

Digital Transformation through e-Government Innovation in Uzbekistan

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Abstract—e-government has evolved through constant interaction between technological advances and social change. The competence of each department is limited in solving social issues that are becoming more complex, and it is time to solve the problem creatively through openness and communications based on ICT. Since 2010, each country has been implementing the Digital Transformation Policy to improve national competitiveness by applying digital technology to society as a whole. A paradigm shift in public services is required and a new e-government model is proposed as an alternative. By digitizing 100% of government services, vision is about sustainable development across society and strategies are presented for platform, open data, and human resource training. Specifically, improvements are being made to infrastructure, human resources expansion, ecosystems and public services. Considering the today's infrastructure and digital capabilities of Uzbekistan, the country is expected to enter digitalization at the level of current advanced countries like Korea at present around 2030. To achieve this, government must take the lead in innovation and be exemplary. To do this, digital government should be implemented by 2025. It will be possible to optimize governance and administration, to create a transparent nation and a paperless government and to be processed anywhere without visiting the government office. Ultimately, it will be able to realize the goal of providing multi-channel public service to individuals and companies as entry into one of advanced countries and a hub of e-commerce based on digital economy.

Keyword—e-Government, d-Government, Digital Government, Digital Economy, Digital Transformation, Public Service, Interactive Public Service.

I. INTRODUCTION

Full-fledged e-government in Uzbekistan began in 2013. A former Vice Minister of Korea, Nam S. Kim who had a lot of experience in e-government projects in Korea was scouted as Deputy Minister of Uzbekistan. An e-Government

Support Center was established and basic projects such as legal maintenance and prioritization of public services were carried out in two years. The Ministry of Information and Communication Technology was established by decree of the President and the 28 major projects were selected and implemented by 2018.

Since 2018, there has been a lot of work in Uzbekistan to simplify access from citizens to public services. These measures are to move public services to the digital sector. Digital transformation of public services means optimizing the structures and administrative units of governments and public institutions as well as interdepartmental cooperation. This is done by decentralizing the administration and creating a single point of contact based on a "single window."

According to the definition of Digital Government in the Recommendation on Digital Government Strategies report published by the OECD in 2014, In the case of E-Government, which means that governments use ICT, especially the Internet, as a tool to move to a better government, Digital Government is defined as a government that uses integrated digital technology to create public values. In other words, the government should support the production function of an ecosystem composed of government, public, business and individuals as a way of supporting government in the future. This means that the application of these technologies is inevitable to ensure data accessibility.

Based on digital government, the ecosystem will operate organically, which will increase the effect of social production. Furthermore, the digital economy of professionals, markets, creativity and innovative societies will be completed.

II. CURRENT STATUS

A. Policy

1) National Development Strategy

This policy, which came into effect in 2017, contains the basic philosophy that is currently being implemented during the five years of the government's ruling. The main directions of the action strategy of the five priority tasks for the development of Uzbekistan, which will be carried out by 2021, are as follows:

- ✓ Improve public administration and national system;

- ✓ Strengthen rule of law;
- ✓ Continue economic growth and liberalization of economy;
- ✓ Improve social safety net;
- ✓ Strengthen security.

It includes strengthening the support and expanding exports of industries to be developed such as digitalization of e-Government, introduction of new IT technology of agri-food / pharmaceutical / automotive.

2) e-Government Development Strategy 2025

The construction of e-government began in 2012 with the establishment of e-Government System Development Center (eGov.uz) and Information Security Center. The 28 major e-government projects have been actively pursued from 2015 to 2018.

At the end of 2018, in accordance with the Presidential Decree of the government's additional measures to introduce information systems for digital economy and e-government (Dec. 13, 2018), the National Project Management Agency (hereinafter referred to as "NAPM") under the President established the "e-Government and Digital Economy Project Management Center" (hereinafter referred to as "e-GDC") and designated it as a dedicated agency.

The basic principle of this concept is to build a centralized data center, to link multi-departments, to introduce new technologies, and to continuously improve digital illiteracy. Government services are "basically digital and open" and are a sustainable development of user-oriented, availability, transparency, information security and innovation ecosystems. Based on this concept, in September 2019, the e-Government Development Plan 2019-2025, which aims to transition to the next stage of e-government maturity, was developed by the center and will soon be approved by the president's decree through consultation with the ministries.

3) Digital Economy 2030 Plan (Draft)

In order to actively introduce and apply digital technologies, NAPM is developing mid-to-long term development plans for the digital economy by 2030.

The main direction of national development to achieve the goal will be

- ✓ digital infrastructure development;
- ✓ human capital development and digital technology construction;
- ✓ construction of government system based on digital data;
- ✓ creation of digital innovation ecosystem;
- ✓ digital security.

As of the end of 2019, the plan consists of relevant government projects, action plans and roadmaps for integrated development of the economic sector. Major development indicators include

- ✓ international index (ICT development, e-government development, global security, global innovation);
- ✓ domestic index (patent activity, regional wired internet subscribers, regional mobile subscribers, broadband internet access households, broadband internet access social facilities, Digital level of the people, digital archives).

B. Public Services

1) OneID

EPIGU was implemented in accordance with the Decree of the Cabinet of Ministers-"On measures to further improve the activities of the Governmental portal of the Republic of Uzbekistan on the Internet, taking into account the provision of interactive public services" (July 1, 2013). EPIGU stands for Uzbekistan for Interactive Public Service. Access to EPIGU is possible by using OneID. To use e-government services, Electronic Digital Signature must be linked to the Unified Identification System (id.gov.uz) with an approved OneID account. The portal now has 1.6 million ID applications and 120 services to citizens and businesses.

2) Single window portal

To date, Uzbekistan has operated a single portal site to simplify the mechanism of interaction between citizens and government on the principle that "documents move, citizens do not move". As of November 2019, more than 177 civil services, including real estate, taxes, education and pensions, are available at the level of 139.9 million – applications through the single portal, 133.300 – registered users, 10.1 million – application through the Public Service Centers via my2.egov.uz.

In the meantime, as a result of the service, the company's registration process has been reduced from 8 to 2 stages, the registration period has been reduced from 2-7 days to 30 minutes, and the number of documents required has been reduced from 5-6 to 1-2. By registering through the Internet, the government's duty has been reduced to 50%.



Fig.1 Typical statistics for single window portal

3) One Stop Center

According to the Presidential Decree (September 28, 2015) - "According to further improve the procedures provided to business entities" under the "Single Window" principle, 194 districts single centers were installed in local governments and started to provide public services to enterprises. In January 2018, Public Service Centers under the People's Reception Centers of the President were transferred to the Unified Center, with 201 regional centers in operation. Kiosk installation projects in regional public centers and major public facilities were also carried out during 2016-2019, and about 250 are currently being installed and operated.

C. IT Infrastructure

1) Wired / mobile communication environment

Since independence from the Soviet Union, foreign telecom

companies are actively accepting investment, and the market is developing at a high speed. Wireless subscription rate is very high compared to fixed line subscription rate. In 2017, the current 3G coverage is 45.3% and the LTE / WiMAX coverage is 16.9%. Mobile broadband penetration has increased very rapidly over the past five years. The market is dominated by the state-owned Uztelecom, and Korean companies that have entered the Uzbek market include ET (cable, 14%) and EVO (wireless, 7%) and etc.

After the advent of the first mobile operator in 1991, it was competing with five operators in 1997. Recently, all operators are introducing or considering 4G LTE service. As of 2018, there are 22,170 base stations, and the mobile market is relatively underdeveloped and slowed down over the past five years. As of the end of 2017, there are Beeline (51%) and UCell (41%) in the mobile market. As of December 2018, Uzmobil, UCell and UMS have been merged into state-owned enterprises. Mobile app services are relatively well developed, for example, by paying utility bills such as electricity and gas using mobile phones.

Computer penetration rate per household (43.9%) and Internet access (75.4%) were close to the world average of 46.6% / 51.5% announced by the ITU in 2018.

Table 1. The statistics of ICT in Uzbekistan

Index	2014	2016	2018
International Internet BWT[BuddeComm/ITU] (Mbit/s)	16,500	80,000	224,000
Mobile penetration/subscribers(ITU) - (5% annual growth)	73%	77%	79%/25.5 mil
Internet users/penetration(ITU) - (8% annual growth)	36.5%/-	46.8%/14 mil	54%/16.7 mil
% of Households with Internet Access at Home	58%	70%	76%
The number of Internet domain	-	29,000	52,000
Fixed line penetration	8.2%/2.5 mil	10.9%/3.4 mil	10.8%/3.5 mil
Fixed broadband penetration (18% annual growth)	2.7%/0.8 mil	8.7%/2.7 mil	12%/3.9 mil
Mobile broadband penetration (10% annual growth)	66%/-	74%/20.8 mil	76%/22.7 mil
Real Mobile Internet subscribers	-	-	9.5 mil
E-Govt Development Index	N/A	80	81
E-Gov online participation index	N/A	47	59

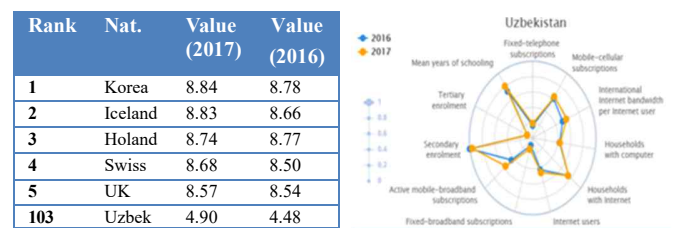
2) Internet environment

In 2018, the ITU did not publish the ICT Development Index (IDI) due to a number of challenges related to data quality and quantity resulting from the change in the set of indicators included in the IDI that was agreed in 2017. Thus, the most recent data is the ITU's Internet Development Index (IDI), which was released in 2017, and the result was 95th out of 175 countries. Mobile phone penetration rate (79%) and school attendance rate (96%) were high, and computer penetration rate

(43.9%) and Internet access (75.4%) per household were on average, while wired broadband subscription rate (12%) and computer penetration rate (44%) was rated low. Uzbekistan was not counted in the National Competitiveness ranking of Networked Readiness published by the World Economic Forum in October 2018.

Internet service started in the late 1990s, the number of Internet users, which was 855,000 as of February 2006, increased to 16.7 million (54%) as of the end of 2018. Since joining APTLD in October 2017 to assign domains, the number of assigned domains has totaled 51,000 as of the end of 2017. In 2018, the bandwidth of international gates increased significantly from 200 GB to 1,200 GB at the end of the year. A telecommunication backbone was built with 22,350 km of fiber optic cable throughout the country.

Table 2. Internet Development Index and Networked Readiness/National Competitiveness



III. EVALUATIONS

A. e-Government Index of UN

The UN's e-government ratings are ranked based on weighting indices on three key factors: coverage and quality of Internet services, ICT infrastructure levels and human capital. Uzbekistan was ranked 174th in the 2004 rating, but ranked 81st in the 2018 ranking.

- Electronic Participation Index – Promoting civic participation in government decision making is the cornerstone of social governance. The goal of the e-Participation Initiative is to improve citizens' access to information and public services. Since 2004, it has risen from 123 to 59.

- Development index-ICT is a comprehensive indicator that characterizes the ranking of countries around the world in terms of the development of ICT. In 2017, Uzbekistan was ranked 95th out of 176 countries.

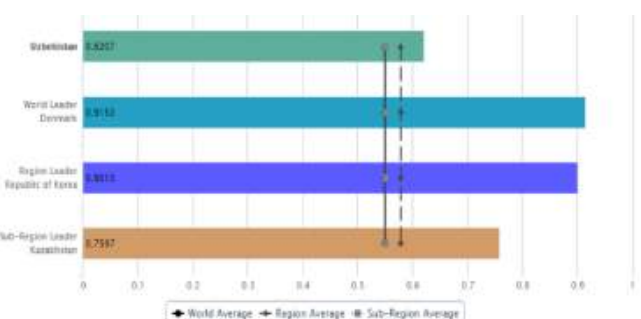


Figure 3. E-Government Development Index
Source: United Nations e-government survey 2018, United Nations New York, 2018

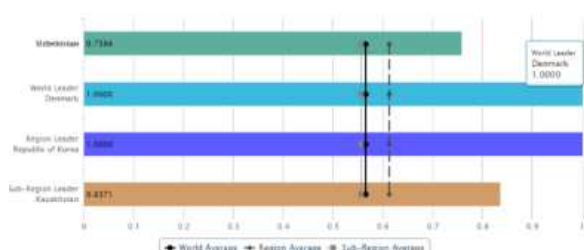


Figure 4. E-Participation Index
Source: United Nations e-government survey 2018¹ United Nations New York, 2018

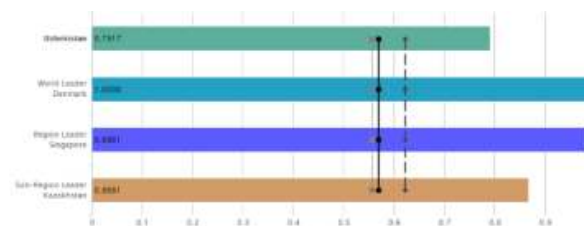


Figure 5. Online Service Index
Source: United Nations e-government survey 2018¹ United Nations New York, 2018

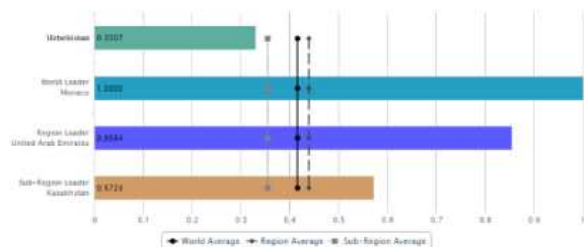


Figure 6. Telecommunication Infrastructure Index
Source: United Nations e-government survey 2018¹ United Nations New York, 2018

Figure 2. e-Government Index of UN

B. Infrastructure / Platform

Overall, the Internet / telecommunication environment in Uzbekistan is below the global average. It's more wireless than wired, and slower. There are very few optical cables to homes, and most of them use A / VDSL lines using telephone lines. According to the results of Speedtest.net announced by global company Ookla, as of the first half of 2019, the wireless 9.5Mbps and the wired 11.8Mbps, which is less than the world's 100th. Recognizing the importance of last mile in 2019, the government is speeding up the spread of optical transmission using GPON and promised to provide 1Gbps of service within two years. Due to the low bandwidth of the international trunk and the use of only Russia, the global search environment for developed countries is weak. Fortunately, local Internet traffic in the country is being processed directly through Tashkent-IX. Due to the cash-driven market, credit card usage is low and e-commerce is not activated. The environment for online transactions and free deposits and withdrawals is still limited. While e-government services are supported, but still issue paper documents, sign them by hand, and send scanned files rather than process them online.

C. Open Data Ranking

The biennial OECD's latest Open Government Index-OECD, reported in September 2018, assesses open data levels as

availability, accessibility, reusability and data diffusion. However, Uzbekistan's data was missing because it was not collected.

The Global Open Data Index (GODI 2017, <https://index.okfn.org/>) also has results from the Open Knowledge Network, but unfortunately no Uzbekistan data has been found.

The government has been working to recognize and revitalize the importance of open data since 2015, and has held open data hackathon events every year since November 2018. Today's public single portal contains more than 4.9 million public data sets from 131 organizations in 18 sectors, including economics, health, education and transportation, and has been used by more than 4 million users. A centralized issuance / authorization system has been developed for each department that can process and store 95,000 licenses, and more than 58,000 have been issued.

Table 3. Indicators for evaluating the quality of e-Government

(N)	Indicators	Specific weight indicator (point)
1	The existence of published regulations for electronic services	2
2	Having the ability to track the progress of the provision of e-services	10
3	Conducting online surveys to improve electronic services	8
4	Availability of applicant assessment tool for the result of obtaining e-services	5
5	Degree of optimization of electronic public services	13
6	Degree of automation of electronic government service	10
7	Compliance with the timing of electronic public services	20
8	Satisfaction of users' needs for electronic public services	30
9	Share of electronic public services registered in the Unified Register	2
Final rating		100

D. Public Service Delivery Level

The PKM353 (Approval of Methodology for Assessing the Quality of Electronic Public Services, October 20, 2016) has assessed the level of electronic public services of state / governmental agencies, local authorities and other organizations annually. Key indicators include not only digitization but also the level of data linkage between departments, conducting online surveys to improve electronic services, optimizing public services, and satisfaction of complaints.

Table 4. e-Government portal site of 2018 evaluation

	Inform.	function	Inter-active	result
State Tax Committee	12,50%	37,50%	10,00%	60,0%
Single portal of interactive public services (EPIU)	14,71%	29,41%	14,71%	58,8%
JSC "Uzbekenergo"	17,50%	32,50%	12,50%	58,8%
Ministry of Finance	25,00%	29,17%	2,08%	56,3%
Ministry of the Interior	16,00%	26,0%	12,0%	54,0%
Municipal services & housing stock	8,70%	34,78%	8,70%	52,2%
State Customs Committee	7,14%	30,95%	11,90%	50,0%
Ministry of Justice	13,95%	25,58%	9,30%	48,8%
Extrabudgetary pension fund with the Ministry of Finance	8,00%	36,00%	4,00%	48,0%
Ministry of Higher and	7,41%	35,19%	3,70%	46,3%

Secondary Special Education				
Ministry of Health	13,46%	28,85%	1,92%	44,2%
Ministry of Employment and Labor Relations	12,73%	29,09%	1,82%	43,6%
Ministry of Public Education	9,62%	30,77%	0,00%	40,4%
Portal of electronic state services of tax authorities	4,35%	30,43%	4,35%	39,1%
Single Window Centers	6,45%	19,35%	9,68%	35,5%
State Committee for Nature Protection	6,38%	21,28%	4,26%	31,9%
Transportation (Maxsustrans)	9,09%	18,18%	4,55%	31,8%
National vacancy database of the Ministry of Employment and Labor	4,00%	24,00%	0,00%	28,0%
Gov'tal portal of the Republic of Uz	3,67%	12,84%	0,00%	16,5%

E. digital Economy

In February 2015, the ICT Committee of the National Assembly in Uzbekistan discussed the new law. Draft e-government legislation to improve the efficiency and transparency of government agencies and improvements to existing e-commerce law were considered. At present, Uzbekistan has a legislative system for e-commerce, but its application to the market is still in its infancy. Much work is still needed in the field of online payment systems.

The number of Internet users, potential consumers of e-commerce services, was close to 54% of the population. Dozens of online portals such as abad.uz and openshop.uz have been opened, and free shipping to eBay, Amazon and Alibaba is also possible. The level of parcel delivery is still low, but is expected to improve gradually. Digital technologies to be applied to society as a whole are also being reviewed one after another. In 2018, Kazakhtelecom and Uz-Telecom in Kazakhstan decided to develop new business areas such as smart cities, blockchain and IoT projects. In 2019, a cooperation agreement was signed with Huawei, China, to test and implement 5G technology.

IV. ISSUES, IMPROVEMENT DIRECTION

A. Issues

Discuss the obstacles and elimination factors that hamper the effective implementation of e-government development in Uzbekistan.

In the meantime, there has been a limit to the widespread use of new ICT technologies in linking public services and institutions because the unified principles for e-government development have changed frequently, systems have been implemented without cross-relationships, and the infrastructure of e-government systems has not been fully developed.

Despite the efforts and positive statistics so far, Uzbekistan still faces a number of challenges that will have a significant impact on growth in the adoption and application of ICT. All of these challenges are "weaknesses" in assessing country in international rankings.

Areas to consider for digital transformation include basic and applied research, attracting and developing experts, training, building an industrial ecosystem, reforming the public sector, creating infrastructure, regulating ethics, digital inclusion (inclusion numerique) and global cooperation.

These issues have been gathered through several workshops and public hearings, including a collaboration workshop between the NAPM-Ministry of Innovation and a meeting of UK GDS experts and these problems can be classified into six categories, including public services, human resources and infrastructure.

Table 5 Issues in each area of e-Government in Uzbekistan

Area	Issues
Interactive Public Services	Office visits are still frequent and require long processing times for complaints. Various document requirements, paper document processing, delivery and storage The process of providing public services is still bureaucratic and complex, resulting in inconsistencies in data held by public institutions
Human Resource	Lack of training systems for government / public sector stakeholders to continuously acquire skills in IT field Absence of programs to improve the digital literacy of the public resources
Tele-communication Infrastructure	Adoption of digital IT technology in all areas of national development Passive, incomplete of e-government platform Broadband access network, last one mile insufficient to ensure the availability and quality of electronic public service delivery Lack of a centralized platform to integrate IT resources Independent ministries, fragmented development and lack of information linkage between ministries
Open Data	Avoid openness because the data held by the government/agencies are individualized and financed Lack of transparency in state agency activities No effective dialogue and interaction between citizens / businesses
Information security	Insufficient care in collecting, processing, storing and transmitting data including personal information Existing Certification Center is not meeting new requirements, and digital signatures are also a fragmentation of technology. Challenges and threats to the rapidly changing digital society are not foreseen.
Innovation ecosystem	Prolonged development of innovation ecosystem Paying no attention to the introduction of innovative platforms and technologies, including public-private partnerships The absence of an ecosystem prevents the digitalization of the economy and hinders corporate activities.

B. Improvement directions

For digitalization of society as a whole, government innovation using IT should be preceded first.

In order to create a transparent and paperless nation, the e-government framework must first be established by 2025.

In order to enter within the top fifty countries, the country's commitment to the direction of digital economic policy 2030 to Uzbekistan must be implied to introduce and apply IT and digital technologies to each sector of society and to create an ecosystem of balanced demand / consumption.

In addition, more intensive policies should be implemented to support global startups, find industry-oriented national projects, foster experts, and create public-private innovation loops to promote innovation.

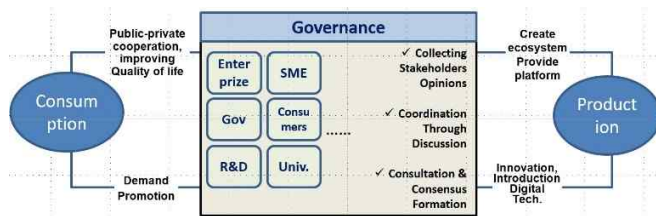


Figure 3. Ecosystem of balanced demand / consumption

First, It's big and bold to drive innovation. Larger innovations also maximize opportunities and possibilities for value creation. It is important to continue to discover and promote solid innovation activities.

Secondly, it must be promoted quickly and renewed frequently. The top 10% of successful innovators achieve 28% of their overall target performance in the first three months, 57% in six months, and 74% in the first year. For 2030, frequent goal setting, such as 2025, is important.

Third, transparent and healthy organizations drive successful innovation. A healthy organization is one that has organizational confidence in its future direction, a strong base of execution and competence, and strong responsiveness and renewal to external changes. Open outside and stick to capacity building inside.

Fourth, successful groups boldly set goals and reset higher when they are achieved. This is the same principle as activating the Pygmalion effect.

One more thing to consider is that there is a limit to how well a government can do everything. In order to narrow the competitiveness gap with the leading countries in digital transformation, it is necessary to establish and promote policies and maintain policy coherence in a way that focuses more on the areas of national competitiveness by discovering the advantages of Uzbekistan.

Uzbekistan will be able to find out what focal points are while the US aims at basic and applied research and infrastructure, and Japan seeks to solve social problems and economic development, and the EU focuses on creating a large ecosystem called Digital Single Market.

C. Indicators and Goals

Uzbekistan has a poor manufacturing industry and no ecosystem of industry-academia. Transparency in countries is also significantly lower than other social and economic international statistics. In 2020, the government budget is approximately US \$ 13 Billion, less than 1/40 of Korea. Despite economic growth of more than 5% per year, it requires at least 10 years of time and significant resources to reach within the current 50 advanced countries. Due to the low level of IT infrastructure, the construction rate of optical cables in each home is also single digit. At the end of 2018, Korea's optical Internet (FTTx) penetration rate was 80%, which was the result of more than 15 years of efforts.

Assuming that e-government will be implemented on infrastructure and platforms similar to these developed countries, the goal for the next 10 years should be to target the world's best models. In addition, it will be evident to make

interim goals in 2025 for interim checks. In that sense, Uzbek e-Government's goal should be set globally and clearly.

Examples of objective statistics that anyone can admit include the United Nations e-government rankings and the Digital Development Index (IDI) of the World Bank and ITU. In order to meet the 2030 target, many indicator levels should begin to be in the top 50 within the next five years.

Table 6 Examples of e-Government Indicators

Indicator Name	Ev. Unit	2018	2020	2025
Level of Uzbekistan on the index of "electronic government"	Rank	Entry into the TOP 50 by the year 2025 in UN e-government development index based on the concept of e-government development in the 2018-2021 years in the Republic of Uzbekistan. Your position: 80-e		
Index of e-participation of the Republic of Uzbekistan	Rank	Joining the TOP 30 to 2025 year in UN e-government development index based on the concept of e-government development in the 2018-2021 years in the Republic of Uzbekistan. Your position: 47-(e)		
The proportion of electronic public services rendered in relation to the total number of services received in the traditional form	%	16%	40%	80%
The annual growth of the number of services provided electronically.	EA	700	1000	3,000
The number of applications and services based on the "open data"	EA	4	12	100

To achieve the goals in the next decade, more specific and detailed indicators are required.

As mentioned earlier, the conclusions obtained through several workshops and seminars have been divided into sectors of 1) Sustainable infrastructure, 2) Digital transformation of public services, 3) Digital ecosystem, 4) Digital skills and human resources, 5) Digital Trust and 6) Open Government and e-participation, setting and targeting each indicator.

For each indicator, the current level is captured by statistics, and its improvement should be tracked annually.

Table 7 Key Indicators of Innovative E-Government

Index	
Sustainable infrastructure	Fault tolerance
	Reduction of costs for server hardware
	Elimination of data duplication in separate departmental server systems
	Reduced costs in connection with the transition to centralized maintenance
	The number of connected government agencies to the interagency integration platform
Digital transformation	Automation of information interaction of state bodies
	The share of government services provided in electronic format

of public services	The share of e-government services provided in relation to the total number of services received in the traditional form
	Maximum time for the provision of public services
	The share of mobile electronic public services in the total volume of electronic services
	The share of services for which data is auto completed using verified government data
Digital ecosystem	Percentage of transactions completed completely in digital format
	The share of e-commerce in the overall market for goods and services
	Number of e-commerce entities
	The share of the turnover of online stores in the total turnover of goods and services paid electronically
Digital skills and human resources	The proportion of electronic educational resources
	The volume of electronic educational content open access
	Number of civil servants trained in data analysis
	Number of civil servants with basic digital skills
Digital Trust	Number of Active keys for entities
	Number of Active keys for individuals
	Number of users of Mobile ID
Open Government and e-participation	Number of developments (the emergence of social and commercially-oriented information services, highly demanded by citizens)
	Number of actively used applications based on "open data" services
	The share of basic open data received in real time (via API web services)
	Number of projects implemented taking into account the views of the population / business

V. CONCLUSION

In the e-government paradigm shift, digital government is being promoted as a new e-government model.

There are many unresolved problems and shortcomings that hinder the transformation of digital Uzbekistan. It now has only the world's average Internet and telecommunications infrastructure, and full-fledged e-government construction has been in progress since 2013, but there are many improvements. While issuing paper documents, handwriting approvals and inter-ministerial assignments are still difficult tasks, it must be improved gradually.

Digital transformation of public services should be preceded by "governmental reform". The Uzbekistan government has been trying to optimize business processes. According to Presidential Decree on December 13, 2018, the e-government business was managed by NAPM, one of the presidential offices. As the silos that are conducted separately by departments have been changed to integrated management so far, the decision is expected to accelerate digital government further.

The plan of 'e-government 2025' and the draft of 'the digital economy 2030', which are currently being improved or devised, will proactively ensure the implementation of the "e-government" system and establish effective interactions with

the national society to create additional conditions for the development of the digital economy.

To support this, the second e-government support center will be established between MoHA / NIA in Korea and NAPM / e-GDC in Uzbekistan from early 2020. It is expected to bring new vitality to e-government business.

The goal by 2030 is to enter the world's 50 advanced countries. To achieve this, digital government must be completed by 2025. The government's data is constantly being opened and will be shared. The introduction of a bus card system, the activation of online e-commerce in everyday life and the challenges of local governments to build smart cities will accelerate the digital society

REFERENCES

- [1] Sang, C. Shin, Zafar Rakhmatillayev, ; "Digital Transformation of the Public Service Delivery System in Uzbekistan", IEEE Communication Society, 2019, 2,
- [2] Meijer, A. (2015). E-governance innovation: Barriers and strategies. *Government Information Quarterly*, 32(2).
- [3] Peter Selfridge, VR Ferose and Aman Kumar, "From Digital Government to Intelligent Government", Digitalist, 2018.10.24.
- [4] Jerry Fishenden, Mark Thompson, "Digital Government, Open Architecture, and Innovation: Why Public Sector IT Will Never Be the Same Again", Journal of Public Administration Research and Theory. 23:977–1004, 2018
- [5] Dawes, S., Vidiyasa, L., & Parkhimovich, O. (2016). Planning and designing open government data programs: An ecosystem approach. *Government Information Quarterly*, 33(1), 15–27.
- [6] Halachmi, A., & Greiling, D. (2013). Transparency, E-government and accountability: Some issues and considerations. *Public Performance & Management Review* 36(4), 562–584.
- [7] Daniel Newman, "Top 6 Digital Transformation Trends In Government", Forbes, 2017.6.29.
- [8] Theresa A. Pardo, "Realizing the promise of Digital Government: It's More than Building a Web Site", Information Impact, October, 2000.
- [9] Paul Waller and Vishanth Weerakkody, "Digital Government: overcoming the systemic failure of transformation", Working Paper 2 - Open Access for discussion, June 2016.
- [10] Yusuf, M., Adams, C., and Dingley, K. (2014) 'Research Philosophy and Methodologies of e-Government: Update from ECEG and ICEG', Conference Proceedings, The 14th European Conference on E-Government (ECEG), Spiru Haret University, Romania, pp. 241-252.
- [11] Bertot, J.C., Jaeger, P.T., and McClure, C.R. (2008). 'Citizen centred E-Government Services: Benefit, Costs, and Research Needs', Conference Proceedings, The Proceedings of the 9th Annual International Digital Government Research Conference, pp. 137-141.
- [12] Jesper Holgersson and Fredrik Karlsson. 2014. Public e-service development: Understanding citizens' conditions for participation. *Government Information Quarterly* 31, 3 (2014), pp. 396–410.
- [13] "Uzbekistan's Development Strategy for 2017-2021", Republic of Uzbekistan, 2017..
- [14] "UN e-Government Readiness Survey 2018", UN, 2018.
- [15] "Fiber Optic line length", Freedom on the Net, 2017.
- [16] Joshi, P.R.; Islam, S.; Islam, S. "A Framework for Cloud Based E-Government from the Perspective of Developing Countries", Future Internet 2017, pp. 9, 80.
- [17] "Internet Development Index 2019", ITU, 2019.5.8.
- [18] "Networked Readiness Index 2018", World Economic Forum, 2019.3.21
- [19] "World Governance Indicators 2018(www.govindicators.org)", World Bank, 2018.9.
- [20] "Internet Speedtest Global Index", Ookla, 2019.10.
- [21] "Global Cybersecurity Index 2018", ITU, 2019.7.31.
- [22] "Global Open Data Index 2017", Open Knowledge Network, 2017.
- [23] "Open Government Data Report – Open Government Index", OECD, 2017, 2018.9.
- [24] "Doing Business 2019 – Economy Profiles". World Bank, 2019.10.30
- [25] "Aggregated Logistics Performance Index (LPI) 2019", World Bank, 2019.6.15.



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