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## Digital Transformation of Public Procurement in an Innovation-Driven Economy

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**Abstract:** The article analyzes the vectors and future of digital transformation of public procurement in the conditions of innovation driven economy. This research examines the main digital technologies of public procurement, and their role in the transparency, competition, and efficiency of public expenditures. Specifically, the paper investigates how e-procurement platforms, data analytics and innovation-oriented procurement can both stimulate innovation and support high technology sectors. The processes and practices surrounding the paper emphasizes that the full deployment of digital technologies in public procurement systems is one of the key enablers to enhancing the efficiency of public expenditure and administering a sustainable innovation ecosystem.

**Keywords:** Public Procurement, Digital Transformation, Innovation Economy, E-Procurement, Innovation Procurement, Public Spending Efficiency, Digital Platforms

### 1. Introduction

Public procurement is a key economic policy instrument, significantly influencing the development of competition, the efficient use of budget funds, and the stimulation of innovation. As an innovative economy emerges, the role of public procurement is growing not only as a mechanism for meeting government needs, but also as a driver of high-tech industries, innovation, and entrepreneurship support.

The digital transformation of public procurement is becoming an important area of modernization for public finance and public administration. E-Procurement E-Procurement refers to the introduction of digital technologies, which are electronic platforms and automated procedures that contribute to greater transparency of the procurement process, as well as lower transaction costs and reduced corruption risks. Electronic procurement system forms a transparent information environment for participants of the market, when procedures are expedited and conditions for more efficient interaction of government and business are created.

The digitalisation of public procurement is especially crucial in an innovative economy, as that allows the transition from the formal price approach to more enhanced bid evaluation models that cover innovation, the product life cycle, and long-term effectiveness respectively.

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The use of digital tools for data analysis and procurement monitoring enables government contracting authorities to make more informed decisions and focus procurement policies on achieving strategic development goals.

For many countries, including those with transitional and developing economies, the digital transformation of public procurement is seen as a key factor in improving the efficiency of budget expenditures and developing an innovative environment. However, this process is accompanied by a number of challenges related to the adaptation of the regulatory framework, the development of digital infrastructure, ensuring information security, and improving the skills of procurement participants.

The purpose of this article is to analyze the directions and prospects for the digital transformation of public procurement in an innovative economy, as well as to identify key factors and tools that contribute to improving the efficiency and innovative focus of public procurement activities.

### **Literature Review**

Academic research views the digital transformation of public procurement as an important tool for increasing the efficiency of public spending and stimulating innovative economic development. OECD emphasizes that digital public procurement improves the transparency of procurement procedures, enhances competition, and creates conditions for the implementation of innovative solutions in the public sector [1].

For example, Edquist and Zabala-Iturriagagoitia (2012) featured public procurement in their comprehensive review of mechanisms to stimulate demand for innovation. As the authors note, digital procurement tools broaden the range of innovative companies and technologies available to the state to support [2].

According to Uyarra, Edler, Garcia-Estevéz, Georghiou, and Yeow (2014), procurement processes through digital marketplaces allow a shift from price criterion toward a more holistic evaluation of proposals, focusing on innovativeness and sustainability in the long term [3]. The role of e-procurement platforms in improving the efficiency and innovation of public procurement is analyzed in detail in the works of the World Bank. They note that the implementation of e-procurement systems reduces transaction costs and increases the participation of small and medium-sized businesses in public procurement [4].

Research by Thai examines digital public procurement as an element of the modern public administration system. The author emphasizes that the use of digital technologies in procurement contributes to increased trust in government institutions and improves the quality of public services [5].

An analysis of the impact of digitalization of procurement on competition and innovation is presented in the works of Glover, Delebarre, and McDonald, which note that e-procurement creates a more equal playing field for access to public contracts and stimulates innovative activity among suppliers [6].

Research by the European Commission emphasizes the importance of digital and innovative procurement for the implementation of "smart growth" strategies. The authors point out that digital procurement is an important tool for supporting innovation ecosystems and technological development [7]. The connection between digital public procurement and the development of an innovative economy is also examined in the works of Kattel and Lember. The authors note that the state, acting as a "smart customer," can generate long-term demand for innovative products through digital procurement mechanisms [8].

UNESCO analyzes digital procurement in the context of sustainable and innovative development. It is noted that the introduction of digital platforms into procurement activities contributes to a more efficient use of budgetary resources and supports innovative solutions [9].

Finally, OECD research emphasizes that the further development of digital public procurement requires a comprehensive approach, including improving the institutional environment, developing digital skills, and using data analytics to evaluate the effectiveness of procurement policies [10].

Overall, the literature analysis shows that the digital transformation of public procurement is viewed as an important factor in the formation of an innovative economy, ensuring increased efficiency of budget expenditures, stimulating innovation, and developing a competitive environment [11].

## 2. Methodology

The study uses systemic and institutional approaches while analyzing the digital transformation of public procurement in an innovative economy. This theoretical framework was built on the basis of the analysis and synthesis of scientific papers and analytical materials of international organizations. The empirical segment of this research consists of a comparative study of digital public procurement instruments and their influence on procurement efficiency and innovativeness of public procurement processes [12]. A tabular approach was used to systematize the results and identify key areas for digitalization of public procurement.

## 3. Results and Discussion

The digital transformation of public procurement in an innovative economy is aimed at improving the efficiency of budgetary funds, fostering competition, and stimulating supplier innovation [13]. Analysis shows that the transition from traditional procurement procedures to digital tools changes not only the technical aspects of the procurement process but also its economic and institutional logic.

The study's results demonstrate that digital public procurement tools automate key stages of the procurement cycle—from planning and placing orders to monitoring contract performance. This reduces administrative costs, increases the transparency of procedures, and expands access to government contracts for market participants, including small and innovative companies.

To systematize key digital public procurement tools and assess their impact on the efficiency and innovation of procurement activities, Table 1 presents the main solutions used in international practice [14].

**Table 1.** Digital public procurement tools and their impact on efficiency and innovation.

Digital tool	Contents and functions	Main effects
Electronic procurement platforms (e-procurement)	Online posting of tenders, submission of applications, electronic auctions	Increasing transparency and competition
Electronic document management	Digital contracts, electronic signatures, online reporting	Reducing procedure times and transaction costs
Digital procurement planning	Electronic procurement plans and demand forecasting	Improving the justification and strategic nature of procurement
Procurement data analytics	Analysis of prices, suppliers and procurement results	Improving efficiency and preventing violations
Electronic contract monitoring	Online control of contract execution	Reducing the risk of default
Innovative procurement (pre-commercial procurement)	Procurement of R&D and innovative solutions	Stimulating innovative activity
Open procurement data	Public access to procurement information	Increasing public control

Integration with financial systems	Linking procurement with budget accounting and payments	Improving the manageability of budget expenditures
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**Source:** compiled by the author based on analytical materials from the OECD, World Bank, European Commission and international practice [1]–[10].

An analysis of the data in Table 1 shows that digitalization of public procurement has had the greatest impact on the transparency and competitiveness of procedures [15]. Electronic procurement platforms and open data reduce information asymmetries between customers and suppliers, thereby increasing the number of participants and reducing corruption risks.

The implementation of electronic document management and digital contract monitoring is essential, as they reduce procurement timelines and improve compliance. This is especially important in an innovative economy, where the speed of implementing new solutions is critical.

The use of procurement data analytics and digital planning facilitates the transition from a formal approach to procurement to a strategic model for managing government demand [16]. Such tools allow for the consideration of product lifecycles, assessing cost effectiveness, and generating sustainable demand for innovative goods and services.

Innovative procurement deserves special attention, including advance commercial procurement mechanisms aimed at supporting research and development. Their development through digital tools allows the government to become an active participant in the innovation ecosystem. Overall, the analysis confirms that digital public procurement tools form the basis for improving the efficiency of budget expenditures and stimulating innovative economic development [17]. Their comprehensive and systematic implementation is a key prerequisite for the successful digital transformation of the public procurement system.

#### 4. Conclusion

The study found that the digital transformation of public procurement is a key area for developing an innovative economy and improving the efficiency of budgetary use. The analysis revealed that the introduction of digital public procurement tools has a comprehensive impact on the procurement system, affecting both organizational procedures and the economic results of procurement activities.

The analysis of digital public procurement tools indicates that the greatest impact is achieved through the implementation of electronic procurement platforms, electronic document management, and digital contract monitoring. These tools ensure increased transparency and competitiveness of procurement procedures, reduced timeframes, and lower transaction costs. At the same time, the use of procurement data analytics and digital planning facilitates the transition to strategic public procurement management focused on long-term innovative development goals.

Innovative procurement mechanisms, including preliminary commercial procurement and R&D procurement, play a special role in the context of an innovative economy. Their digitalization allows the state to generate sustainable demand for innovative solutions, stimulate the development of high-tech industries, and support innovative business activity.

At the same time, the study results show that successful digital transformation of public procurement requires a comprehensive approach that takes into account institutional, technological, and personnel factors. Based on the findings, it is advisable to formulate the following practical recommendations.

First, it is advisable to expand and integrate electronic procurement with financial and budgetary systems to enhance the controllability and transparency of public expenditures. On the second point, it is suggested to broaden the implementation of big data analytics and digital monitoring tools to better evaluate procurement performance and monitor risks at an early stage. Third, it is to be seen to upgrade the regulatory framework of public procurement, with legal recognition of digital processes and promotion of new forms of innovative procurement act. Fourth, the development of innovative procurement instruments for R&D support, through digital platforms, should be further strengthened. Fifth, the digital competencies of all procurement process stakeholders must be developed and the cybersecurity of digital procurement systems must be ensured. Thus, the realization of these proposals will contribute to the efficiency and concentration of the innovative emphasis of public procurement, more rational use of budget funds and formation of the enabling environment for sustainable development of innovative economy.

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