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DIGITAL TRANSFORMATION OF PROCUREMENT ACTIVITIES AS A FACTOR IN INCREASING THE INVESTMENT EFFICIENCY OF A CONSTRUCTION ENTERPRISE

Naidenova Marina

Deputy General Director for Procurement, Procurement Department, Adamant-Stroy Limited Liability Company, 13 Mineralnaya Street, Saint Petersburg 195197, Russia

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ABSTRACT

The article examines the digital transformation of procurement activities as a systemic factor in enhancing the investment efficiency of a construction enterprise. The evolution of the procurement function from basic automation to the integration of intelligent analytical and digital platforms that ensure the reduction of transaction costs, increased cost transparency and improved risk controllability is analyzed. The strategic role of integrated IT systems, BI tools and artificial intelligence technologies in the formation of resilient supply chains and the improvement of project implementation predictability is emphasized. The article substantiates the impact of the digital maturity of procurement on the investment attractiveness of an enterprise, the level of corporate governance and compliance with ESG criteria. It is concluded that the digitalization of the supply function becomes a key condition for the sustainable development of the construction business under conditions of high market uncertainty.

KEYWORDS: digital transformation, procurement activities, investment efficiency, construction enterprise, BI platforms, artificial intelligence, ESG.

1. INTRODUCTION

Digital transformation has become a critical driver of sustainable development and enhanced competitiveness in the construction industry, one of the most capital-intensive and resource-dependent sectors of the economy. Under conditions of intensifying investment competition, high market volatility, and increasing demands for transparency in corporate governance, the efficiency of the procurement function acquires particular importance. Procurement activities exert a direct influence on project costs, implementation timelines, and the financial stability of construction enterprises. The introduction of digital solutions into supply management systems fundamentally reshapes supplier interactions, increases process controllability, and creates prerequisites for improving the investment attractiveness of the enterprise.

The relevance of this study is determined by the need for construction companies to adopt management models aligned with the requirements of the digital economy and capable of overcoming the limitations of traditional procurement practices, which often lack sufficient speed, flexibility, and transparency. In the context of accelerating digitalization of production and managerial processes, the transformation of the procurement function becomes strategically significant, as it enables cost optimization and strengthens the firm's investment efficiency. The purpose of the study is to identify the role of digital platforms, analytical tools, and integrated information systems in shaping a new procurement management environment that reduces transaction costs and supports more informed and timely decision-making.

2. MAIN PART. THE STRATEGIC IMPORTANCE OF PROCUREMENT FOR INVESTMENT ATTRACTIVENESS

In contemporary conditions, procurement activity has moved beyond the boundaries of an operational function limited to supplying construction projects with necessary resources. Today, supply management is viewed as a strategic component of the overall business model, exerting a systemic influence on a company's financial performance, resilience, and attractiveness to external investors. According to the global EY CPO Survey 2025, the key priorities and development vectors of the procurement function are increasingly centered on strengthening supplier relationships, integrating ESG standards, and expanding the use of artificial intelligence (AI) – fig. 1.

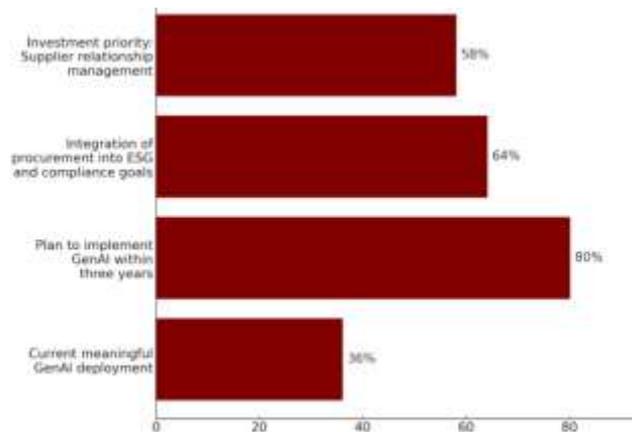


Figure 1: Key strategic priorities of the procurement function according to the EY CPO Survey 2025 [1]

The effectiveness of the procurement function directly influences the economic performance of a project. According to McKinsey (2024), procurement and supply chain management decisions shape up to 70 % of the total cost of the construction project, while increased process maturity is able to reduce direct material expenses by 9–15 %. Deloitte says 69 % of companies have experienced delays



in executing contracts due to supply instability, underlining the strategic value of resilient and well-managed supplier relationships. Additional benefits arise from digitalization: PwC (2024) estimates that automation and the introduction of digital analytics shorten the procurement cycle by 30–40 % and reduce operational costs by 20–25 %. These findings confirm that the consistent transformation of procurement strategies toward digitalization enhances the predictability of logistics flows, reduces working capital requirements, and minimizes project execution risks.

Procurement, as a component of investment attractiveness, is of particular interest to investors because of its impact on operational risk reduction and the stability of financial flows. The integration of digital tools into the procurement system increases expenditure transparency, strengthens control over tendering and contracting, and enables faster response to deviations and disruptions in logistics cycles. This is particularly relevant when dealing with countries that have transitional economies and still weak legal and institutional frameworks. As shown in studies on adapting international contracting models under conditions of institutional transformation, the role of a structured and digitally supported procurement system becomes significantly more pronounced in such environments [2].

In this way, the procurement function becomes a strong strategic tool in a digital environment. It offers construction companies operational stability and increased investment attractiveness by assuring efficient risk management, cost transparency, and increased reputational reliability. It is increasingly important in a setting when investment decisions are more and more dependent on ESG aspects, digital maturity, and the ability of a company to build up efficient and resilient networks of partnerships.

2.1 Digital transformation: from automation to intelligent systems

The evolution of digital solutions in the procurement domain of construction enterprises has progressed from simple automation of routine operations to the adoption of intelligent analytical systems capable of supporting strategic decision-making (table 1).

Table 1: Evolution of digital procurement systems in construction enterprises [3, 4]

Stage	Characteristics	Technological solutions
Basic automation	Automation of routine and transactional operations; digitization of isolated processes; fragmented data and limited integration.	Accounting modules, warehouse management systems, spreadsheet-based planning and supplier records.
Process digitalization and integration	Formation of integrated digital workflows; increased transparency; reduction of transaction costs.	ERP systems, SRM platforms, e-procurement platforms, electronic document management systems.
Advanced analytics and real-time monitoring	Data-driven procurement management; real-time contract performance tracking; improved predictability of supply risks.	Contract monitoring systems, analytical dashboards, price forecasting tools, supplier behavior analytics.
Intelligent digital systems	Use of AI and predictive models; strategic optimization of sourcing; adaptive decision-making under market volatility.	Machine learning models, predictive and prescriptive analytics, AI-assisted supplier selection tools, automated risk assessment modules.

This transfer from basic automation to intelligent procurement systems fundamentally changes how construction enterprises manage their supply chain: procurement will shift from an essentially transactional function to a data-informed, strategically oriented domain. This change requires not only the adoption of advanced technologies but also the development of organizational capabilities, including analytical competencies, cross-functional integration and strategic supplier collaboration. The assessment of construction enterprises’ readiness to implement digital solutions in procurement can be carried out using a digital maturity model that reflects the progressive transition from basic automation to full intelligent management of the procurement function (table 2).

Table 2: Levels of digital maturity in procurement activities [5]

Level of digital maturity	Description
Zero level (manual management)	Dominance of paper-based document flow; absence of digital tools.
Basic automation	Local use of software for accounting and warehouse logistics without integration.
Data and process integration	Implementation of ERP and SRM systems; data exchange across departments in a unified digital environment.
Analytical transformation	Use of BI tools, demand forecasting, and procurement performance analysis.
Intelligent management	Implementation of AI, automated decision-making algorithms, digital twins of logistics processes, and scenario modeling.

Higher levels of digital maturity can enable a construction company not only to enhance the efficiency of existing operations but also to strengthen its position in the investment market by demonstrating adaptability, innovation capacity, and adherence to sustainable development. Yet, at the same time, advancing to more mature stages require not only technological investment but also a revision of organizational structures, corporate culture, and workforce competencies.

2.2 Integration and automation in supply management

In the context of the accelerating digitalization of the economy, integration and automation have become essential elements of effective supply management within construction enterprises. Contemporary requirements for cost reduction, increased transparency, mitigation of project risks and adherence to delivery schedules necessitate a shift from isolated technological solutions to architectures that ensure end-to-end digital connectivity across all participants in the supply chain.

The integration of IT solutions into procurement activities forms a unified digital architecture that ensures coherence, transparency and controllability of supply processes by consolidating modules for resource management, logistics, financial control, contract administration and analytics. The use of modular platforms, open APIs and cloud technologies enables scalability, adaptation to project-specific requirements and automation of formerly manual operations (table 3).

Table 3: Key components of an integrated IT architecture in procurement [6, 7]

Component / procedure	Functional role	Key effects for procurement activities
ERP system (resource management)	Centralization of data on orders, inventory, budgeting and demand planning.	Shortened approval cycles; higher data accuracy; improved transparency of resource flows.
Logistics and warehouse management modules	Coordination of material flows, inventory control and tracking of deliveries.	Reduced risk of supply disruptions; optimized stock levels; improved predictability of delivery schedules.
Financial control and accounting integration	Automatic document matching, budget tracking, payment monitoring.	Faster payment processing; fewer documentation errors; prevention of delays and financial penalties.
Contract management (e-contracting)	Digital contract administration, automated approval workflows, version control.	Enhanced legal transparency; reduced contract cycle time; improved compliance with contractual obligations.
E-tendering systems	Online organization of procurement procedures, automated bid evaluation.	Elimination of manual errors; objective supplier selection; transparent and traceable tender processes.
E-invoicing (electronic document flow)	Automated processing of invoices and financial documents, synchronized with ERP modules.	Accelerated settlements; reduced paper-based operations; lower risk of delays and duplicate documents.
E-catalog management	Standardized electronic catalogs for materials and services.	Reduced procurement variability; faster order creation; improved control over prices and specifications.

Recent industry reports confirm that the development of integrated IT systems in procurement has become a decisive factor in enhancing the performance of construction projects. According to the PwC Digital Procurement Survey 2024, organizations that have already implemented end-to-end source-to-pay platforms report significant gains in transparency and savings in transaction-related costs. In the construction sector, similar tendencies are present: according to the results of the RLB Construction Procurement Trends Report 2025, 40 % of contractors indicate a rise in digitally supported and collaborative procurement, while 61 % of tenders now contain structured evaluation criteria, enhancing predictability in supplier selection. The implications of the RICS Digitalisation in Construction Report 2024 also highlight that the application of digital tools to contract management,

logistics coordination, and risk monitoring has become a decisive prerequisite for strengthening project resilience. Collectively, these findings show that the integration of IT solutions into procurement is no longer a supplementary enhancement but a strategic direction shaping the competitive position of construction enterprises.

Automation also extends to monitoring and post-contract control processes. Modern platforms enable real-time tracking of deviations from delivery schedules, the creation of digital acceptance certificates, the documentation of non-conformities, and the management of claims. These capabilities not only enhance internal controllability but also contribute to stronger supplier relationships, reinforcing the company’s reputational reliability in the market (table 4).

Table 4: Automation of monitoring and post-contract control processes [8, 9]

Process	Automated functionality	Key effects for the company
Monitoring of delivery schedules	Real-time tracking of delivery status; automatic alerts on delays and deviations.	Reduced risk of supply disruptions; improved accuracy of project scheduling.
Digital acceptance of materials and works	Creation of electronic acceptance certificates, photo and video documentation, automated verification of supporting documents.	Higher accuracy of quality control; faster processing time; fewer disputes with contractors.
Recording of violations and non-conformities	Automatic documentation of detected issues, classification of deviations, integration with risk-management systems.	Faster root-cause analysis; reduction in repetitive errors.
Claims and dispute management	Automation of claim submission, tracking and resolution; centralized database of incidents and contractor responses.	Improved efficiency of supplier negotiations; increased transparency; reduced financial losses.
Post-contract performance analytics	Automated collection of data on actual delivery times, quality metrics and fulfillment of contractual obligations.	Better supplier evaluation; strengthened decision-making in future procurement cycles.

It is necessary to underline that such an end-to-end automation of procurement requires revising not only existing business processes but also the structure of organizational responsibilities. The shift in question creates new demands placed on the digital competencies of procurement specialists and on cross-functional collaboration between logistics, finance, and IT departments. In a broader context, automated solutions enable construction companies to align with international standards of corporate governance and to demonstrate the maturity of operational processes to investors and partners, thereby

strengthening their position in a competitive environment.

2.3 Analytical tools in procurement management

Modern approaches to procurement management in the construction sector extend far beyond the automation of basic processes. At higher levels of digital maturity, enterprises aim to implement analytical tools that enable data to be used as a strategic asset. This shift is driven by the high degree of market uncertainty, the multiplicity of suppliers, fluctuations in the prices of construction materials and the need for rapid responses to logistics-related risks. Analytics facilitates the transition from a reactive procurement model to a proactive, controlled and predictable decision-making process.

In practice, the most widely adopted technologies are BI platforms, which allow companies to generate real-time dashboards, monitor key procurement performance indicators (KPIs), compare supplier conditions, detect anomalies and perform factor analysis of price changes. Crucially, analytical modules operate in conjunction with ERP and SRM systems, ensuring data consistency and relevance across the entire procurement cycle. According to research by Market Report Analytics (MRA), the global market for business intelligence and analytics platforms is showing steady expansion: in 2025 it is estimated at \$38.5 billion, with a projected CAGR of 8.84 % for the period 2025–2033 (fig. 2).

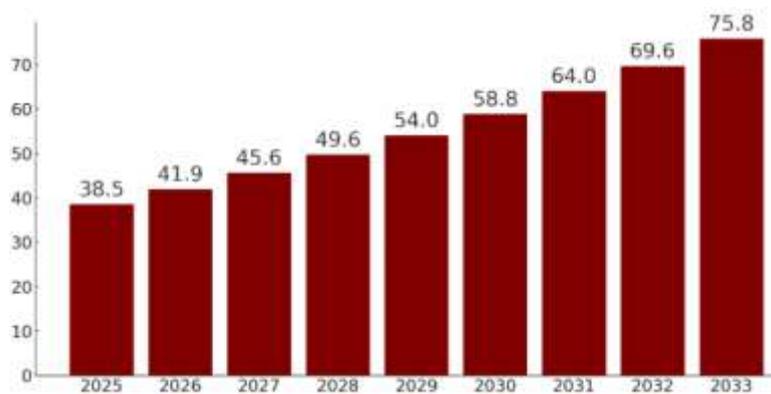


Figure 2: Projected growth of the global BI and analytics platforms market, billion dollars [10]

The presented data confirm the stable growth of the BI platforms and analytics market, reflecting the rising demand for digital decision-support tools. This trend reinforces, for construction enterprises, the rising importance of data in actions that may lead to benefits through better procurement activity, enhanced predictability of logistics processes, and more informed strategic decisions.

The development of analytics in procurement is being driven in one important direction by the use of AI and big data-processing algorithms to assist in decisions regarding supplier selection, contract management, and strategic planning. For instance, intelligent systems can rank suppliers automatically on multiple criteria that include price, reliability, delivery speed, and compliance with the terms of the



contract. They can also identify recurring disruptions in logistics or create recommendations for adjusting procurement schedules when the market conditions become volatile. In more mature digital ecosystems, such solutions are integrated with corporate decision-making centers where they lower the dependence on human judgment and guarantee a unified analytical standard of quality. A notable example is the experience of the American construction company Turner Construction, which uses its BI platform Project Pulse to implement real-time data visualization and monitoring of key project indicators, thereby improving transparency in procurement processes and enhancing the manageability of project risks [11].

Another example is the American engineering and construction company Bechtel, which, as part of its digital transformation initiatives, actively implements AI-driven tools for data analysis and improving the predictability of project execution. According to the company's published materials, AI solutions are employed to process large volumes of project information, identify patterns in contractor performance, model risks and support managerial decisions in complex logistical scenarios [12]. Machine-learning algorithms allow for early, more precise identification of possible deviations and vulnerabilities. This leads to more process transparency and enhances the quality of planning.

It is worth noting that the effective use of these analytical tools requires not only technological readiness but also a certain level of digital culture within the organization. What matters most is not the simple availability of data, but their interpretation capability and the practical application of insights to strategic actions. In this context, the formation of a digital corporate identity and the management of knowledge in a digital environment become strategic assets. As shown in contemporary research, digital presence, openness of analytical data and reputational transparency increasingly shape long-term value for partners and investors [13].

Thus, the implementation of analytical technologies in the procurement system of a construction enterprise strengthens the controllability and resilience of supply processes, enables more accurate forecasting of needs and risks, and enhances both the reputational and investment attractiveness of the business.

2.4 Assessment of the impact of digitalisation on investment efficiency

Digital transformation of the procurement function has a direct impact on the investment efficiency of construction enterprises, creating conditions for reducing operational and transaction costs, increasing supply-chain transparency and improving risk management. The introduction of digital tools enables real-time cost control, strengthens contract execution mechanisms and enhances the level of trust from investors and creditors, who view digital process maturity as an indicator of organisational resilience and managerial competence (table 5).

Table 5: Key effects of procurement digitalisation on investment efficiency

Area of impact	Description of effect	Investment significance
Cost transparency	Detailed expenditure analysis, automated document flow, electronic tendering.	Reduced risk of inefficient contracts; increased investor confidence.
Risk management	Digital contracting, performance monitoring, automated recording of non-conformities.	Lower probability of disruptions; stronger contractual discipline.
Operational efficiency	Shortened procurement cycles, process optimisation, reduced transaction costs.	Higher capital turnover; improved financial performance.
Corporate governance and ESG	Increased transparency, standardised procedures, digital audit functions.	Alignment with ESG requirements; strengthened investment attractiveness.

Thus, the impact of procurement digitalisation extends beyond operational optimisation and forms a strategic advantage by improving enterprise resilience, enhancing the predictability of financial flows and increasing overall investment attractiveness. Comprehensive integration of digital solutions into procurement management becomes a key condition for improving the investment efficiency of construction companies.

3. CONCLUSION

Digital transformation of procurement activities enables the reduction of costs, enhancement of the transparency of financial flows, improvement in risk controllability and strengthening the resilience of supply chains, thus serving as a key driver for improving the investment efficiency of construction enterprises. Together with digital platforms, analytical tools, and intelligent systems, it pushes the function of procurement from an operational to a strategic level, creating conditions favorable for enhancing both competitiveness and investment attractiveness. The results of the study confirm that the level of digital maturity in procurement is directly correlated with the quality of corporate governance, compliance with ESG principles, and the degree of investor confidence. Therefore, digitalization of supply management is an indispensable part of the long-term sustainable development of construction businesses.



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