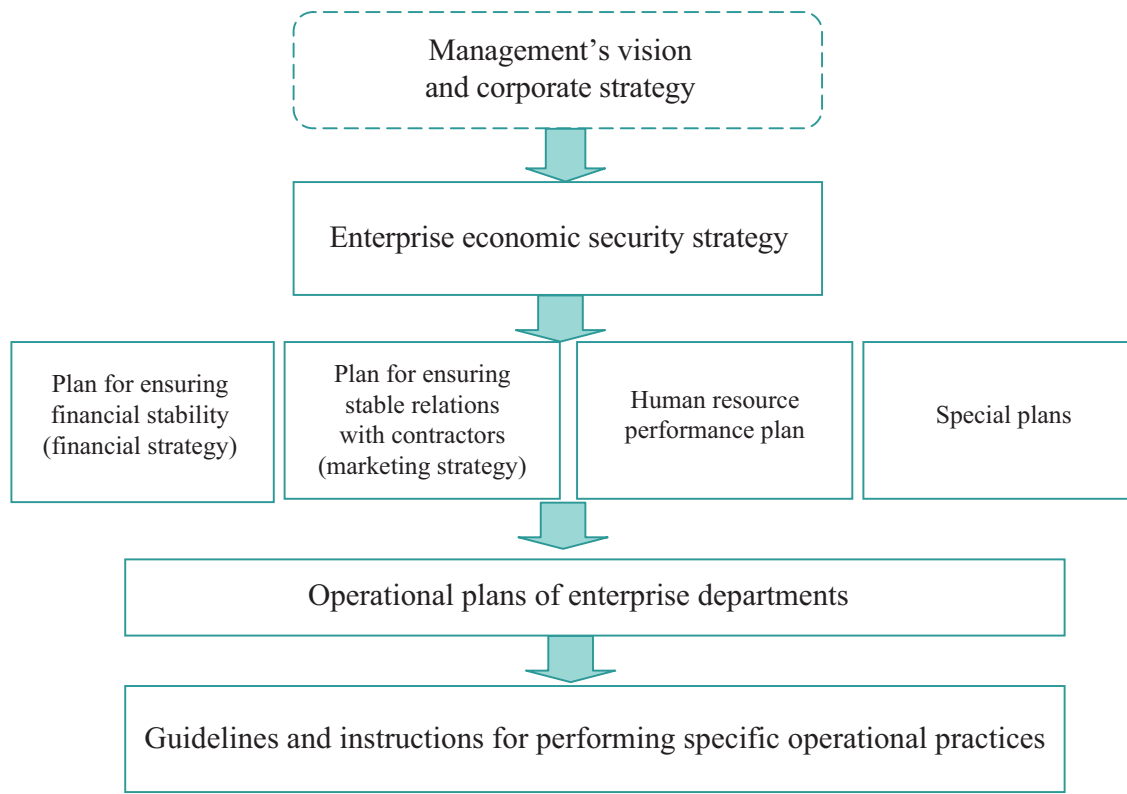
1. Risk Management: Systematization of Concepts

The study of risk management as a scientific category makes it possible to distinguish between two fundamental approaches.

Under the first approach, which adopts a process perspective, risk management is viewed as a process characterized by specific stages, a defined sequence of actions, and corresponding results. This approach presupposes, a priori, the possibility of forecasting and programming the types and levels of risk at the enterprise level. For example, D. Hubbard defines risk management as a process of identifying, assessing, and prioritizing risks that results in the economically justified allocation of resources to minimize, monitor, and control the probability and/or impact of adverse events, or to maximize emerging opportunities [Hubbard, 2020]. A.A. Obukhov notes that it is a continuous, iterative process within the organizational practice [Obukhov, 2015].

The second approach considers risk management as a management system characterized by a systemic description of its elements and the interrelations between them. For example, N.A. Rykhtikova defines risk management as a specific management subsystem designed to develop and implement economically justified recommendations and measures to mitigate the negative effects of risks [Rykhtikova, 2010]. The author of this paper believes that applying the systems paradigm to the study of risks within an enterprise's economic security framework is the most productive perspective.

Fig. 1. Conceptual model of risk management within the economic security framework of an enterprise



Source: compiled by the author.

It should also be noted that several definitions combine both approaches. For instance, the standard “Risk Management – Guidelines for Application in Design” defines risk management as the systematic application of management policies, procedures, and practices to the tasks of identifying, analyzing, evaluating, treating, and monitoring risk, and to communicating risk-related information¹. This definition is one of the most comprehensive, as it integrates both process and systems perspectives.

An overview of risk management approaches within the systems paradigm makes it possible to distinguish three levels of enterprise risk management. A number of authors emphasize the strategic role of risk management in enterprise functioning [Kachalov, 1999; Hanley, 1999; Meulbroek, 2000; Korezin, 2008; Rykhtikova, 2010; Kanev, 2014]. The undeniable advantage of this approach lies in the inherent alignment between the goals, tools, and methods of risk management and the enterprise’s strategic objectives, as well as in the high degree of systematization of risk management processes. However, this approach requires the effective application of stakeholder management theory, accurate decomposition of key success factors and performance indicators, and awareness of the exponential growth in risk management

complexity. Risk management as a tactical management function at the enterprise level has been discussed in the works by [Balabanov, 1996; Khokhlov, 1999; Dubrov et al., 2000; Obukhov, 2015; Hubbard, 2020]. The main focus here is on the instrumentalization of approaches to the identification, categorization, and forecasting of risks. The advantage of this approach is the high level of concreteness and adaptability of risk management methods, which enable efficient accounting and analytical control at the enterprise level. Its limitation lies in the autonomy of the risk management system, which is often examined separately from other management subsystems. This prevents the theoretical model of enterprise economic security from achieving sufficient comprehensiveness and integration. Moreover, the issue of coordinating different risk management functions across multiple decision-making centers within the enterprise remains unresolved. A third approach focuses on local decision-making contexts for risk management at enterprises [Chernova, 2000; Chernova, Kudryavtsev, 2005; Vyatkin et al., 2006; Krui et al., 2011]. This perspective highlights specific categories of risks but, due to its limited linkage with overall strategy and tactics, effectively represents a situational leadership model for addressing individual cases related to an enterprise’s economic security.

¹ <https://docs.cntd.ru/document/1200041477?ysclid=mihg2vc56v28539121>.

As shown in [Shirko, 2022], aligning the enterprise's economic security system with its overall strategy is essential. Economic security thus serves as the methodological foundation for shaping strategic priorities, plans, and policies, while the economic security system itself is grounded in risk management concepts. Consequently, the most comprehensive understanding of risk management is as an element of enterprise's strategic management system. In this context, risk management constitutes a set of functional strategies within the overall framework of the enterprise's economic security. Drawing on the model developed by D. Norton and R. Kaplan, the author identifies four key functional areas of enterprise risk management: finance, stakeholder relations, human resource management, and process administration [Norton & Kaplan, 2000]. In these functional areas, strategy is implemented and goals are achieved, and these same domains serve as primary sources of risks to enterprise sustainability.

Risk management is reflected in the development of enterprise sustainability plans integrated with departmental plans, process notations, and operational practices.

2. Integrated Approach to Risk Management within the Enterprise's Economic Security Framework

Within the conceptual model of risk management within the economic security framework, the author identifies the following elements: the subject, the object, concepts, approaches to organizing risk management, forms, methods and tools, and the regulatory basis.

Choosing a conceptual approach means determining whether the enterprise's economic security system will be based on (1) a preventive approach, (2) a reactive approach, or (3) an integrated approach combining both.

The regulatory basis of enterprise risk management can be divided into four levels:

1. International standards in risk and project management – including PMBOK, APM Body of Knowledge, ISO, FERMA, and COSO ERM.

2. Federal laws and regulations – this category includes federal laws, Government decrees, orders, presidential decrees, and standards that regulate risk management at the organizational level and project risk management. This group, in particular, includes the Civil Code of the

Table
Subject-object matrix of risk management using the example of a road sector enterprise

Strategic dimension	Threat	Risk	Monitoring tools	Risk owner
Finance	Decline in investment activity	Financial risk	Financial records and statements	Finance Department
		Investment risks		
Stakeholder relations	Production downturn and loss of markets	Marketing risk	Data on contract performance and competitor contracts	Marketing Department
Business processes	Losses due to reputational damage; reduction in investment	Operational risk	Database of enforcement proceedings and court rulings	General Director (CEO)
		Technological risks		
		Sales risks	Title documents Official public procurement website	
Human resources	Risk of financial losses	Human resource risk	Primary inventory records	HR Department
			HR records and reports	

Source: compiled by the author.

Russian Federation (Parts One and Two), the Tax Code of the Russian Federation, and the Federal Law “On Public – Private Partnership, Municipal – Private Partnership in the Russian Federation and Amendments to Certain Legislative Acts of the Russian Federation”.

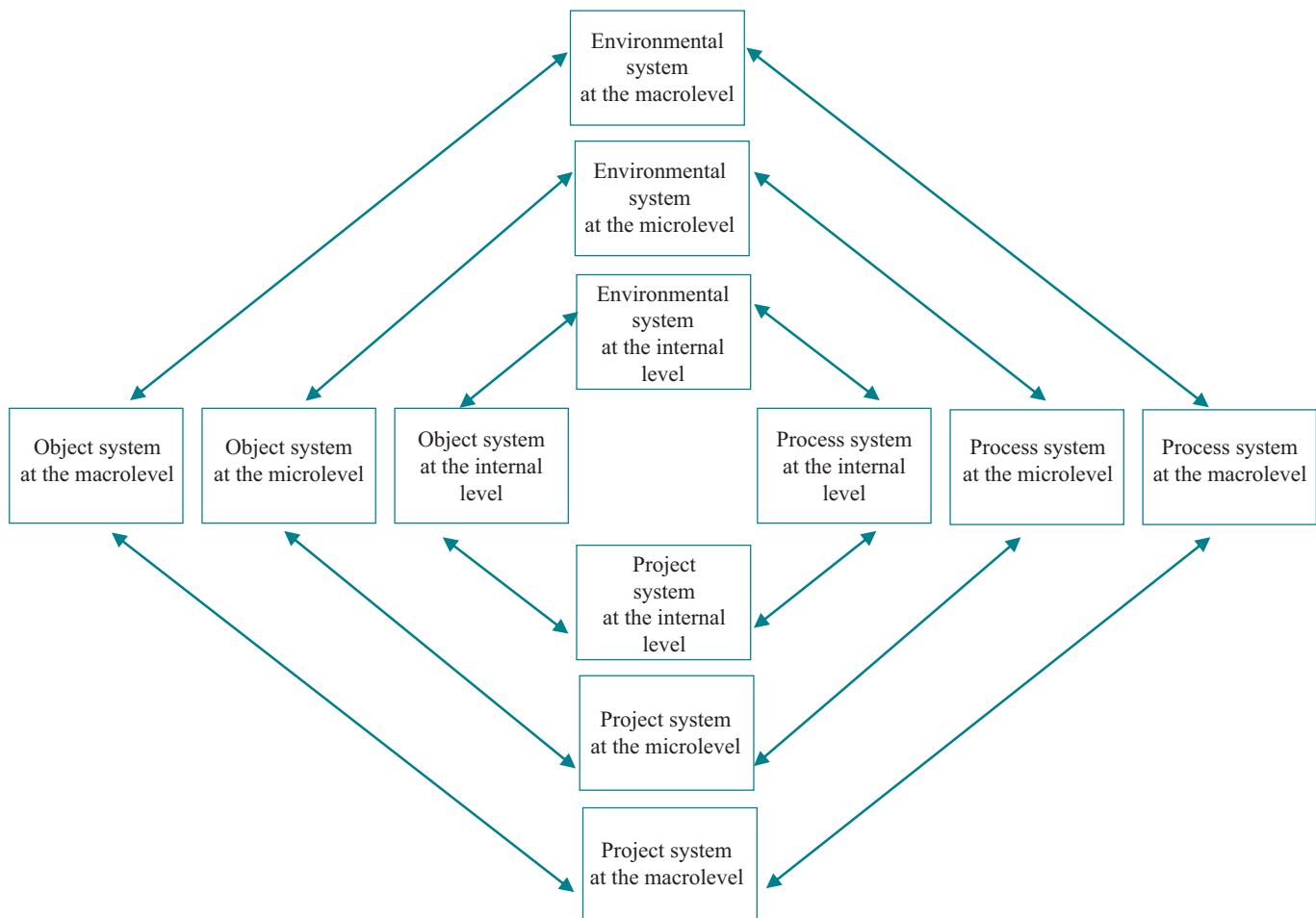
3. Industry-specific laws and regulations – these legal acts govern risk management within organizations, taking into account the particularities of their respective industries. Examples include the Federal Law “On the Organization of Insurance Business in the Russian Federation”, the Federal Law “On the Central Depository”, the Federal Law “On Banks and Banking Activity”, as well as the directive of the Federal Road Agency (Rosavtodor) “On the Approval of the Methodology for Structuring an Investment Project to Enable the Application of Various Investment Mechanisms, Including Public – Private Partnership Mechanisms; the Methodology for Assessing the Effectiveness of Investment Mechanisms, Including Public – Private Partnership Mechanisms; and the Methodology for Selecting Optimal Investment Mechanisms, Including Public – Private Partnership Mechanisms, for the Implementation of Investment Projects”.

4. Internal organizational acts, including corporate strategies, plans, project management standards, and procedural documents.

The subjects of risk management within an organization may include the enterprise’s top management, project leaders, specific structural units, and employees who exert direct or indirect managerial influence (in various forms of management) on the objects of management – individual or composite risks (both positive and negative) – as well as the economic relations arising among different stakeholders in the process of risk management. An example of a subject – object matrix of risk management for a road sector enterprise is presented in the table below.

Thus, the author offers an extended interpretation of the enterprise’s risk management system as part of its economic security strategy, encompassing the planning and implementation of measures aimed at minimizing negative and maximizing positive risks to enhance operational efficiency and sustainability. The novelty of this approach lies in combining systemic and structural perspectives in defining the essence of the risk management system.

Fig. 2. Telescopic model of the tetrad system



Source: compiled by the author.

3. Methodological Foundations of Risk Management within the Enterprise's Economic Security Framework

For the purposes of this study, the basic paradigm underlying the model is specified. Among the three classical paradigms of economic theory – neoclassical, institutional, and evolutionary – none provides sufficient methodological complexity to address modern risk management challenges. According to the research hypothesis, the current model of enterprise economic security, as the basis of the overall management framework, must be characterized by qualitatively new system-wide properties. This requirement is met by the neosystemic paradigm.

The methodological foundations of risk management within the neosystemic paradigm rest on two key assumptions: that risks cannot be completely eliminated from enterprise activities, and that there exists an optimal state of enterprise functioning in which unavoidable risks are managed most effectively. The author's metamodel incorporates two principal constraints:

1) Risk management within the economic security framework is based on the acceptability criterion. The acceptable level of risk depends on the activity domain: the higher the uncertainty (e.g., in R&D), the greater both the deviation potential and tolerance.

2) Risk management must rely on the ability to forecast events and phenomena; fundamentally unpredictable events should not be classified as risks but rather as force-majeure circumstances.

The foundation of the proposed metamodel is G.B. Kleiner's methodological systematics and tetrad model [Kleiner, 2011]. The author presents a telescopic model of the tetrad system, comprising three hierarchical levels: internal level – the enterprise itself; microenvironment – the immediate surroundings of the enterprise; macroenvironment – the broader external context. Interactions among the tetrad systems at each level are illustrated in Figure 2. Object, project, process, and environmental systems together form the object, project, process, and environment systems of the economy.

Within the neosystemic paradigm, the traditional subjects and objects of enterprise risk management are subsystems of the object system. The structure of this object system at the enterprise level includes the following:

- 1) Internal stakeholders;
- 2) Internal risks;
- 3) Internal functional areas of risk management.

At the microenvironment level, the object system includes:

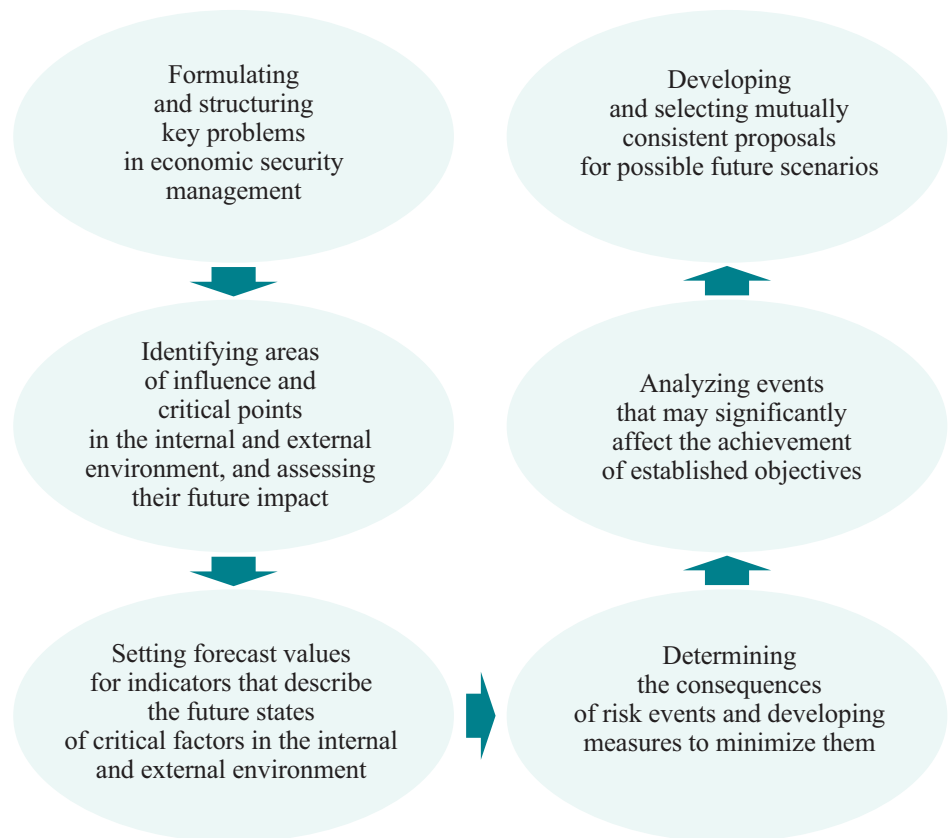
- 1) External stakeholders in the immediate environment;
- 2) Market risks arising from competitive forces;
- 3) External functional risk management areas influenced by the enterprise.

At the macroenvironment level, the object system includes:

- 1) External stakeholders associated with related subsectors of the road sector;
- 2) Macrorisks manageable by the enterprise.

The environmental system represents the infrastructure of the object system's surroundings. Following L. von Bertalanffy's general system model [Von Bertalanffy, 1969], the enterprise's internal environment encompasses the factors that generate internal risks, while both the immediate and the broader external environments contain specific and nonspecific sets of factors that constitute sources of risk for all enterprises in the road sector. Environmental factors are reflected in regulations, standards, and actual events that act as triggers for change in road infrastructure projects.

Fig. 3. Economic security management processes



Source: compiled by the author.

The process system of enterprise economic security can be represented as a set of methods and approaches for ensuring economic security on the basis of risk management. The overall logic of these processes comprises the stages presented in Figure 3.

The project system is represented by the goals and objectives defined by the enterprise in the field of economic security (the internal project environment), as well as the objectives of higher-level systems, such as the regional and national road sector development programs. These objectives are expressed through the system of projects implemented at each project level of the telescopic tetrad.

To ensure the coordinated functioning of the tetrad complex of a road sector enterprise's economic security system, unified management of all four tetrad elements is required. In this model, enterprise economic security should be viewed as a continuous process of managerial decision-making in risk management, embedded within an evolving

and increasingly complex accounting – analytical and administrative subsystem.

Conclusion

Despite extensive prior research, the study of enterprise economic security continues to be a matter of academic debate. The author identifies the lack of an integrated perspective as the key limitation of existing studies. This paper presents an original approach based on several management theories and the neosystemic paradigm of tetrad modelling. The principal novelty of the proposed approach lies in the integrative and comprehensive nature of the economic security model, which distinguishes this study from earlier works.

The model makes it possible to consolidate different levels of risk management, form a coherent subject – object framework for enterprise risk management, and embed a risk-oriented approach into the enterprise's core processes.

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