



Spectrum Journal of Innovation, Reforms and Development

Volume 09, Nov., 2022

ISSN (E): 2751-1731

Website: www.sjird.journalspark.org

**ANALYSIS OF DIGITAL TRANSFORMATION OF THE REPUBLIC OF
UZBEKISTAN**

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Abstract

This study uses Uzbekistan as a case study to investigate the stages of development and present level of e-government in post-Soviet transition countries. The prior research on e-government in developing nations underlined the system's significant benefits, such as improved state service delivery, reduced corruption, and more open and inclusive governance. According to the study, post-Soviet countries in transition have a variety of obstacles that keep them from realizing the benefits of digital transformation in the public sector.

Keywords: Telecommunications and Infrastructure, EGDI, e-government, ICT, technologies.

Introduction

The world's most recent environment is defined by a heavy reliance on technologies, which have disrupted nearly all facets of life to some degree. However, it must be acknowledged that when combined with information flow, it has enabled great productivity and efficiency and increased connectedness across nations, organizations, businesses, and people. The fact that these trends are seen as indicators or characteristics of the so-called "information society" should be emphasized. This idea has been the focus of numerous studies that have examined the impact of information and communication technology (ICT) on all facets of life, including the economy, education, health, finance, and governance.

The primary indicators of an informational or network society are the capacity to access and manage information and the growth of human capital with cognitive abilities combined with spatial, technological, and vocational developments (Bell 1974, 437; Castells 1996).

The demand for skilled workers (from physical to intellectual) in the profit-driven private sector changed as a result of a new trend of readily available information and cost savings through automation and computerization (Ndou, 2004a; OECD, 2017).

The potential of digital initiatives to revitalize their responsiveness to changing citizen needs, effectively use limited public resources, and most importantly encourage more just and inclusive management, or participatory democracy, has only recently been recognized by the public sector, which has lagged behind the private sector in terms of ICT applications (Tappscott and Caston 1993, cited in Ndou 2004a).

So, in addition to the fact that recent technological advancements can increase managerial effectiveness in the public sector, it is also clear that citizens now have a "digital mind" that is



more informed, networked, aware of their rights, and demanding than ever before. This has forced the public sector to adopt ICT to increase transparency, accountability, and citizen interaction with the government. International organizations, or democracy observers, are therefore encouraging more and more nations to adopt and invest in the concept of e-government as they recognize the transformative potential of ICT in public administration to increase efficiency, transparency, and citizen engagement, including the provision of public services to end users and communities.

With Uzbekistan as an example, one of the developing economies in central Asia that has prioritized e-government strategies in recent public administration reforms, this work seeks to investigate the directions of electronic government reforms in post-Soviet transition countries. We plan to assess the current state of e-government development and then identify challenges in the ICT-led advancement in the public sector under the clear hypothesis derived from prior studies (Ndou 2004a; Siddiquee 2016) claiming that ICT-enabled policy changes bring administrative efficiency improvements, more engaged public participation, and an increase in overall service quality if successfully implemented.

Literature Review

Given recent technical advancements and movements toward a knowledge-based economy, a clear trend of ICT usage in the public sector can be seen in both emerging and developed countries (UNECE 2003). Research on public administration and research on communication and information technology for development intersect in studies on digitalization in the public sector. The dispute concerning the real goal of e-government research and its precise definitions is still going on. Is the digitalization of government services the end goal for governments, or is information and communication technology in the public sector only a tool for improved governance? Good governance has been identified as one of the dimensions of major development issues by international development institutions such as the United Nations (UN), the World Bank (WB), the Asian Development Bank (ADB), the Organization for Economic Co-operation and Development (OECD), the Inter-American Development Bank (IADB), and other development organizations. These organizations have incorporated good governance into their strategy documents (World Bank 1992, 83).

It makes sense to define electronic government from the standpoint of Uzbekistan because e-government definitions may vary based on the circumstances and goals of ICT adoption in a particular country. In accordance with Article 3 of the Law of the Republic of Uzbekistan "On Electronic Government" from 2015, "Electronic government is a system of technical tools, administrative measures, and legal measures for providing electronic coordination between organizations and rendering public services by government authorities to individuals and entities through the application of ICT." The law establishes the obligations and responsibilities of specific entities in carrying out e-government projects as well as the primary goals and guiding principles of e-government. In accordance with the law on electronic government, standardization of document systems, equal rights for users of e-government services, and openness in governmental authorities



The key tenets of Uzbekistan's e-government system are information security and the continuous enhancement of online public services (*ibid.*, Article 4).

The definitions of e-government provided above all point to the following similarity: The goal of e-government is to transform and improve public administration, operations, and internal communication within organizations while delivering better public services. E-government is the electronic delivery of government services made possible by the most recent communication technologies, typically through the internet. According to Randeep (2005), the core of electronic government is not "technology," but rather "government," which is expected to be the focal point of the idea of a digitized public service system. ICT is viewed by the World Bank as one of the instruments or driving forces of development. According to the World Bank (2005, 15), "e-development success should not be assessed by technology dispersion but by advancements in development itself, including economic growth and, eventually, attainment of the Millennium Development Goals."

Research Methodology

The framework for analysis, tools, and procedures to be used to assess each domain of our approach are presented in this part. The section also includes explanations of survey data collection as well as the research's constraints.

The review of the literature reveals a lack of study on the growth of e-government in Uzbekistan since e-government is a relatively new policy tool that has only recently been incorporated into reforms of the public sector. The work of Khodjaev (2004), completed for the project by the UNDP to establish an e-government system in Uzbekistan, is one of the notable works specifically on the development of e-government in Uzbekistan. Rakhmonov produced yet another noteworthy study on the state and difficulties of Uzbekistan's digital transformation (2009). The framework for this work was developed using references from reports by international organizations on ICT development and e-governance (UNDP 2013; UN 2018b; OECD 2019), as well as works on innovative public sector reforms in CA by Adams and Rustemova (2009), Johnson and Kolko (2010), Brimkulov and Baryktabasov (2018), and Kassen (2019).

However, studies focusing entirely on Uzbekistan's recent advancements in e-government are few and far between, making it impossible to have a thorough assessment of the nation's e-governance. Furthermore, there is scarcely any literature now in print that discusses the most recent advancements in Uzbekistan's e-government projects in terms of open data, civic involvement, and transparency. As a result, we made the decision to use the data and resources at our disposal to construct a multiple-level analysis (Kassen 2019) of the digital transformation occurring in the Uzbek public sector.

The following primary and secondary sources are the basic foundation of the current work, which is in accordance with the study questions and the framework:

1. Academic studies and literature on ICT-driven public sector changes;
2. Reports from global development organizations, including the UN, World Bank, and OECD, as well as policy and legislative documents released by the Republic of Uzbekistan;



- Examining the websites of the government organizations at the federal, state, and city levels, through which the majority of online public services are provided

To comprehend the supportive framework for e-government and its consequences for the need for improvements in public administration, study of the socioeconomic settings of the nation is crucial.

There is growing evidence from the literature that a country's setting has a significant impact on whether or not specific e-government tactics are successful (Bwalya and Mutula 2014, 15; Kassen 2019).

The present institutional, technological, environmental, and service quality (G2C, G2B, and G2G) perspectives are used to analyze the current state of government websites in order to assess the growth of e-government. The first three factors are examined using secondary data from international organization publications as well as government rules and policy papers.

Results and Discussions

Recent technological advancements are said to give considerable benefits for general development, particularly in emerging or developing countries, according to international development organizations, human rights organizations, and academics of ICT for development study. Particularly, the UN, WB, ADB, and other development agencies place emphasis on the potential of ICT to revolutionize public sector efficiency and improve service quality, which would afterwards foster participatory democracy and open governance.

Indicators that assist us comprehend the condition of the e-government enabling environment include the amount of innovation, human capital, and ICT infrastructure. In order to assess Uzbekistan's e-government development since the government's initiatives began in 2001, the present section will use these indicators, official data, and other analytical materials.

It is clear from the national reports and analytical materials that Uzbekistan's government services have improved both in terms of general quality and quantity, as well as what has been accomplished thus far in terms of establishing a legislative foundation. Uzbekistan's performance nonetheless stays in the center of the pack when measured using the EGDI, which compares nations' performance rather than evaluating the absolute progress of e-government, coming in at 69 out of 193 countries (UN 2022). Amongst Central Asian countries by EGDI index, Uzbekistan ranked as second following Kazakhstan.

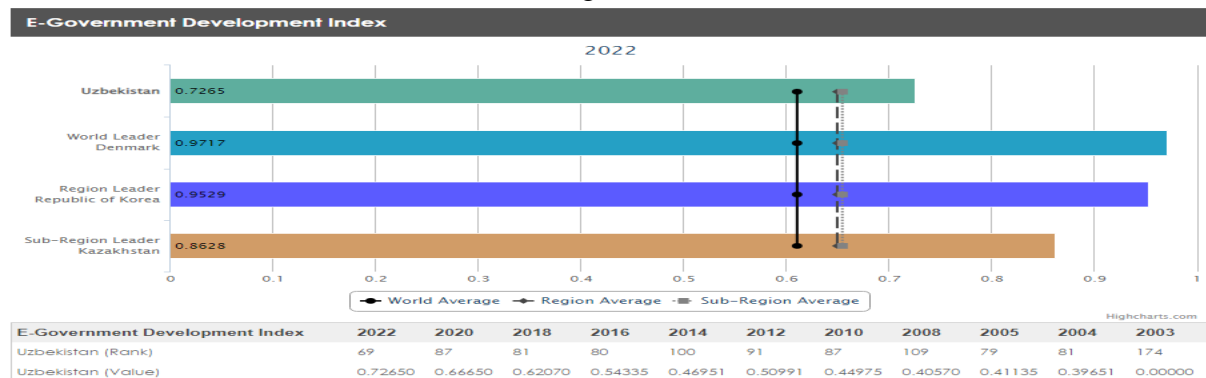


Fig-1. Comparison of Uzbekistan with world and regional leaders by E-Government Development Index



Source: UN E-Government Knowledgebase

Rest of the figures further show that Uzbekistan was noted in numerous assessments as a nation with significant ICT development barriers (UNECE 2003; ITU 2014). Uzbekistan did poorly on all three of the EGDI's sub-indices, particularly the one measuring ICT infrastructure (TII), which differs greatly from Kazakhstan's. These three sub-indices are Telecommunications and Infrastructure (TII), Online Services (OSI), and Human Capital Indices (HCI).

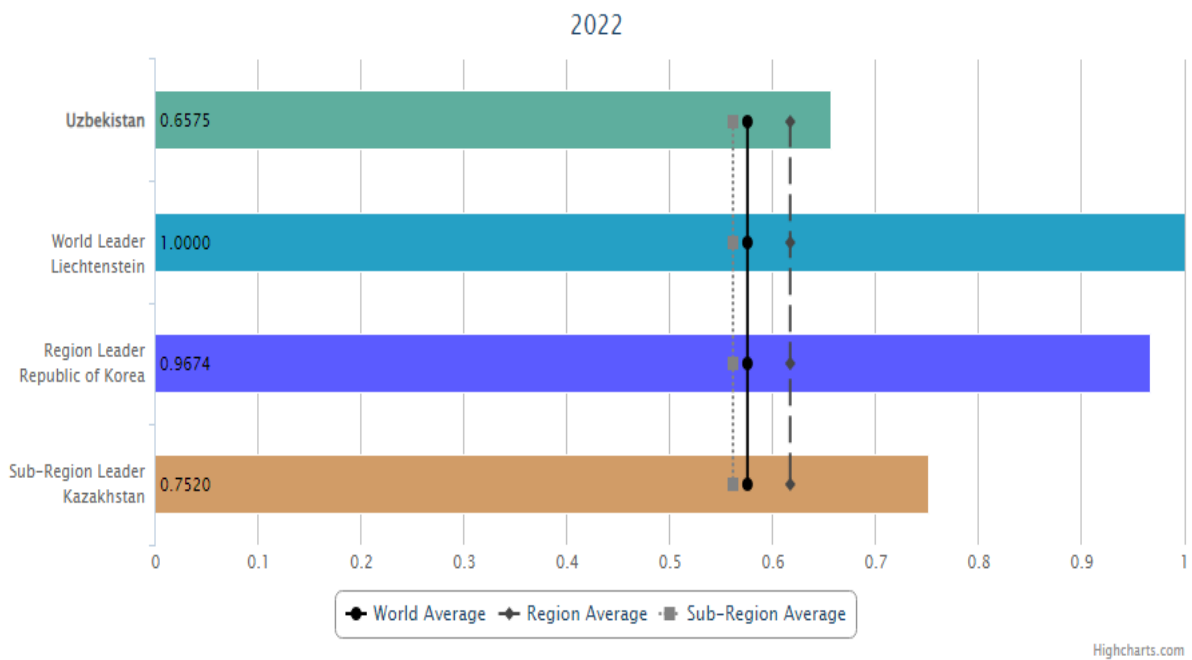


Fig-2. Telecommunication infrastructure index

Source: UN E-Government Knowledgebase

If we examine historical information on ICT penetration in Uzbekistan using the UN's TII, a composite index of active mobile, computer, and internet users, as well as the rate of fixed or wireless broadband usage, we find that the nation's performance has increased threefold, reaching nearly 0.65 in 2022 from zero in 2002.

Table-1. The number of subscribers with Internet access by region (at the end of the year; per 100 people of the population)

	2015	2016	2017	2018	2019	2020	2021
Republic of Uzbekistan	26,6	30,2	34,5	40,4	48,8	58,4	65,8

Source: Statistical committee of Republic of Uzbekistan

Since there are average 65.8 internet subscriptions for every 100 residents, the majority of people access the internet through their phones, but this country still lags behind other CIS nations like Kazakhstan, where the average individual possesses 1.5 mobile phones. Almost 90% of survey participants use mobile devices or other electronic gadgets to access the internet (PC, laptop, internet cafe). 56 per 100 people subscribe to mobile broadband, which is about average for the region and the world.

Table-2 The length of fiber-optic communication lines (thousand km)

Territories	2015	2016	2017	2018	2019	2020	2021
Republic of Uzbekistan	20	22,1	24,5	26,6	36,6	68,6	118,0
Karakalpakstan Republic	1,7	1,9	2	2,1	3,1	4,0	8,6
regions:							
Andijan	1,1	1,3	1,4	1,5	2,5	4,3	6,8
Bukhara	1,3	1,4	1,5	1,6	2,3	4,3	8,3
Jizzakh	0,9	1	1,1	1,3	1,8	2,4	5,1
Kashkadarya	1,1	1,3	1,4	1,6	2,1	5	7,8
Navoi	1,4	1,5	1,6	1,7	2,3	2,6	7,0
Namangan	1,1	1,1	1,3	1,4	2	4,9	7,7
Samarkand	1,1	1,2	1,3	1,5	2,1	6,1	11,0
Surkhandarya	0,9	1	1,1	1,3	1,7	4,1	7,5
Syrdarya	0,8	0,9	0,9	1	1,7	2,2	6,4
Tashkent	2,2	2,5	2,9	3,1	4,2	6,5	10,5
Ferghana	1,3	1,4	1,6	1,7	2,2	6,4	9,2
Khorezm	1	1,1	1,3	1,5	2	3,5	6,8
Tashkent city	4,1	4,5	5	5,3	6,8	11,9	15,0

Source: Statistical committee of Republic of Uzbekistan

However, the MITC is optimistic about current trends in infrastructure improvement, highlighting the fact that the availability of fiber-optic lines (FOLs) in rural areas has expanded and that rate reductions for internet plans while using public services were established (table-2). However, the data reveals that rural FOL provision only accounts for 5% of total FOL and has had a very slight increase over time.

Table-3 The number of computers connected to the local computer network in enterprises and organizations (at the end of the year, units)

Territories	2015	2016	2017	2018	2019	2020	2021
Republic of Uzbekistan	287 362	325 466	364 378	401 494	416 870	376 538	421 560
Republic of Karakalpakstan	10 864	12 260	14 379	16 216	18 852	17 761	19 558
Andijan	11 658	12 733	14 187	15 419	18 510	17 639	16 291
Bukhara	10 447	11 429	12 087	13 439	13 129	15 796	18 689
Jizzakh	12 842	14 069	15 269	16 401	14 794	6 599	14 553
Kashkadarya	10 520	13 776	18 690	19 883	21 972	16 591	15 680
Navoi	11 345	13 031	14 453	16 396	18 794	18 229	21 298
Namangan	13 376	16 246	17 954	20 143	21 942	19 748	19 135
Samarkand	18 058	21 358	25 432	26 937	30 913	21 280	25 093
Surkhandarya	10 778	11 953	19 315	21 682	18 151	7 830	7 793
Syrdarya	5 777	6 945	6 877	7 629	7 496	8 011	8 229
Tashkent	15 590	17 189	18 483	22 181	25 831	27 305	31 448
Ferghana	16 758	21 593	22 720	24 425	23 244	21 269	23 111
Khorezm	9 761	11 407	12 790	14 686	15 130	15 247	16 620
Tashkent city	129 588	141 477	151 742	166 057	168 112	163 233	184 062

Source: Statistical committee of Republic of Uzbekistan



Nevertheless, just 45% of homes have a computer, which limits access to internet services because most e-government platforms are desktop-based. Additionally, people who live in remote or rural locations seldom ever have access to the internet, and when they do, their connections are often of poor quality, as shown by the Speedtest Global Index.

The aforementioned indices, however, do not fully capture the state of e-government development at this time. Knox (2019), for instance, presented a paradox in relation to e-government in Kazakhstan, contending that despite leading the CIS in terms of e-government, Kazakhstan lacks in the genuine value of online public services, as determined through interviews and surveys. The operation of a small number of telecommunications companies that compete with one another within the nation can help to partially explain the root causes of the internet penetration issue. These companies are discouraged from investing in rural areas because of the low population density and the potential for low return on investment. Another factor contributing to the low efficiency of ICT infrastructure development is a lack of cooperation and communication among the country's current mobile telecommunications providers, which has a direct bearing on the growth of e-government in Uzbekistan (MITC 2018). The investment in ICT infrastructure is being made unevenly throughout the regions without being fully informed about each other's efforts due to an oligopolistic attitude and lack of cooperation.

Conclusion

In conclusion, ICT infrastructure has been a focus of government attention since 2002 and the focus of numerous government programs to increase ICT investment, education, and research. However, there is still room for improvement in the telecommunications infrastructure in terms of internet penetration (both in urban and rural areas), new sources of funding for ICT projects that are not solely reliant on public funds, and policies that encourage the development of IT professionals.

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