MECHANISMS FOR IMPROVING THE EFFECTIVENESS OF STRATEGIC MANAGEMENT IN LARGE CONSTRUCTION ENTERPRISES

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Abstract

The article examines economic and organizational mechanisms for improving strategic management effectiveness in large construction enterprises. The study aims to develop a mechanism integrating corporate strategy, project portfolios, resources, digital management tools, and performance indicators into a unified system. Systematic, comparative, statistical, and content analysis methods were used to assess trends in Uzbekistan’s construction industry, the role of large organizations, and sectoral digitalization. A six-block mechanism is proposed, combining strategic diagnostics, goal cascading, project portfolio optimization, BIM and ERP integration, risk and resource management, and KPI-based feedback. The scientific novelty lies in developing a comprehensive strategic effectiveness assessment system incorporating financial, project, resource, organizational, and digital indicators. The proposed mechanism can support better resource allocation, faster management decisions, improved project discipline, and stronger alignment between long-term corporate objectives and operational activities.

Keywords: strategic management, strategic effectiveness, large construction enterprise, management mechanism, project portfolio, digital transformation, BIM, ERP, KPI, risk management, resource efficiency, competitiveness.

YIRIK QURILISH KORXONALARIDA STRATEGIK BOSHQARUV SAMARADORLIGINI OSHIRISH MEXANIZMLARI

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Annotatsiya. Maqolada yirik qurilish korxonalarida strategik boshqaruv samaradorligini oshirishning iqtisodiy va tashkiliy mexanizmlari tadqiq etilgan. Tadqiqotning maqsadi korporativ strategiya, loyiha portfeli, resurslar, raqamli boshqaruv vositalari va samaradorlik ko‘rsatkichlarini yagona tizimga integratsiya qiluvchi mexanizmni ishlab chiqishdan iborat. Tizimli, qiyosiy, statistik va kontent-tahlil usullari asosida O‘zbekiston qurilish tarmog‘ining rivojlanish dinamikasi, yirik tashkilotlarning o‘rni hamda raqamlashtirish jarayonlari baholangan. Natijada strategik diagnostika, maqsadlarni kaskadlash, loyiha portfelini optimallashtirish, BIM va ERP integratsiyasi, risk-resurs boshqaruvi hamda KPI asosidagi teskari aloqani birlashtiruvchi olti blokli mexanizm taklif etilgan. Ilmiy yangilik strategik samaradorlikni moliyaviy, loyiha, resurs, tashkiliy va raqamli ko‘rsatkichlar orqali kompleks baholash tizimining ishlab chiqilganligi bilan belgilanadi.

Kalit so‘zlar: strategik boshqaruv, strategik samaradorlik, yirik qurilish korxonasi, boshqaruv mexanizmi, loyiha portfeli, raqamli transformatsiya, BIM, ERP, KPI, risklarni boshqarish, resurs samaradorligi, raqobatbardoshlik.

МЕХАНИЗМЫ ПОВЫШЕНИЯ ЭФФЕКТИВНОСТИ СТРАТЕГИЧЕСКОГО УПРАВЛЕНИЯ НА КРУПНЫХ СТРОИТЕЛЬНЫХ ПРЕДПРИЯТИЯХ

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Аннотация

В статье исследованы экономические и организационные механизмы повышения эффективности стратегического управления крупными строительными предприятиями. Цель исследования заключается в разработке механизма, интегрирующего корпоративную стратегию, портфель проектов, ресурсы, цифровые инструменты управления и показатели эффективности в единую систему. На основе системного, сравнительного, статистического и контент-анализа оценены динамика развития строительной отрасли Узбекистана, роль крупных организаций и процессы цифровизации. Предложен шестиблочный механизм, объединяющий стратегическую диагностику, каскадирование целей, оптимизацию портфеля проектов, интеграцию BIM и ERP, управление рисками и ресурсами, а также обратную связь на основе KPI. Научная новизна заключается в разработке комплексной системы оценки стратегической эффективности по финансовым, проектным, ресурсным, организационным и цифровым показателям.

Ключевые слова: стратегическое управление, стратегическая эффективность, крупное строительное предприятие, механизм управления, портфель проектов, цифровая трансформация, BIM, ERP, KPI, управление рисками, эффективность ресурсов, конкурентоспособность.

Introduction

The construction sector is an important component of economic development because it forms the material foundation of manufacturing, transport, energy, public utilities, and social infrastructure. The activities of construction enterprises affect not only the technical outcomes of individual projects, but also the utilization of investment funds, the commissioning of new production capacities, regional development, and the living conditions of the population. Therefore, management effectiveness in large construction enterprises should not be limited to completing projects within the established deadlines and cost estimates; it should also encompass corporate strategy, project portfolios, financial sustainability, innovation capacity, and long-term competitiveness.

According to the most recent comparable annual data of the National Statistics Committee of Uzbekistan, the volume of construction works performed in the country increased from 259.6 trillion soums in 2024 to 313.8 trillion soums in 2025, with a real growth rate of 14.2 percent [1]. In 2025, 69.7 percent of construction works were related to the construction of buildings and structures, 64.9 trillion soums accounted for civil construction projects, and 30.2 trillion soums for specialized construction works [2]. This growth indicates the increasing complexity of strategic management tasks related to project portfolios, financial flows, and production resources in construction enterprises.

Large construction organizations performed construction works worth 42.8 trillion soums in January–August 2025. This was 24.9 percent more than in the corresponding period of 2024, and their share in total construction works amounted to 22.7 percent [3]. At the same time, in 2025, 47.8 percent

of new construction volume was carried out by small enterprises and microfirms, 26.4 percent by large organizations, and 25.8 percent by the informal sector [5]. Such a structure indicates that coordinating numerous contractors, subcontractors, and suppliers is of particular strategic importance in the activities of large enterprises.

The main management problems observed in construction enterprises are related to the incomplete cascading of strategic plans to the project and departmental levels, the dominance of short-term financial interests in project selection, the decentralized allocation of resources, the fragmentation of data across different software systems, and the delayed identification of risks. As a result, corporate strategy may exist in one document, the project schedule in another system, and financial data in a separate accounting program. This reduces the speed and reliability of managerial decision-making.

The aim of the study is to develop a mechanism for improving the effectiveness of strategic management in large construction enterprises by integrating their strategic goals, project portfolios, resources, digital management tools, and performance indicators into a unified system. The object of the study is the activity of large construction enterprises operating in Uzbekistan, while the subject of the study is the economic and organizational-managerial relations associated with improving the effectiveness of strategic management in these enterprises.

Literature Review

The effectiveness of strategic management reflects an enterprise's ability to correctly define long-term goals, mobilize resources toward priority areas, adapt to changes in the external environment, and transform strategy into practical results. The Balanced Scorecard concept developed by Kaplan and Norton proposes transforming strategy into measurable objectives by balancing financial results with customer, internal process, and learning and growth indicators [20]. This approach enables construction enterprises to link project duration, quality, client satisfaction, resource consumption, and employee competencies with corporate outcomes.

Contemporary studies note that the introduction of digital technologies alone does not guarantee sustainable effectiveness. Wijayarathne, Gunawan, and Schultmann, having summarized 63 scientific studies in the construction sector, found that BIM, artificial intelligence, and IoT improve operational efficiency; however, high costs, a lack of skills, and organizational resistance limit the results [12]. Therefore, digitalization should be managed not as a technical project, but as a process that simultaneously transforms strategy, organizational structure, and human capital.

Sompolgrunk and co-authors emphasize that the strategic alignment of BIM and Big Data integration creates data-driven competitive advantages [13]. A study conducted by Salih and El-adaway on the basis of data from 48 construction projects showed that BIM, unmanned devices, and augmented reality technologies are associated with schedule performance, whereas digital twin, IoT, and additive manufacturing technologies are associated with cost performance [14]. Villena Manzanares, García-Segura, and Pellicer demonstrated that the effectiveness of BIM use depends on contract conditions, information exchange, and stakeholder cooperation [15].

Studies on project portfolio management focus on the need to implement strategy through individual projects. Ahlemann and co-authors found that the development of project portfolio management capability depends on top management support, organizational change, the use of external knowledge, and the integration of new practices into enterprise operations [16]. In the model developed by Ghanbari, Olaikhan, and Skitmore for construction holding companies, projects are evaluated jointly

according to strategic goals, risk, profitability, and net present value [17]. The results of Elnabwy and co-authors show that project size, the portfolio tool applied, and resource allocation factors are important prerequisites for portfolio management [18].

In the field of risk management, Cherkos and Asfaw substantiated that the system of risk identification and response is linked to project outcomes through the mitigation of construction risks [19]. The literature review shows that strategic planning, portfolio management, digitalization, risks, resources, and KPI systems have often been studied separately. The issue of integrating them into a unified and continuous management cycle that links the strategic and operational levels of a large construction enterprise—especially in the context of Uzbekistan—has not yet been sufficiently developed.

Research Methodology

The study is conceptual and analytical in nature. It uses methods of system and comparative analysis, dynamic analysis of statistical data, scientific abstraction, induction and deduction, grouping, content analysis, SWOT analysis, and cause-and-effect analysis. The empirical base was formed from the data of the National Statistics Committee of Uzbekistan, the Ministry of Construction and Housing and Communal Services, official presidential resources, the World Bank, the Asian Development Bank, and UNDP.

To assess the effectiveness of strategic management, a system of indicators consisting of five dimensions was proposed:

1. financial effectiveness;
2. project effectiveness;
3. resource effectiveness;
4. organizational and managerial effectiveness;
5. digital and innovation effectiveness.

The comprehensive strategic effectiveness index is expressed as follows:

$$SSI = \Sigma(w_j I_j), \quad \Sigma w_j = 1$$

Here, SSI is the integral index of strategic effectiveness; I_j is the normalized index for the corresponding dimension ranging from 0 to 1; and w_j is the weight of the indicator group. The weights are determined according to the characteristics of the enterprise by using the AHP method, expert assessment, or equal weighting. For example, in state infrastructure projects, schedule, quality, and social outcomes may have a higher weight, whereas in private enterprises, profitability, cash flow, and project portfolio value may be assigned greater weight.

Because open financial and operational data at the enterprise level were insufficient, the article does not present calculated numerical results for the SSI. The proposed index should be tested in future empirical studies based on the managerial, financial, and project data of real enterprises.

Research Results

As of 1 May 2026, 31,489 enterprises and organizations were operating in the construction sector of Uzbekistan, and their number had increased by nearly 3.1 thousand over the year [4]. The increase in the number of enterprises intensifies competition, but at the same time it also increases the need to assess quality, financial sustainability, contractor capacity, and project discipline.

The state-level digital infrastructure of the construction sector is being formed gradually. Based on the national information system "Transparent Construction", 24 electronic systems have been developed and integrated with the information systems of 15 ministries and agencies [6]. The system includes platforms for ratings, tenders, expert examination of design and estimate documentation, state construction supervision, and other functions. At the same time, digitalization in state systems does not automatically mean that an enterprise's internal BIM, ERP, CRM, budgeting, and project management programs are integrated. The key management problem is linking the data available in state and corporate digital systems to the strategic decision-making process.

Table 1. Factors Influencing the Effectiveness of Strategic Management in Large Construction Enterprises

Factor group	Main factors	Existing problem	Impact on strategic effectiveness	Proposed management tool
External institutional	Legislation, permits, standards, state supervision	Changing requirements and multiple information sources	Delays in decision-making and increased compliance costs	PESTEL analysis, regulatory monitoring, integration with "Transparent Construction"
Financial-economic	Prices, cash flow, credit, inflation, currency risk	Discrepancies between estimated and actual costs	Declining profitability and liquidity	Rolling budget, Earned Value Management, scenario analysis
Organizational-managerial	Structure, authority, interdepartmental communication	Disconnection between strategic and operational plans	Unclear responsibilities and duplication of work	Strategic management office, PMO, RACI matrix
Technological	BIM, ERP, CRM, IoT, Big Data	Data fragmentation	Reduced speed and accuracy of decision-making	Unified data environment, integrated dashboard
Human capital	Leadership, digital and project competencies	Skills gaps and resistance to change	Incomplete use of technologies	Competency model, continuous training, motivation
Environmental and resource	Materials, energy, water, waste	Delayed monitoring of consumption indicators	Increased costs and environmental risks	Resource audit, BIM-based calculation, environmental KPIs

Source: compiled by the author.

The table results show that the problems affecting strategic effectiveness are interrelated. For example, changes in material prices are not merely a financial issue; they also affect project selection, the supply chain, cash flow, and contractual risks. Similarly, although the implementation of a BIM system represents a technological upgrade, its effective use is determined by authority, data standards, and employee competencies.

In the strategy for modernizing the construction sector of Uzbekistan for 2021–2025, improving the effectiveness of public administration and introducing digital technologies were identified as priority areas [7]. In the "Uzbekistan–2030" Strategy, performance indicators were established for construction supervision, long-term infrastructure financing, and the digitalization of public services [8]. Therefore, enterprise strategies should be aligned with state policies on digitalization and performance.

The World Bank notes that Uzbekistan's economy remains highly energy- and resource-intensive, and that factors such as water scarcity and extreme temperatures increase risks for infrastructure and economic activity [9]. In the ADB country strategy for 2024–2028, the green economy, private sector competitiveness, and investment in human capital are defined as key priorities [10]. For this reason, the strategic KPI system of large construction enterprises should reflect not only economic results, but also indicators related to energy, water, materials, and waste.

Discussion

The obtained results show that the effectiveness of strategic management should be assessed not as the aggregate of individual project outcomes, but as the alignment of corporate goals, project

portfolios, resources, and organizational capabilities. This conclusion confirms the approach of Ahlemann and co-authors, who consider portfolio management as an organizational capability [16]. However, in the context of Uzbekistan, where state construction supervision and digital platforms play an important role, the strategic mechanism should also encompass the link between the enterprise's internal systems and external institutional information systems.

The findings indicate that strategic effectiveness cannot be achieved merely by installing BIM or ERP separately. If a technology is not linked to strategic objectives, managerial responsibilities, and KPIs, it becomes only a tool for the electronic processing of documents. In this respect, the proposed approach is consistent with the conclusions of Wijayarathne and co-authors, who argue that digital transformation should be considered together with dynamic organizational capabilities [12].

The main barriers to implementing the mechanism include the initial cost of software, differences in data formats, insufficient digital competencies, conflicts of authority between departments, and employee resistance to change. UNDP initiatives aimed at developing digital capacity for monitoring building energy efficiency in Uzbekistan show that, alongside technical equipment, it is also necessary to strengthen the capacities of specialists [11].

Proposed Strategic Management Mechanism

As a result of the study, a six-block integrated mechanism for improving the effectiveness of strategic management in large construction enterprises is proposed.

The first block is strategic diagnostics. The external and internal environment of the enterprise is assessed on the basis of PESTEL, SWOT, and stakeholder analysis. The financial condition, project portfolio, production capacities, digital maturity, employee competencies, and environmental risks are diagnosed.

The second block is the cascading of strategic objectives. Corporate objectives are translated to the level of functional departments, project teams, and individual responsible persons. For each objective, a KPI, target value, deadline, budget, and responsible person are defined. As a result, strategy is transformed from a declarative document into a system of practical tasks.

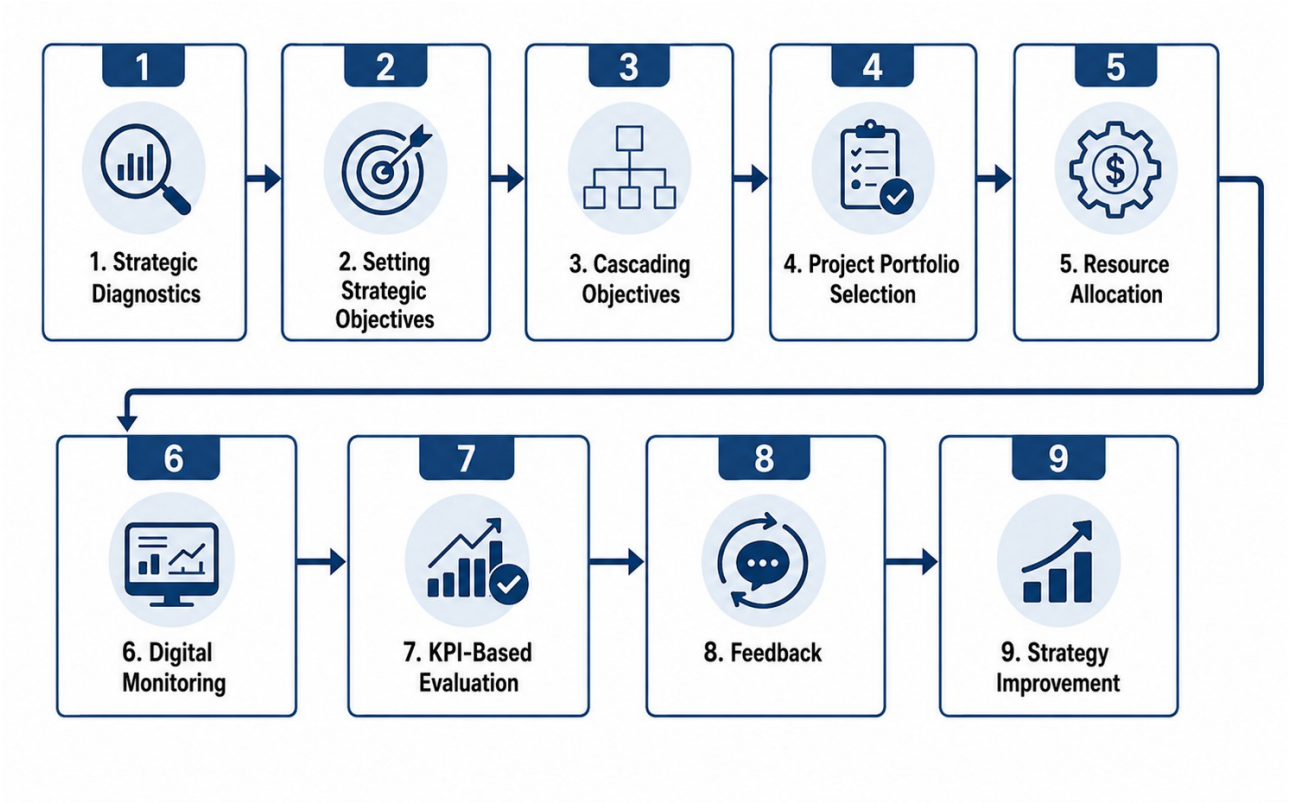
The third block is project portfolio optimization. Projects are assessed according to profitability, net present value, strategic significance, risk, resource requirements, client reliability, and environmental impact. Limited financial, labor, and technical resources are directed toward projects that create the highest strategic value.

The fourth block is digital integration. BIM, ERP, CRM, electronic document circulation, and project management platforms are integrated into a unified data environment. A dashboard is created for management to display project schedules, cost estimates, cash flow, material consumption, risks, and KPIs in near real time.

The fifth block is risk and resource management. A register of strategic, financial, technical, contractual, environmental, and operational risks is maintained. For each risk, the probability, impact, response measure, and responsible person are defined. The consumption of materials, labor, equipment, energy, and water is compared with the plan.

The sixth block is strategic monitoring and feedback. Planned and actual results are compared regularly on the basis of the Balanced Scorecard and SSI indicators. The causes of deviations are identified, and adjustments are made to the budget, resource allocation, project priorities, or strategic objectives.

Table 2. Logical Sequence of the Mechanism



Source: compiled by the author.

In the traditional management system, strategic planning, budgeting, and project control are carried out in separate cycles. In the proposed mechanism, however, they are integrated into a single closed management cycle. Its key difference lies in the possibility of adjusting decisions not only after periodic reports, but also on the basis of integrated current data.

Scientific Novelty

The scientific novelty of the study lies in the proposal of a comprehensive assessment system for the effectiveness of strategic management in large construction enterprises across financial, project, resource, organizational-managerial, and digital-innovative dimensions. Strategic planning, goal cascading, project portfolio optimization, resource and risk management, digital monitoring, and feedback processes were integrated into a unified six-block mechanism. In addition, the procedure for regularly adjusting managerial decisions on the basis of SSI and KPI indicators was substantiated.

Conclusion and Practical Recommendations

Based on the results of the study, the following scientific conclusions were drawn:

6. The rapid growth in the volume of construction works is increasing the importance of the strategic management of project portfolios and resources in large enterprises.

7. A disconnect between corporate strategy and individual projects may lead to resources being directed toward projects with low strategic value.
8. It is not sufficient to assess strategic effectiveness only through profit or profitability; project, resource, organizational, and digital indicators should also be taken into account.
9. The effectiveness of BIM, ERP, and other digital tools depends on their integration into a unified data environment and management processes.
10. Selecting a project portfolio on the basis of risk, strategic significance, and resource requirements increases the long-term sustainability of the enterprise.
11. A KPI and feedback system makes it possible to adapt strategy to changing market and project conditions.

The following practical recommendations are proposed for large construction enterprises:

12. integrate corporate strategy, the investment program, and the project portfolio into a single planning document;
13. introduce a Balanced Scorecard and KPI system that cascades strategic objectives to the level of departments and projects;
14. establish unified data exchange among BIM, ERP, CRM, and project management software;
15. create a PMO or strategic management office responsible for managing the project portfolio and strategic initiatives;
16. select projects based on profitability, risk, strategic significance, resource requirements, and environmental outcomes;
17. monitor the consumption of materials, labor, equipment, energy, and water in near real time;
18. regularly develop the strategic, financial, digital, and risk management competencies of managers and project specialists.

The implementation of these recommendations will help accelerate managerial decision-making, reduce resource losses, strengthen project discipline, improve the stability of cash flows, and enhance the competitiveness of the enterprise.

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