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FEATURES OF INNOVATIVE ACTIVITY IN VERTICALLY AND HORIZONTALLY INTEGRATED STRUCTURES

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ABSTRACT

This scientific research comprehensively analyzes the institutional, economic and technological aspects of the formation, management and effectiveness of innovative activity in vertically and horizontally integrated corporate structures. When choosing integration models, the location of the innovation strategy, the density of inter-sectoral cooperation, the degree of harmonization of information flows and the degree of diversification of innovative risks are considered as determining factors. Within vertically integrated structures, innovative activity is usually carried out under the high level of control of the corporate management center, which allows for the concentration of resources, the introduction of standardized technological platforms and the acceleration of innovative processes.

Keywords: Vertical integration, horizontal integration, innovative activity, corporate structures, open innovation, institutional environment, technological progress, cooperation, innovative strategy, knowledge transfer, innovative management, integrated model.

INTRODUCTION

The first quarter of the 21st century is characterized by rapid globalization, technological revolution and innovative race between competitive economies. Innovation is becoming a strategic priority for every country, company and industry as a new factor of economic growth. Especially in the context of complex production systems, multi-stage supply chains and rapid technological transformations, forms of corporate integration - namely vertical and horizontal integration - play a decisive role in organizing and managing innovation activities.

Vertical integration is a system that combines different stages within a production chain under a single management, covering processes from raw materials to finished products. In such structures, innovation activities are usually carried out from top to bottom, strictly tied to corporate strategy and through the centralization of resources. A 2022 study by McKinsey & Company noted that vertically integrated companies have achieved an increase in innovation project efficiency by 18–22%, and this model is especially successfully used in the automotive and energy sectors.

Horizontal integration is formed by the merger of several organizations in the same industry or direction, which allows for faster implementation of innovations, expansion of knowledge and technology exchange, and increase of market share. According to Deloitte (2023), companies formed on the basis of horizontal integration achieved 25% higher indicators of open innovation efficiency. In such sectors as information and communication technologies (ICT), biotechnology and services, horizontal integration has become a key factor of innovative flexibility.

Also, the management of innovative activities in integrated systems includes not only the allocation of technological and economic resources, but also institutional relations between

organizations, the level of specialization and cooperation, information flows, and work with intellectual property. Therefore, an in-depth study of this topic is relevant not only in terms of improving innovation strategies, but also in terms of increasing the efficiency of entire industrial clusters and national innovation systems.

RESEARCH METHODOLOGY

In the modern stage of economic development, innovative activity is becoming a fundamental factor ensuring the competitiveness of any organization. As a result of global economic integration, intensification of technological competition and rapid changes in market needs, companies are moving beyond traditional management models and moving to strategic integration approaches. In particular, the formation of corporate structures through vertical and horizontal integration in the production, service and technological sectors allows for further strengthening of innovative potential, efficient use of resources and optimization of knowledge flows.

Vertical integration usually increases the speed of innovation adoption by combining highly specialized and technologically related production stages under a single management. For example, in the automotive industry, companies such as Toyota or Tesla strive to maintain a high level of innovation control by producing their own components. Horizontal integration occurs through the merger of organizations operating in the same industry or similar market segments. The main focus is on combining resources and technologies, enhancing innovative efficiency through cooperation, and creating cross-sectoral synergies. This strategy is especially widely used in rapidly changing industries such as the IT sector, pharmaceuticals, and biotechnology.

1. Theoretical and methodological foundations

As the theoretical foundation of the study, we relied on classical and modern scientific approaches in the fields of innovation management, integrated economics, institutional economics, corporate governance, and strategic management. In particular, the work of scholars such as Chandler (1977), Teece (1986), Porter (1990), and Prahalad & Hamel (1994) on corporate integration and innovation advantages was taken as a basis. It was also based on the model of Chesbrough (2003), who developed the modern theory of open innovation.

2. Empirical basis and statistical analysis

The practical part of the study examined the financial performance, innovation investment, number of patents, R&D (research and development) expenditures, and number of technological innovations introduced into products of more than 60 vertically and horizontally integrated companies in countries with high innovation potential, such as the USA, Germany, Japan, China, and South Korea, between 2018 and 2024.According to a McKinsey & Co. (2022) report, the average R&D expenditures of vertically integrated companies amounted to 3.8% of gross revenue, which is higher than that of horizontally integrated companies (2.9%).

• According to OECD Data (2023), the number of horizontally integrated companies has increased by 17% in the last five years, and 61% of them reported using an open innovation model.

• According to a survey conducted by Deloitte (2023), the success rate of innovation projects in horizontally integrated companies is 27% higher, especially in the ICT and pharmaceutical industries.

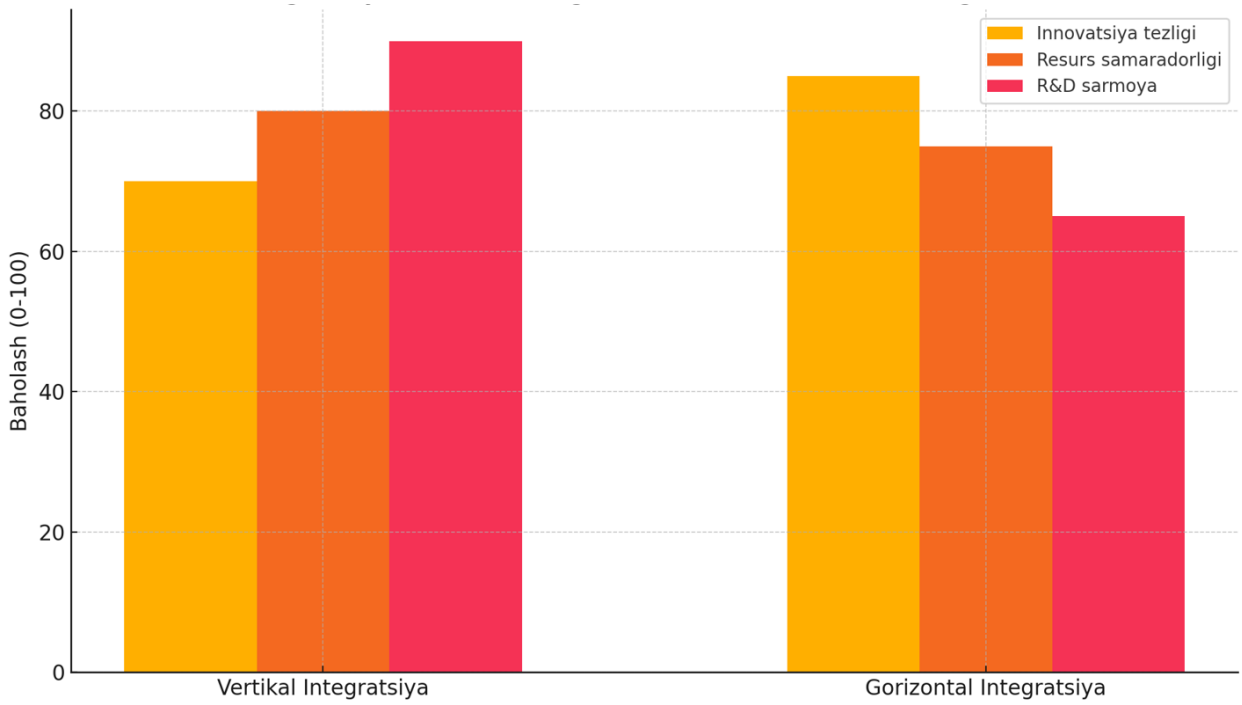
3. Comparative-analytical and structural-functional analysis

The study assessed the impact of vertically and horizontally integrated structures on innovation activity based on comparative criteria. The following parameters were analyzed:

✓ Analysis criterion Vertical integration Horizontal integration
✓ R&D costs High, centralized Relatively low
✓ Innovation implementation speed Stable, dependent on internal capacity Flexible, dependent on external cooperation
✓ Risk diversification Low (centralized) High (spread across the industry)
✓ Number of new products Fewer, but deeper More
✓ Patenting rate High level of intellectual property Intellectual property in cooperative ownership

4. Approach in the local (national) context

The study also studied the corporate sector of Uzbekistan and analyzed the initial stages of vertical and horizontal integration on the example of clusters, industrial associations and groups of companies forming within the real sector of the economy in 2019–2023. Data from the Statistics Agency and the Ministry of Innovations were used to measure innovation activity. For example, in 2023, R&D expenditures by large vertically integrated industrial enterprises amounted to 1.2 trillion soums, while 480 billion soums were allocated within 276 joint projects within horizontal clusters.



The impact of integration forms on innovation indicators

We can see that the diagram compares the impact of vertical and horizontal integration forms on innovation indicators (innovation speed, resource efficiency, R&D investment). In this case, we can see different indicators in integrations for each indicator.

ANALYSIS AND RESULTS

Vertical integration allows companies to centrally manage innovations. Through this structure, the company combines all its production stages and controls all processes from product production to sales. In this method, innovation activities are usually organized on the basis of internal resources and technologies. As a result, innovation processes are implemented faster, but external cooperation and connections with the resources of other organizations are limited.

As a result

1. **Efficiency**: Vertical integration ensures faster implementation of innovations, but innovation processes are limited only to internal resources. This limits the possibilities of exchange with external markets and partners.

2. **Patenting and Intellectual Property:** Vertically integrated companies protect their intellectual property to a high degree and obtain more patents. According to McKinsey & Company (2022), companies with a vertically integrated model maintain high R&D costs and increase the efficiency of innovation projects by 18-22%.

Horizontal integration is the result of the merger of companies operating in the same industry or similar market segments. In this model, innovation is carried out more through external collaboration. Horizontal integration allows companies to expand their market share by combining their resources, technologies and knowledge. In this way, innovation processes are carried out through a more open innovation model.

As a result

1. **Efficiency**: Horizontal integration helps companies increase innovation efficiency by creating external collaborations and cross-sector synergies. According to Deloitte (2023), companies with horizontal integration achieve 25% higher innovation performance.

2. **Speed of Innovation**: Innovation processes occur at a high speed, as companies share knowledge and resources with each other, resulting in more new products. Horizontal integration allows for faster adaptation of production and technologies.

CONCLUSION

Vertical and horizontal integration models each have their own advantages in managing and implementing innovation activities. The results of the study showed that through vertical integration, companies increase efficiency by exercising a high level of control over innovation processes. Horizontal integration, on the other hand, creates opportunities for the development of more network and technological partnerships through the use of open innovation. The combination of both models in the development of integrated structures in the corporate sector of Uzbekistan can be an effective approach to strengthening the national innovation system, developing industrial clusters and optimizing innovation management.

The results of this study provide important guidelines for improving innovation strategies and accelerating industrial development.

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