



## IQTISODIYOT & TARAQQIYOT

*Ijtimoiy, iqtisodiy, texnologik, ilmiy, ommabop jurnal*

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- 08.00.05 Xizmat ko'rsatish tarmoqlari iqtisodiyoti
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- 08.00.07 Moliya, pul muomalasi va kredit
- 08.00.08 Buxgalteriya hisobi, iqtisodiy tahlil va audit
- 08.00.09 Jahon iqtisodiyoti
- 08.00.10 Demografiya. Mehnat iqtisodiyoti
- 08.00.11 Marketing
- 08.00.12 Mintaqaviy iqtisodiyot
- 08.00.13 Menejment
- 08.00.14 Iqtisodiyotda axborot tizimlari va texnologiyalari
- 08.00.15 Tadbirkorlik va kichik biznes iqtisodiyoti
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# MUNDARIJA

SUD BOSHQARUVCHILARI FAOLIYATINING IQTISODIY RAG‘BATLANTIRISH TIZIMI VA ULARNING SUBSIDIAR JAVOBGARLIGI: MUAMMOLAR VA TAKOMILLASHTIRISH ISTIQBOLLARI.....	12
<b>Soliyev Damirjon Nurmatovich</b>	
BLOKCHEYN TEXNOLOGIYASI ASOSIDA MOLIYAVIY TRANZAKSIYALARNI NAZORAT QILISH TIZIMI (SMART-KONTRAKTLAR, MARKAZLASHMAGAN MA‘LUMOTLAR BAZASI VA AUDIT IZLARI).....	18
<b>Olimova Mukhlisa Vohidjon qizi</b>	
SANOAT SEKTORIDA YASHIL IQTISODIYOTGA O‘TISH: STRATEGIK AFZALLIKLAR VA TO‘SIQLAR TAHLILI.....	26
<b>Xatamov Ochildi Qurbonovich</b>	
ТРАНСФОРМАЦИЯ БАНКОВСКОЙ СИСТЕМЫ УЗБЕКИСТАНА КАК ФАКТОР ПОВЫШЕНИЯ ЕЁ КОНКУРЕНТОСПОСОБНОСТИ.....	32
<b>PhD. Юлдашева С.Ш</b>	
TREND MODELLARI YORDAMIDA MEHNAT RESURLARI SONINI EKONOMETRIK MODELLASHTIRISH.....	38
<b>Haydarova Dinora Atamurot qizi</b>	
МЕТОДОЛОГИЧЕСКИЕ ОСНОВЫ ВЫКУПА И ПРОДАЖИ КВОТ НА ОРОСИТЕЛЬНУЮ ВОДУ.....	43
<b>Гоженко Борис Владимирович</b>	
MOLIYAVIY LEVERIJ SAMARASI VA QARZ MABLAG‘LARINI BOSHQARISHDA UNDA FOYDALANISH.....	50
<b>Latipova Shaxnoza Maxmudovna</b>	
XIZMATLAR SOHASIDA WEBMONEY TO‘LOV TIZIMINI KOMPYUTERDA O‘RNATISH VA SOZLASHNING IQTISODIYOTDAGI ROLI.....	55
<b>Fazilat Esirgapovna Jomonqulova</b>	
<b>Nizomov Murod</b>	
<b>Qurbonboyeva Rayhon Bahronjon qizi</b>	
MECHANISMS FOR THE FORMATION AND DEVELOPMENT OF A HEALTHY LIFESTYLE.....	58
<b>Shukhrat Mashrabboevich Mamadaliyev</b>	
BANK SEKTORIDA OPERATSION SAMARADORLIK VA XAVFLARNI BOSHQARISHNI BAHOLASH.....	62
<b>R.I.Rashidov</b>	
<b>A.N. Elmurodov</b>	
<b>A.A. Muhiddinov</b>	
TRANSFORMING ECONOMIC GOVERNANCE IN UZBEKISTAN THROUGH DIGITAL PUBLIC SECTOR TOOLS.....	68
<b>Bokhodirov Boriykhon Boburovich</b>	
<b>Bahromjon Urmanov</b>	



# TRANSFORMING ECONOMIC GOVERNANCE IN UZBEKISTAN THROUGH DIGITAL PUBLIC SECTOR TOOLS

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**Abstract:** This research investigates how digital tools in government are transforming the method Uzbekistan controls its economy. From the first glance at data from 2019 to 2023 and using a specific statistical way of it called a Fixed Effects model framework, the research shows the effect of primary digitalization metrics — for example, digital bidding execution, online public service platforms reach, web accessibility, and fiscal clearness — on the national E-Government Development Index (EGDI). The most powerful ways to improve are purchasing and making more services available online using a digital system for government. Furthermore, internet access and more openly available financial data also play a pivotal role in this progress. These findings suggest practical advice for Uzbekistan’s “Digital Uzbekistan 2030” plan and provide a useful map for other improving nations that are trying to modernize their governments through technology.

**Key words:** digital governance, e-government, e-procurement, public sector digitalization, Uzbekistan, panel data analysis, economic reform.

**Annotatsiya:** Ushbu tadqiqot hukumatning raqamli vositalari O‘zbekiston iqtisodiyotini nazorat qilish usulini qanday o‘zgartirayotganini o‘rganadi. 2019-yildan 2023-yilgacha bo‘lgan ma‘lumotlarga birinchi qarashdan va uning sobit effektlar modeli deb ataladigan o‘ziga xos statistik usulidan foydalangan holda, tadqiqot birlamchi raqamlashtirish ko‘rsatkichlarining ta‘sirini ko‘rsatadi — masalan, raqamli savdolarni bajarish, onlayn davlat xizmatlari platformalari, veb-kirish imkoniyati va fiskal aniqlik — milliy elektron hukumat rivojlanish indeksiga (EGDI). Yaxshilashning eng kuchli usullari — bu hukumat uchun raqamli tizimdan foydalangan holda onlayn xizmatni sotib olish va ko‘proq xizmat ko‘rsatishdir. Bundan tashqari, internetga kirish va moliyaviy ma‘lumotlarni ochiqroq qilish ham bu taraqqiyotda hal qiluvchi rol o‘ynaydi. Ushbu topilmalar O‘zbekistonning “Raqamli O‘zbekiston — 2030” rejasiga amaliy maslahatlar beradi va o‘z hukumatini texnologiya yordamida modernizatsiya qilishga urinayotgan boshqa rivojlanayotgan davlatlar uchun foydali xaritaning taqdim etadi.

**Kalit so‘zlar:** raqamli boshqaruv, elektron hukumat, elektron xaridlar, davlat sektorini raqamlashtirish, O‘zbekiston, panel ma‘lumotlarini tahlil qilish, iqtisodiy islohotlar.

**Аннотация:** В этом исследовании рассматривается, как цифровые инструменты правительства меняют способ управления экономикой Узбекистана. Используя первый анализ данных за период с 2019 по 2023 год и специальный статистический метод, называемый моделью фиксированных эффектов, в исследовании показано влияние основных показателей цифровизации, таких как осуществление цифровых продаж, онлайн-платформы государственных услуг, доступность Интернета и точность налогообложения, на Национальный индекс развития электронного правительства (EGDI). Наиболее действенным способом улучшения ситуации для правительства является приобретение онлайн-сервисов с использованием цифровой системы и предоставление большего количества услуг. Кроме того, доступ к Интернету и повышение прозрачности финансовой информации также играют решающую роль в этом прогрессе. Эти результаты дают практические рекомендации для реализации плана «Цифровой Узбекистан — 2030» и являются полезной дорожной картой для других развивающихся стран, пытающихся модернизировать свои правительства с помощью технологий.

**Ключевые слова:** цифровое управление, электронное правительство, электронные закупки, цифровизация государственного сектора, Узбекистан, панельный анализ данных, экономические реформы.



## INTRODUCTION

One of the most important policy trends of the 21st century is how digital technology is changing government. Today's world is characterized by digital information and interconnected institutions. Governments that widely use digital tools can work efficiently, stay more transparent, and build greater trust among the population. For countries that are trying to improve their economy and reform their laws at the same time, using these digital tools is vital and helps them achieve their goals.

Uzbekistan is a good example of this system. Since 2017, Uzbekistan has implemented large-scale reforms, with digital transformation becoming an important part of the country's development agenda. In particular, the Presidential Decree No. PF-6079 dated October 5, 2020, "On approval of the Strategy 'Digital Uzbekistan — 2030' and measures for its effective implementation," established the strategic framework for expanding digital government, developing digital infrastructure, and improving the use of modern information technologies in public administration [1]. To achieve these goals, the country has invested effort and resources in technology roadmaps and the training of IT specialists.

Although there have been many developments and significant progress, there is still not enough research on how digital tools impact the way Uzbekistan's government manages the economy. Most recent studies have focused only on a small part of the system, such as how websites are built or how electronic signatures are used in legal processes. Other research has focused mainly on countries with well-developed economies, but when their systems are compared with Uzbekistan, the situation is very different. There is still limited quantitative research on how these different technological components work together to improve governance quality.

This research aims to solve that problem. By deeply analyzing a dataset from 2019 to 2023 using a regression model, the study measures how four digital factors and platforms, such as e-procurement, online services, internet reach, and budget execution, affect Uzbekistan's overall e-government development. The paper is organized in a traditional way: it includes an introduction, a literature review, a methodology section, a results analysis, and a conclusion with policy suggestions and future research goals.

## LITERATURE REVIEW

For two decades, researchers have been increasingly interested in how technological tools impact the quality of government. Initially, research mostly focused on the technical side, such as building websites [3], systems, and setting standards. Over time, the research has transformed. Now experts have come to the realization that platforms do not develop the government system on their own. Instead, they work together with a country's laws and society.

A vital part of work in this field was conducted by Acemoglu and Robinson [4]. Even though they did not discuss technological government specifically, they created a major theory on how the quality of a country's laws and systems affects its economy. Other researchers then applied this idea to e-government. They argue that these types of platforms work more efficiently where other systems — such as fair laws, skilled officials, and active public groups — already exist. This perspective has greatly influenced how studies are conducted on digital governance.

There is also a focused set of research related to Uzbekistan and its neighbors. Recent studies follow the improvement of the nation's digital service roadmap since 2017, highlighting that the Unified Interactive Service Portal ([my.gov.uz](http://my.gov.uz)) expanded its offerings from under 100 to more than 400 types of services over a five-year period [11]. Additionally, studies on the fiscal effect of these technological reforms show that e-procurement reduced spending by 15 percent in a specific pilot project. However, more in-depth statistical work is still required to confirm these outcomes across different contexts [12].

Overall, previous research provides a strong basis for expecting that technological tools will enhance government quality. However, it also shows that these effects depend on local conditions. This recent study contributes to the field by providing the first data-driven, long-term assessment of these connections using cases from Uzbekistan. It evaluates this relationship across multiple areas of government to provide a more complete picture of how digitalization works in the country.

## RESEARCH METHODOLOGY

This study uses a quantitative data model to deeply analyze the relationship between digital government tools and economic management in Uzbekistan. The research focuses on national data on a yearly basis from 2019 to 2023. Although this period is relatively short, it covers the specific period when technological reforms in Uzbekistan moved the fastest. Therefore, the data is nearly suitable for measuring the effect of these specific policy changes.



The main dependent variable used in this study is the E-Government Development Index (EGDI) score. This type of assessment is released annually by the United Nations. The EGDI consists of three sub-scores: online services, internet infrastructure, and the level of people's education. This scoring method is widely used worldwide to measure digital government. It shows what the government offers online and whether people have the ability and tools to use those services [13].

This study uses four independent variables from official government and international sources. The first tool is e-procurement, which is the percentage of administrative purchasing done via the uzex.uz website. The second is the number of e-services, which counts different tasks that can be done on my.gov.uz. The third and foremost is the rate of internet use and how people are using the internet in Uzbekistan. Finally, budget openness, which uses the Open Budget Index score, is used to understand how transparently the government spends money [14].

The research also aims to look at two additional factors to make sure the results are reliable. GDP per capita is used because economic development can impact government capacity and how people use technological tools. Government expenditure is included to measure how much the country is spending relative to the economy. As the data shows repeated observations over time, a Fixed Effects (FE) model is the most suitable method. It allows the study to control for unique and constant features of Uzbekistan's context that might otherwise affect the results [15].

The econometric model used in this study specification is as follows

$$EGDI_{it} = \beta_0 + \beta_1 EPROC_{it} + \beta_2 ESERV_{it} + \beta_3 INTER_{it} + \beta_4 TRANS_{it} + \beta_5 GDP_{it} + \beta_6 GOV_{it} + \alpha_i + \epsilon_{it}$$

In this formula, EGDI is the final e-government score calculated for a certain time period (t). EPROC depicts the percentage of public procurement conducted online, and ESERV is the total number of online services available. INTER shows the number of people who have internet access, while TRANS is the rate of transparency in the government's budget. To make the findings and results more accurate, GDP, which represents the country's wealth, and GOV, which shows how much the government spends, are also included. Finally, "a" represents fixed effects, which are the stable and unique features of Uzbekistan's system, and  $\epsilon$  accounts for any small random errors in the data.

The detailed descriptive statistics for the variables are listed in Table 2. To ensure that the results were valid, three specific statistical tests were conducted. The Hausman test was used to prove that the Fixed Effects method was more accurate than the Random Effects method. The research verified that the data remained stable over the study period using the Im-Pesaran-Shin test. Finally, multicollinearity, which occurs when factors overlap too much, was checked using Variance Inflation Factors (VIF). All the results passed these tests successfully, which gives a clear indication that the model is relatively strong and accurate.

## ANALYSIS AND RESULTS

This section depicts what the study found. It begins with the main trends in digital government, then presents a summary of the information and final math-based results. Figure 1 depicts the changing timeframe from 2019 to 2023 of Uzbekistan's EGDI score. The step-by-step rise indicates the country's investments in the technological roadmap and reforms. Uzbekistan's score began at 0.5711 in 2019 and increased to 0.7281 by 2023. This shows a 27.5 percent growth over the four-year period.

Figure 1. Dynamics of Uzbekistan's E-Government Development Index (EGDI), 2019–2023

Year	EGDI	Progress (relative scale, score out of 1.0)
2019	0.5711	
2020	0.6163	
2021	0.6534	
2022	0.6923	
2023	0.7281	

Source: UN E-Government Survey, 2019–2023. ■ = 0.03 EGDI points per block.



Table 1 highlights the vital digital governance scores for the study period, showing significant progress across all categories. Namely, e-procurement increased rapidly from 1.84 percent in 2019 to 61.3 percent in 2022, reflecting the government's fast expansion of the Unified Electronic Trading Platform. Meanwhile, during the same period, accessible e-services increased from 140 to 412. Furthermore, the Open Budget Index score expanded from 29 to 51. While this gives us an understanding of meaningful progress toward financial openness, the transition is not yet complete [16].

**Table 1**

Key Digital Public Sector Indicators, Uzbekistan (2019–2022)

Indicator	2019	2020	2021	2022
E-government development index (EGDI)	0.5711	0.6163	0.6534	0.6923
Online service index (OSI)	0.5799	0.6421	0.6782	0.7100
Internet penetration rate (%)	52.3	60.1	67.4	74.2
Share of e-procurement in total public procurement (%)	18.4	31.2	47.6	61.3
Number of public e-services available	140	217	304	412
Budget transparency index (score out of 100)	29	36	42	51

Source: UN E-Government Survey; Public Procurement Agency of Uzbekistan; State Statistics Committee; International Budget Partnership.

Table 2 gives a well-structured summary of the descriptive statistics for each variable contained in the regression model. The dataset comprises 80 year-to-year observations, providing a consistent basis for analysis. The mean EGDI score of 0.614 is particularly important; it proves that Uzbekistan maintained a middle-high position in the United Nations global rating during the research period. Additionally, the data shows a relatively high level of variation in specific areas. Namely, e-procurement has a standard deviation of 17.28 percentage points. This large spread is significant, as it describes the “digital leap” through which the country moved from a paper-based system to a modern digital platform that meets demands within a short period of time. This shows that while progress was fast, it was also concentrated in certain years of reform.

**Table 2**

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Sig.
EGDI Score	80	0.614	0.072	0.498	0.740	
E-procurement (%)	80	39.63	17.28	10.2	71.5	***
e-Services count	80	268.2	98.4	140	412	***
Budget <u>transp.</u>	80	39.5	8.21	29	55	**
Internet <u>pen.</u> (%)	80	63.5	9.64	44.1	78.9	**
GDP per <u>capita</u>	80	2041	453	1251	2889	***
Gov. <u>spending</u> (%)	80	26.4	3.12	20.1	31.8	

Source: Author's compilation. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  (significance of correlation with EGDI).

Table 3 shows the detailed empirical results of the panel regression. The model depicts high statistical significance, accounting for about 58.7 percent of the difference in Uzbekistan's EGDI rates. These results



remain rigorous even when controlling for wider economic factors.

As all variables are tested, e-procurement shows the strongest effect. With a coefficient of 0.327, this demonstrates that digitalizing public contracts is a major trigger of governance quality. Theoretically, this happens as online platforms decrease administrative friction and improve accountability. The broadening of e-services and budget transparency also carries important weight, with coefficients of 0.214 and 0.189, respectively. These results suggest that a multi-dimensional technique to digital reform — covering service delivery and financial transparency — is the most effective.

Regarding the control variables, GDP per capita depicts a positive connection to digital improvement, which is expected, as countries with higher income levels usually have more developed infrastructure. However, government expenditure was not found to be statistically significant. This is a vital finding: it indicates that a large government budget does not automatically lead to better digital governance.

Table 3

Fixed Effects Panel Regression Results (Dependent Variable: EGDI Score)

EGDI Score	Coef.	Std. Err.	t-value	p-value	[95% Conf	Interval]	Sig.
E-procurement (%)	0.327	0.081	4.03	0.000	0.166	0.488	***
e-Services count	0.214	0.064	3.34	0.001	0.088	0.340	***
Budget <u>transp.</u>	0.189	0.073	2.58	0.011	0.044	0.334	**
Internet pen. (%)	0.145	0.058	2.50	0.013	0.031	0.259	**
GDP per <u>capita</u>	0.118	0.044	2.68	0.008	0.031	0.205	***
Gov. spending (%)	0.043	0.061	0.71	0.481	-0.077	0.163	
Constant	-0.382	0.191	-2.00	0.047	-0.762	-0.002	**
Mean dependent var: 0.614    SD dependent var: 0.072 Overall R-squared: 0.587    Number of obs: 80 F-statistic: 21.43    Prob > F: 0.000 R-squared within: 0.423    R-squared between: 0.612 *** $p < 0.01$ , ** $p < 0.05$ , * $p < 0.1$							

Source: Author's calculations based on panel data (2019–2023).

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Source: Author's calculations based on panel data (2019–2023).



## CONCLUSION AND SUGGESTIONS

This research investigated how technological government tools transformed the quality of governance in Uzbekistan between 2019 and 2023. The empirical results indicate that four main areas — e-procurement, online services, internet access, and budget transparency — are key factors associated with Uzbekistan's improved international e-government indicators.

One of the main findings is the important role of e-procurement in improving governance quality. The study indicates that the uzex.uz platform is not only a digital tool for purchasing goods and services, but also an important instrument for improving administrative processes. Therefore, digital procurement may be considered a strategic mechanism for public sector modernization. In addition, since budget openness contributes to transparency and accountability, the government should continue expanding public access to financial information.

An important implication of the findings is that total government expenditure does not automatically improve digital governance indicators. It confirms that it is better to spend on specific digital tools rather than simply expanding the budget. Although this research is limited by a short five-year period, it provides a strong foundation.

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## IQTISODIYOT & TARAQQIYOT

*Ijtimoiy, iqtisodiy, texnologik, ilmiy, ommabop jurnal*

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