DIGITAL ECOSYSTEM COUNTRY ASSESSMENT (DECA)

Uzbekistan

JANUARY 2022
ACKNOWLEDGEMENTS

This report reflects insights from the Digital Ecosystem Country Assessment (DECA), which was led by USAID/Uzbekistan with support from Nathan Associates under the US-Support for Economic Growth in Asia (US-SEGA) project. Women in Digital Transformation (DBA WinDt Consulting), a women-owned small business, prepared this report. The report was written by Reyn Anderson, Victoriya Babakhodjaeva, Zamira Dzhusupova, Yaroslav Eferin, Kate Gromova and Dilshod Zufarov of WinDt, working closely with Jeremy Schanck, US-SEGA Deputy Chief of Party, Ann Katsiak, US-SEGA Chief of Party and Allyson Cross, US-SEGA program coordinator. Editing was provided by Laura Lindamood and design and graphics were provided by Words by Design.

The authors extend their appreciation to all USAID staff who participated in internal discussions and review of this report. We particularly thank the following individuals for their detailed review: Meghan Lefeber, Craig Jolley, Scott Hedlund, Bahtiyor Mirzabaev, Iulia Sandu, Mamed Askerov, and Ruslan Ramanov.

The authors also extend their deep gratitude to USAID/Uzbekistan for providing critical insight and facilitating interviews as well as to all of the interviewees who made this assessment possible.

The report authors accept responsibility for any errors or inaccuracies in this report.

Disclaimer: This report is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of Nathan Associates and do not necessarily reflect the views of USAID or the United States Government.
<table>
<thead>
<tr>
<th>TABLE OF CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acronyms</td>
</tr>
<tr>
<td>Executive Summary</td>
</tr>
<tr>
<td>Section 1: About this Assessment</td>
</tr>
<tr>
<td>Section 2: DECA Findings</td>
</tr>
<tr>
<td>2.1. Pillar 1: Digital Infrastructure and Adoption</td>
</tr>
<tr>
<td>2.1.1. Expanding digital infrastructure</td>
</tr>
<tr>
<td>2.1.2. Digital inclusion and digital divides</td>
</tr>
<tr>
<td>2.1.3. Regional snapshots</td>
</tr>
<tr>
<td>2.1.4. The digital ecosystem’s Achilles heel: Cybersecurity</td>
</tr>
<tr>
<td>2.2. Pillar 2: Digital Society, Rights, and Governance</td>
</tr>
<tr>
<td>2.2.1. Government’s hold on internet, media and civil society</td>
</tr>
<tr>
<td>2.2.2. Growing online engagement, for better and for worse</td>
</tr>
<tr>
<td>2.2.3. Content is key</td>
</tr>
<tr>
<td>2.2.4 Digital government challenges and successes</td>
</tr>
<tr>
<td>2.2.5. Regional snapshots</td>
</tr>
<tr>
<td>2.3. Pillar 3: Digital Economy</td>
</tr>
<tr>
<td>2.3.1. Reforms for the digital economy</td>
</tr>
<tr>
<td>2.3.2. Evolving Digital Financial Services</td>
</tr>
<tr>
<td>2.3.3. Growing e-commerce</td>
</tr>
<tr>
<td>2.3.4. Nascent digital startup ecosystem</td>
</tr>
<tr>
<td>2.3.5. Unmet demand for digital and IT talent</td>
</tr>
<tr>
<td>2.3.6. Regional Snapshots</td>
</tr>
<tr>
<td>2.4. Deeper Dives: Health and Climate Change</td>
</tr>
<tr>
<td>2.4.1. Digital Health</td>
</tr>
<tr>
<td>2.4.2. Climate Change</td>
</tr>
<tr>
<td>Section 3: Recommendations for USAID/Uzbekistan</td>
</tr>
<tr>
<td>Appendices</td>
</tr>
<tr>
<td>Appendix A — Government of Uzbekistan: Structure and Responsibilities</td>
</tr>
<tr>
<td>Appendix B — Definitions</td>
</tr>
<tr>
<td>Appendix C — Methodology</td>
</tr>
<tr>
<td>Appendix D — List of Laws and Regulations</td>
</tr>
<tr>
<td>Appendix E — References</td>
</tr>
</tbody>
</table>
LIST OF BOXES, TABLES, AND FIGURES

BOXES

BOX 1: Opportunities for broadband network development using shared network infrastructure ................................................................. 20

BOX 2: Access restriction: How it works .......................................................................................................................................................... 31

BOX 3: Digital government vs. e-government ........................................................................................................................................... 36

BOX 4: Digital signature vs. electronic signature ......................................................................................................................................... 40

BOX 5: What are people-centric public services? ............................................................................................................................................... 41

BOX 6: Digital wallets, e-wallets and mobile wallets ................................................................................................................................. 51

BOX 7: Uzbekistan at the leading edge of innovation: ATTO .................................................................................................................................. 52

BOX 8: UZCARD is a corporate leader of the startup fintech ecosystem .................................................................................................... 60

BOX 9: USAID involvement in digital health of Uzbekistan ........................................................................................................................ 76

BOX 10: Developing Emerging Technologies in Uzbekistan ...................................................................................................................... 79

TABLES

TABLE 1: Digital literacy ........................................................................................................................................................................ 23

TABLE 2: UNCTAD B2C E-commerce Index, 2020 ................................................................................................................................. 53

TABLE 3: Government bodies with responsibilities related to the startup ecosystem .................................................................................. 57

TABLE 4: Digital Startups Stages .............................................................................................................................................................. 58

TABLE 5: eHealth & mHealth ................................................................................................................................................................... 73

TABLE 6: Summary of DECA recommendations for USAID/Uzbekistan .................................................................................................. 81

FIGURES AND MAPS

FIGURE 1: Digital ecosystem ........................................................................................................................................................................ 13

FIGURE 2: Uzbekistan’s telecommunications market overview ............................................................................................................... 16

FIGURE 3: Elements of a telecommunications network .......................................................................................................................... 17

FIGURE 4: Total length of fiber optic communication lines, thousand km, 2013-2021 ................................................................................ 18

FIGURE 5: 3G + 4G coverage in Uzbekistan (UCELL data) ....................................................................................................................... 19

FIGURE 7: Cost of internet ............................................................................................................................................................................ 22

FIGURE 8: Mobile Broadband coverage (3G (blue), 4G (purple)) ............................................................................................................. 26

FIGURE 9: Mobile Broadband coverage (3G (blue), 4G (purple)) ............................................................................................................. 26

FIGURE 10: Mobile Broadband coverage (3G (blue), 4G (purple)) ............................................................................................................. 27

FIGURE 11: Major Ethnic Groups in Central Asia ........................................................................................................................................ 35

FIGURE 12: Uzbekistan in Global E-Government Development Benchmark ............................................................................................ 44
FIGURE 13: Uzbekistan in Global E-Participation Index ................................................................. 45
FIGURE 14: Account ownership (including payment cards, mobile payment service application accounts) .............................................. 49
FIGURE 15: The number of digital bank services users ........................................................................ 50
FIGURE 16: Digital startup supporting ecosystem ........................................................................ 58
FIGURE 17: Digital startups summary .............................................................................................. 62
FIGURE 18: Digital education ecosystem .......................................................................................... 65
FIGURE 19: Mapping IT Centers ....................................................................................................... 66
FIGURE 20: Private IT courses map .................................................................................................. 67
FIGURE 21: IT Center locations across the region .............................................................................. 70
FIGURE 22: IT Park locations across the region .................................................................................. 72
FIGURE 23: IT Park locations across the region .................................................................................. 73
FIGURE 24: Overview of public health sector under the Ministry of Health ........................................ 77
FIGURE 25: Overview of the health information system in Uzbekistan ........................................... 77
FIGURE 26: Administrative-territorial division of Uzbekistan .......................................................... 93
FIGURE 27: Powers verticals in Uzbekistan ....................................................................................... 94
FIGURE 28: Key informant interviews, by stakeholder group ............................................................. 98
<table>
<thead>
<tr>
<th>ACRONYMS</th>
<th>EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI</td>
<td>Artificial Intelligence</td>
</tr>
<tr>
<td>AIMK</td>
<td>Agency for Information and Mass Communications</td>
</tr>
<tr>
<td>ATM</td>
<td>Automated Teller Machine</td>
</tr>
<tr>
<td>ATTO</td>
<td>Avtomatlashirilgan Transport To’lov Tizimi Operatori</td>
</tr>
<tr>
<td>BB</td>
<td>Broadband</td>
</tr>
<tr>
<td>BBC</td>
<td>British Broadcasting Corporation</td>
</tr>
<tr>
<td>CA</td>
<td>Central Asia</td>
</tr>
<tr>
<td>CASA</td>
<td>Central Asia South Asia</td>
</tr>
<tr>
<td>CDCS</td>
<td>USAID Country Development Cooperation Strategy</td>
</tr>
<tr>
<td>CERT</td>
<td>Computer Emergency Response Team</td>
</tr>
<tr>
<td>CIO</td>
<td>Chief Information Officer</td>
</tr>
<tr>
<td>CIS</td>
<td>Commonwealth of Independent States</td>
</tr>
<tr>
<td>CRPCU</td>
<td>Common Republican Processing Centre of Uzbekistan</td>
</tr>
<tr>
<td>CSO</td>
<td>Civil Society Organizations</td>
</tr>
<tr>
<td>CVC</td>
<td>Corporate Venture Capital</td>
</tr>
<tr>
<td>DECA</td>
<td>Digital Ecosystem Country Assessment</td>
</tr>
<tr>
<td>DFS</td>
<td>Digital Financial Services</td>
</tr>
<tr>
<td>DMS</td>
<td>Document Management System</td>
</tr>
<tr>
<td>DO</td>
<td>Development Objective</td>
</tr>
<tr>
<td>DRWG</td>
<td>Digital Resilience Working Group</td>
</tr>
<tr>
<td>EAEU</td>
<td>Eurasian Economic Union</td>
</tr>
<tr>
<td>EBRD</td>
<td>European Bank for Reconstruction and Development</td>
</tr>
<tr>
<td>ECDP</td>
<td>E-Commerce Development Program For 2018 – 2021</td>
</tr>
<tr>
<td>EEC</td>
<td>Eurasian Economic Commission</td>
</tr>
<tr>
<td>EGDl</td>
<td>E-Government Development Index</td>
</tr>
<tr>
<td>EPALE</td>
<td>Electronic Platform for Adult Learning in Europe</td>
</tr>
<tr>
<td>EPI</td>
<td>E-Participation Index</td>
</tr>
<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EY</td>
<td>Ernst &amp; Young</td>
</tr>
<tr>
<td>FINTECH</td>
<td>Financial Technology</td>
</tr>
<tr>
<td>FSP</td>
<td>Financial Service Provider</td>
</tr>
<tr>
<td>GCC</td>
<td>Gulf Cooperation Council</td>
</tr>
<tr>
<td>GDD</td>
<td>Gender Digital Divide</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GIZ</td>
<td>German Society for International Cooperation</td>
</tr>
<tr>
<td>GNI</td>
<td>Gross National Income</td>
</tr>
<tr>
<td>GNP</td>
<td>Gross National Product</td>
</tr>
<tr>
<td>GRP</td>
<td>Gross Regional Product</td>
</tr>
<tr>
<td>GSMA</td>
<td>Global System for Mobile Communications Association</td>
</tr>
<tr>
<td>EU GSP</td>
<td>Generalised Scheme of Preferences of The European Union</td>
</tr>
<tr>
<td>ACRONYMS</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>HCI</td>
<td>Human Capital Index</td>
</tr>
<tr>
<td>HIS</td>
<td>Health Information System</td>
</tr>
<tr>
<td>HOA</td>
<td>Homeowner’s Association</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communications Technology</td>
</tr>
<tr>
<td>ID</td>
<td>Identity Document</td>
</tr>
<tr>
<td>IDC</td>
<td>International Data Corporation</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
</tr>
<tr>
<td>IOT</td>
<td>Internet of Things</td>
</tr>
<tr>
<td>IP</td>
<td>Internet Protocol</td>
</tr>
<tr>
<td>IR</td>
<td>Intermediate Results</td>
</tr>
<tr>
<td>IREX</td>
<td>International Research &amp; Exchanges Board</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
</tr>
<tr>
<td>ISP</td>
<td>Internet Service Provider</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technologies</td>
</tr>
<tr>
<td>ITU</td>
<td>International Telecommunication Union</td>
</tr>
<tr>
<td>IUT</td>
<td>Inha University in Tashkent</td>
</tr>
<tr>
<td>JBIC</td>
<td>Japan Bank for International Cooperation</td>
</tr>
<tr>
<td>KII</td>
<td>Key Informant Interview</td>
</tr>
<tr>
<td>LGBT</td>
<td>Lesbian, Gay, Bisexual, and Transgender</td>
</tr>
<tr>
<td>LGBTQI</td>
<td>Lesbian, Gay, Bisexual, Transgender, Queer and Intersex</td>
</tr>
<tr>
<td>LLC</td>
<td>Limited Liability Company</td>
</tr>
<tr>
<td>LTE</td>
<td>Long Term Evolution</td>
</tr>
<tr>
<td>MERL</td>
<td>Monitoring, Evaluation, Reporting, and Learning</td>
</tr>
<tr>
<td>MFI</td>
<td>Microfinance Institution</td>
</tr>
<tr>
<td>MFS</td>
<td>Mobile Financial Services</td>
</tr>
<tr>
<td>MID</td>
<td>Ministry of Innovative Development</td>
</tr>
<tr>
<td>MITC</td>
<td>Ministry of Information Technologies and Communications</td>
</tr>
<tr>
<td>MNO</td>
<td>Mobile Network Operator</td>
</tr>
<tr>
<td>MPHSTF</td>
<td>Multi-Partner Human Security Trust Fund</td>
</tr>
<tr>
<td>NAPA</td>
<td>National Association for Process Automation</td>
</tr>
<tr>
<td>NFC</td>
<td>Near-Field Communication</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
</tr>
<tr>
<td>OIC-CERT</td>
<td>Computer Emergency Response Team for Organisation of Islamic Cooperation</td>
</tr>
<tr>
<td>OSCE</td>
<td>Organization for Security and Co-operation in Europe</td>
</tr>
<tr>
<td>OSI</td>
<td>Online Services</td>
</tr>
<tr>
<td>PCI DSS</td>
<td>Payment Card Industry Data Security Standard</td>
</tr>
<tr>
<td>PKI</td>
<td>Public Key Infrastructure</td>
</tr>
<tr>
<td>POC</td>
<td>Point of Contact</td>
</tr>
<tr>
<td>POS</td>
<td>Points of Sale</td>
</tr>
<tr>
<td>PSP</td>
<td>Payment Service Provider</td>
</tr>
<tr>
<td>QA</td>
<td>Quality Assurance</td>
</tr>
</tbody>
</table>

**Uzbekistan DECA Findings**

**DIGITAL ECOSYSTEM COUNTRY ASSESSMENT**
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>QR CODE</td>
<td>Quick Response Code</td>
</tr>
<tr>
<td>RATS-SCO</td>
<td>Regional Anti-Terrorist Structure of The Shanghai Cooperation Organization</td>
</tr>
<tr>
<td>RFP</td>
<td>Request for Proposal</td>
</tr>
<tr>
<td>SDG / SDGs</td>
<td>Sustainable Development Goals</td>
</tr>
<tr>
<td>SG</td>
<td>Singapore Government</td>
</tr>
<tr>
<td>SIEM</td>
<td>Security Information and Event Management</td>
</tr>
<tr>
<td>SOC</td>
<td>Security Operation Center</td>
</tr>
<tr>
<td>SSL</td>
<td>Secure Sockets Layer</td>
</tr>
<tr>
<td>SSO</td>
<td>Single Sign On</td>
</tr>
<tr>
<td>STEM</td>
<td>Science, Technology, Engineering, and Mathematics</td>
</tr>
<tr>
<td>SUE</td>
<td>State Unitary Enterprise</td>
</tr>
<tr>
<td>TA</td>
<td>Technical Assistance</td>
</tr>
<tr>
<td>TII</td>
<td>Telecommunication Infrastructure Index</td>
</tr>
<tr>
<td>TIIAIME</td>
<td>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers</td>
</tr>
<tr>
<td>TIUE</td>
<td>Tashkent International University of Education</td>
</tr>
<tr>
<td>TPS</td>
<td>Internet Provider “Technopromsystem”</td>
</tr>
<tr>
<td>TSTU</td>
<td>Tashkent State Technical University</td>
</tr>
<tr>
<td>TUIT</td>
<td>Tashkent University of Information Technologies</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>UKCIS</td>
<td>UK Council for Internet Safety</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
</tr>
<tr>
<td>UNFPA</td>
<td>United Nations Population Fund</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>USA or US</td>
<td>United States of America</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>USD</td>
<td>U.S. Dollar</td>
</tr>
<tr>
<td>USSD</td>
<td>Unstructured Supplementary Service Data</td>
</tr>
<tr>
<td>UTRAMS</td>
<td>Unified Travel and Mission System</td>
</tr>
<tr>
<td>UI/UX</td>
<td>User Interface/User Experience</td>
</tr>
<tr>
<td>UZ</td>
<td>The Republic of Uzbekistan</td>
</tr>
<tr>
<td>UZINFOCOM</td>
<td>Unified Integrator for the Creation and Support of State Information Systems</td>
</tr>
<tr>
<td>UZPROMSTROY-</td>
<td>Uzbekistan Industrial and Construction Bank</td>
</tr>
<tr>
<td>BANK</td>
<td></td>
</tr>
<tr>
<td>UZVCA</td>
<td>Uzbekistan Venture Capital Association</td>
</tr>
<tr>
<td>VC</td>
<td>Venture Capital</td>
</tr>
<tr>
<td>VR</td>
<td>Virtual Reality</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WTO</td>
<td>World Trade Organization</td>
</tr>
</tbody>
</table>
Executive Summary

When President Shavkat Mirziyoyev took office in September 2016, he set out to completely transform Uzbekistan’s government and economy and open the country up to the global community. The new Government launched an ambitious reform agenda that began reorganizing institutions, opening markets, and loosening some of the old Government’s grips on society. The global impact of digital technologies on modern economies and societies were well-recognized, and the Government put digital transformation high on its agenda. The official “Year of Science, Enlightenment and Digital Economic Development” in 2020 brought to the forefront the importance of embracing digital technologies to enhance economic competitiveness and create quality jobs for Uzbekistan’s growing, young population.

At the same time, the social and economic challenges of COVID-19 deepened the Government’s commitment to using digital technologies in its own operations and integrating digital technologies across economic sectors while also accelerating the pace of digital adoption among the general public. To help guide the country through the next decade of changes, the Government adopted the Digital Uzbekistan 2030 Strategy (Digital Uzbekistan Strategy) in October 2020. The Digital Uzbekistan Strategy sets out five priority areas for development: Digital infrastructure; e-Government; Digital economy; National IT sector; and IT education.

These developments coincide with a strong focus at USAID regarding digital transformation, as articulated in its Digital Strategy and the Digital Ecosystem Country Assessment (DECA) methodology.

USAID’S Digital Strategy charts an agency-wide vision for development and humanitarian assistance in the world’s rapidly evolving digital landscape. It aims to improve USAID development and humanitarian assistance outcomes through the responsible use of digital technology and to strengthen the openness, inclusiveness, and security of partner country digital ecosystems.

A critical product of USAID’s Digital Strategy is the Digital Ecosystem Country Assessment (DECA). DECAs will inform the development, design, and implementation of USAID’s strategies, projects, and activities. They are a decision-making tool designed to help USAID Missions identify opportunities, maximize benefits, and manage the risks associated with digital technology. Their purpose is to support partner nations on the journey to self-reliance through a better understanding of their digital ecosystem and how it can be leveraged or strengthened through future programming.

The DECA was guided by USAID/Uzbekistan’s strategic priorities. These priorities informed stakeholder selection, interview question design, and recommendation framing. Colleagues at USAID/Uzbekistan identified four priority areas, together with four cross-cutting topics, for their current and future programming. Priority areas for programming are Good Governance, Human Capital, Inclusive Economic Growth and Climate Resilience. Cross-cutting topics are Digital Economy, Gender, Private Sector and Youth. USAID/Uzbekistan’s priorities and cross-cutting topics align well with many of the Government of Uzbekistan’s digital development priorities, particularly Human Capital and Inclusive Economic Growth priorities and all four cross-cutting topics.

Uzbekistan’s Digital Strategy outlines programs and implementation roadmaps for each of the country’s regions and the Republic of Karakalpakstan. While emphasized priorities vary somewhat across the regions, developing the National IT sector and expanding IT education are included in every region’s program. The Government
is committed to growing the IT and digital skills of its young population so that they are ready to participate in and create a competitive digital economy. The network of IT Parks (one in each region plus the Republic of Karakalpakstan) and IT Centers (over 200 across the country) are central to achieving this goal. Uzbekistan’s Strategy also includes programs for growing the digital economy by developing digital financial services, stimulating the growth of startups, and transforming sectors such as health, agriculture, water and forest management, and tourism. These sector focus areas align with USAID/Uzbekistan’s priority investment areas in health, agriculture, and climate change.

Uzbekistan’s digital ecosystem has evolved rapidly since the Government embarked on its ambitious national economic and government reform agenda in 2016. The country can point to many important achievements over the past five years, even as it continues to address critical challenges related to each of the digital ecosystem pillars. The greatest cross-cutting challenge to developing Uzbekistan’s digital ecosystem is its poor cybersecurity. While the Government’s Cybersecurity Center has a strong team of professionals, their resources are limited and focused primarily on protecting core, critical government systems. Large, state-owned enterprises, regional governments, private businesses, organizations, and individuals have little awareness of cybersecurity risks or capacity to address them. Low demand for cybersecurity services means few companies are on the market to provide them. Despite these weaknesses, cybersecurity is not mentioned in the Digital Uzbekistan Strategy. The Government views cybersecurity through a national security lens, making it a politically sensitive topic. Any USAID/Uzbekistan proposed programming around cybersecurity will require building trust with the necessary Government authorities and institutions.

Digital connectivity infrastructure has expanded to cover most of the population, particularly mobile networks. According to UCELL, its 4G network currently reaches 80% of the country’s settlements and will expand to 95% by the end of 2022. Due to high investment costs and low demand, plans to roll out 5G are limited to parts of Tashkent and each of the regional IT Parks. The Government aims to have all schools, universities, healthcare centers, hospitals and mahallas1 connected to high-speed internet in the same timeframe. The quality and reliability of internet connections, however, remain poor, especially outside bigger cities and along transportation corridors. Government-owned enterprises control nearly all the country’s internet infrastructure (fixed and mobile), and there are no near-term plans to liberalize the telecommunications sector. Japan has provided financing for building out the national fiber-optic cable network owned by UzbekTelecom. Russian-owned Megafon is preparing to make major investments in mobile network infrastructure and digital services through its joint venture with UCELL. Huawei is a major supplier of network equipment.

Digital divides along geographic and gender lines run deep in Uzbekistan. Higher-quality internet access packages and devices (computers, smartphones, tablets) are relatively affordable in Tashkent, where average incomes are higher, but they quickly become major budget items for people living in the regions, especially outside major urban centers. Basic digital literacy and skills, including digital financial literacy and knowledge of cyber-hygiene practices, is low for the entire population. Businesses offer digital literacy and skills classes, but these are concentrated in Tashkent. The Government is trying to address these gaps through school programs and courses at its network of IT Centers in the regions. However, IT Center classes are designed for in-person attendance, so many still cannot access their resources, and only basic courses are free of charge. Social and cultural norms are a significant factor in the gender digital divide. Women and girls are passed over when families must make financial choices about who has access to the internet or to paid digital literacy and skills-improvement programs. IT and tech are stereotyped as men’s interest areas; women average less than ten percent of students

---

1 Mahallas are Uzbekistan’s local, community-level, self-governing bodies. There are over ten thousand mahallas in the country. See Appendix A.
in IT-related university programs and only two percent of startup founders. The Government’s national programs to improve the general public’s digital literacy and skills and grow the IT sector provide USAID/Uzbekistan with strong starting points for engagement on overcoming gender and geographic digital divides.

High-quality online content development — a critical factor in bridging digital divides — faces numerous challenges. Internet freedom is constrained by the Government’s tight regulation of media and civil society, which stymies development of sustainable business models. The Government holds numerous levers, both regulatory and technical, to filter online content. Self-censorship among journalists is widespread. Women journalists and bloggers note growing online harassment and bullying from religious conservatives. Critically, professional and educational online content is largely unavailable in Uzbek, Tajik or Karakalpak languages; this type of content is mostly in Russian. Despite these limitations, and driven in part by the COVID-19 pandemic, appetite for online content is growing. More and more people are going online every day for news, political discussions, shopping, business, and community-organizing. Numerous, popular online entertainment channels are produced in local languages. The low-data demand, mobile-optimized Telegram messaging app is by far Uzbekistan’s most popular platform. Even some Government entities and officials, including the President’s Office, have adopted it as an unofficial channel for citizen engagement.

Digital government transformation is proceeding, though unevenly. Reforming the internal systems and processes of entrenched bureaucracies is challenging. The lack of consistent, coordinated leadership across government bodies to help break through institutional cultures have hampered progress. For example, data- and information-sharing between ministries is still based on bilateral agreements rather than an overarching government policy. Ministries and agencies guard their mandates, and entrenched civil servants have little understanding of the benefits or need for digital reforms. To help break through some of these institutional challenges, the e-Government Center was established in 2020 and given a broad mandate to lead and drive a “whole-of-government” approach to digital government transformation. The Digital Uzbekistan Strategy also makes raising the digital knowledge and skills of middle-management and regional governments’ staff a high priority. The COVID-19 pandemic has helped focus the Government’s commitment to digital transformation on the health and education sectors. The Ministry of Health is expected to issue a Digital Health Strategy this fall.

Uzbekistan’s digital economy is in relatively early stages of development but shows many promising opportunities for growth. Widespread reforms in recent years have put in place many — though not all — key legal frameworks. Digital financial services are growing rapidly thanks to regulatory changes, but important reforms for digital trade, startups and innovative investment approaches are incomplete. The percentage of “unbanked” persons is slowly declining, and the adoption of digital payment systems is growing, though a significant urban–rural divide exists. E-commerce received a push with COVID-19 business closures, but infrastructure limitations and cultural norms present significant challenges to continued growth. Many elements of the startup ecosystem are weak or missing, most critically access to funding, mentoring, and a skilled workforce. Government commitment to growing a startup ecosystem is strong; the Government recognizes the importance of startups for developing the national IT sector, growing the digital economy and creating good jobs for its young population. The IT Park is responsible for creating favorable conditions for tech and IT startups. Looking toward the future, the Government also has initiated projects and programs to develop and test emerging technologies such as the Internet of Things, big data, artificial intelligence, blockchain, robotics and drones.
KEY FINDINGS

Overcoming the digital divides between men and women and urban and rural populations requires long-term planning and resource commitments that include broad stakeholder engagement and coordination. The availability of reliable broadband outside major urban centers, affordability of high-data internet access packages and devices, and opportunities to develop basic digital literacy (including digital financial literacy and cyber-hygiene) and more advanced digital skills are all broad, systemic challenges to overcoming digital divides. Cultural norms around women and girls’ social roles, including perceptions about their capacity to understand, use, and develop technologies, cut across all of these challenges.

The public’s appetite for online content is growing, but accessible, diverse, high-quality educational and professional content in local languages is sorely lacking. Government control of the online information landscape is tight, and independent media and civil society organizations have limited resources or capacity to develop high-quality content. Supporting development of businesses and nonprofits that grow the availability of mobile-accessible, educational content in local languages can help bridge digital divides and crowd out misinformation, disinformation, and extremism.

High, unmet demand for digital and IT talent and a weak digital startup ecosystem are critical bottlenecks to growing Uzbekistan’s domestic IT sector and driving digital transformation across the economy. The Government is implementing digital knowledge and skills training, as well as specialized IT schools and university programs, across the education system, but for-profit and not-for-profit private-sector educational alternatives are needed to help meet existing and anticipated demand. In addition to more IT specialists, growing the domestic IT sector requires more effective use of Government resources, varied financing mechanisms, mentorship opportunities and international partnerships.

The COVID-19 pandemic has strengthened the Government’s commitment to digital transformation of the health sector. Strong leadership in the Ministry of Health that is actively seeking international experience presents opportunities for strong, effective partnership engagements.

PRIORITY RECOMMENDATIONS

The following recommendations are identified as priorities because they align most closely with most of USAID/ Uzbekistan’s and the Government of Uzbekistan’s overlapping priorities. These recommendations focus on bridging digital divides, investing in youth to grow an innovative, competitive, future-oriented digital economy, and strengthening the private sector’s role in driving Uzbekistan’s digital transformation.

1. Partner with MITC/IT Park through a demand-driven assistance mechanism. MITC/IT Park is a critical player in digital development in Uzbekistan, responsible for many key initiatives outlined in the Digital Uzbekistan Strategy. Developing a strong working relationship with the IT Park that helps it achieve its mandated targets will build trust between the USG and GOU. USAID/Uzbekistan should access the services of pre-competed technical assistance and training mechanisms to develop a short-term, demand-driven program to support the GOU’s immediate needs in implementing Digital Strategy 2030. This could start with policy support, firm-level assistance, and awareness campaigns related to the digital startup ecosystem.
2. **Support the production and dissemination of diverse and rich digital content in Uzbek, Tajik, and Karakalpak languages.** USAID/Uzbekistan can work with civil society, media, and the private sector to build resilience, develop organizational and operational capacity, and increase supply of educational, informative, entertaining online content in local languages that helps expand online expression, crowds out extremist voices and creates a richer, more inclusive online information landscape.

3. **Support digital transformation of key USAID intervention areas (health, agriculture, climate).** USAID/Uzbekistan can help health sector transformation by rolling out capacity-building training, bringing highly needed international expertise and supporting collaboration between public and private sectors. USAID/Uzbekistan can support multi-stakeholder efforts to use emerging and digital technologies to help improve resilience to climate change impacts on agriculture and water management.

4. **Support development of an inclusive, market-driven digital startup ecosystem.** USAID/Uzbekistan can provide support for ongoing regulatory reforms and strengthen the IT Park’s capacity to fulfill its mandate, use large government businesses to anchor the incubation and acceleration of sectoral- and industry-focused reforms, develop and provide access to finance for early-stage companies, and facilitate the development of strong national and international networks. USAID/Uzbekistan can prioritize activities to engage more women in startup creation.

5. **Build digital literacy and digital skills development to bridge digital divides.** USAID/Uzbekistan can learn from, align and coordinate with existing government and donor programs and plans. Engage USAID’s Center for Digital Development to help create a digital literacy toolkit and guidebook for integrating digital literacy training across USAID/Uzbekistan programming. USAID/Uzbekistan can help transform education to ensure the adoption of modern training methods and updated curriculum to meet current and future market demands for digital and business talents and prioritize education and inclusion for women and vulnerable groups. USAID/Uzbekistan can help universities and private schools build international partnerships.

**ROADMAP FOR THE REPORT**

**Section 1** provides background on the DECA framework and goals. It includes a summary of USAID/Uzbekistan’s priorities, connecting them with digital solutions.

**Section 2** presents the key findings about Uzbekistan’s digital ecosystem. This section is organized into four subsections. The first three subsections describe findings for each DECA pillar: digital infrastructure, access, and use; digital society and governance; and digital economy. The fourth subsection presents findings on health and climate change.

**Section 3** provides recommendations on how USAID/Uzbekistan can leverage and support the digital ecosystem to achieve improved development outcomes.
Section 1:
About this Assessment

USAID’s Digital Strategy aims to improve USAID development and humanitarian assistance outcomes through the responsible use of digital technology and to strengthen the openness, inclusiveness, and security of country digital ecosystems.

As part of the Digital Strategy implementation, the DECA examines three broad areas to understand the opportunities and challenges in a country’s digital ecosystem:

1. Digital Infrastructure and Adoption
2. Digital Society, Rights, and Governance
3. Digital Economy

The Uzbekistan DECA took place from May-August 2021. The DECA team conducted desk research, consultations with USAID/Uzbekistan, and two and a half weeks of in-country key informant interviews. The in-country research included site visits to the Autonomous Republic of Karakalpakstan and Bukhara Region, as well as virtual interviews with stakeholders in Namangan Region. The DECA Team conducted 66 interviews with stakeholders from government, industry, civil society, academia, international development organizations, and USAID/Uzbekistan technical teams.

Rather than act as an authoritative source on Uzbekistan’s digital ecosystem, the DECA is intended to be a rapid assessment of opportunities and challenges tailored to USAID’s programmatic priorities, and thus may not cover all of USAID/Uzbekistan program offices and projects in-depth.

FIGURE 1: Digital ecosystem
When President Shavkat Mirziyoyev took office in September 2016, he set out to completely transform Uzbekistan’s government and economy and open the country up to the global community. The new Government launched an ambitious reform agenda that began reorganizing institutions, opening markets, and loosening some of the old Government’s grips on society. The global impact of digital technologies on modern economies and societies were well-recognized, and the Government placed digital transformation high on its agenda. The official “Year of Science, Enlightenment and Digital Economic Development” in 2020 brought to the forefront the importance of embracing digital technologies to enhance economic competitiveness and create quality jobs for Uzbekistan’s growing, young population. At the same time, the social and economic challenges of COVID-19 deepened the Government’s commitment to using digital technologies in its own operations and integrating digital technologies across economic sectors while also accelerating the pace of digital adoption among the general public.

To help guide the country through the next decade of changes, the Government adopted a Digital Uzbekistan 2030 Strategy (Digital Uzbekistan Strategy) in October 2020. The Digital Uzbekistan Strategy sets out five priority areas for development: Digital infrastructure; e-Government; Digital economy; National IT sector; and IT education. The Strategy outlines more than 1,600 projects across all twelve regions of Uzbekistan plus the Autonomous Republic of Karakalpakstan and names 29 districts for piloting a variety of new projects in 2020-2022. These range from establishing e-hospitals, to integrating digital technologies into cotton textile production and systems for monitoring natural gas consumption, to creating “smart agriculture fields” using the Internet of Things (IoT). The Strategy also highlights legal and regulatory reforms needed to drive digital economy development. Digital and IT educational programs at the primary, secondary, and tertiary levels, along with digital skills training for government employees and citizens, are a primary focus for programs in every region. The Strategy’s targets are very ambitious, reflecting a sense of urgency to quickly pull Uzbekistan’s economy and society into the digital age.

The Government has invested heavily in recent years in rapidly building out the digital connectivity infrastructure needed for a modern digital society and economy. The internet is becoming more available and affordable for more citizens and businesses every year, even as challenging digital divides between men and women and urban and rural populations remain. The Government uses digital platforms to disseminate information and respond to citizens’ criticisms and concerns. While it maintains tight regulatory controls over the online information ecosystem, the number of individual bloggers and local activists is growing, and global platforms such as Facebook, Instagram and YouTube have national content creators and millions of users in Uzbekistan. The availability of digital financial services has grown rapidly, following banking sector reforms. The COVID-19 pandemic has accelerated adoption of digital technologies and especially helped to drive an expansion of e-commerce. Still, the legacy of top-down governance has meant that Uzbekistan’s limited IT and nascent startup sectors have been largely sidelined from the Government’s digital transformation planning processes. The Soviet-era education system is scrambling to update schools’ curricula and expand its pool of qualified digital and IT specialists. While the challenges Uzbekistan faces are steep, the Government’s commitment to educating a globally-competitive next generation inspires hope for the future of the country’s digital transformation.
2.1. PILLAR 1: DIGITAL INFRASTRUCTURE AND ADOPTION

**Digital Infrastructure and Adoption** This pillar refers to the resources that make digital systems possible and how individuals and organizations access and use these resources. This pillar examines aspects of digital infrastructure like internet bandwidth, network coverage, and telecom market dynamics as well as behavioral, social, and physical barriers and opportunities for equitable adoption — who uses and does not use digital technologies and why.

### KEY TAKEAWAYS:

<table>
<thead>
<tr>
<th>DIGITAL INFRASTRUCTURE AND ADOPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The Government’s programs to expand internet coverage to the entire country are showing some successes, but they are not designed to develop a competitive telecommunications market.</td>
</tr>
<tr>
<td>• Overcoming the digital divides between men and women and urban and rural populations requires long-term planning and resource commitments that includes broad stakeholder engagement and coordination.</td>
</tr>
<tr>
<td>• The lack of a holistic national approach to cybersecurity puts the data of local governments, businesses, organizations, and citizens at risk and jeopardizes trust in digital transformation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RELEVANT RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Support last-mile connectivity development by encouraging innovative business models, financing, and stakeholder engagement</td>
</tr>
<tr>
<td>2. Integrate digital literacy training activities across USAID/Uzbekistan programming</td>
</tr>
<tr>
<td>3. Build awareness and strengthen Uzbekistan’s digital resilience, including cybersecurity knowledge and capacity among individuals, businesses, and organizations</td>
</tr>
</tbody>
</table>

**INTRODUCTION**

The Government of Uzbekistan has set ambitious goals to expand and improve the country’s internet connectivity infrastructure and provide the entire population with the knowledge and skills needed to prosper in the digital age. While internet coverage is growing rapidly, the Government maintains a strong hold on the telecommunications sector. Steps toward market liberalization are small and incremental. Even as internet availability improves, bridging geographic and gender divides remain a tremendous challenge. Internet and device affordability, lack of digital literacy and relevant content all pose barriers to digital inclusion. For women and girls especially, social and cultural norms may be discouraging the use of digital technologies and pursuit of IT professions. The lack of a holistic national approach to digital resilience, including cybersecurity, puts the data of governments, businesses, organizations, and citizens at risk and jeopardizes trust in digital transformation.

2.1.1. EXPANDING DIGITAL INFRASTRUCTURE

One of the core strategic pillars of Uzbekistan’s Digital Strategy is development of digital connectivity infrastructure. The Strategy’s digital infrastructure goals include expanding the reach and capacity of the fiber optic backbone and middle-mile network, providing secure, affordable, high-quality broadband internet to all citizens — including coverage of all “social facilities” (schools, universities, government IT Centers, hospitals, health centers, and mahallas) by 2022, developing an open and competitive telecommunications sector, and reducing the urban/rural digital divide. Some specific targets include increasing internet coverage across the country from 78% to 95% with minimum speeds of 10 Mbps, capacities of 400 Gbps and 60 Gbps at regional and district levels, respectively, and high-speed internet connectivity in all tourist destinations by 2022.
The Ministry of Information Technologies and Communications (MITC) is responsible for achieving these Digital Uzbekistan Strategy goals and targets. The MITC works towards the targets through its state-owned enterprises, UzbekTelecom, which owns more than 95% of the country’s fiber optic backbone and middle-mile infrastructure, and Mobile Network Operators (MNOs) MobiUz,2 UCELL,3 and UzMobile, a wholly owned subsidiary of Uzbek Telecom. The DECA team’s efforts to meet with UzbekTelecom were not successful. Generally, interviewees were reluctant to discuss the Government’s outsized role in the telecommunications market or any possibility of liberalization in the coming years, although more than one noted the need for competition on the international and national backbone segments. The Government has justified its dominant ownership of infrastructure, especially the international gateway, by characterizing it as a national security interest.4

UzbekTelecom has long held a de facto monopoly on Uzbekistan’s international gateway as the only operator granted a license for this market segment. MobiUz reportedly also was granted a license in the past year, but has not operationalized it. UCELL does not hold a license, and Beeline’s applications have been repeatedly denied; Beeline is the only fully-private MNO on the market.5 As a result, the market is totally dependent on the wholesale international access prices UzbekTelecom offers. MITC-published data shows wholesale international

---

2 MobiUz was recently transferred to the MITC from the National Agency for Project Management (NAPM) when NAPM’s “Digital Trust Fund” was dissolved. MobiUz is slated for privatization, but no plans or timelines are publicly available.
3 According to news reports in February 2021, UCELL is being transferred into the Joint Venture “Digital Holding” between the Government of Uzbekistan (which will hold a 49% ownership stake) and Russian telecom company MegaFon (which will hold a 51% ownership stake). The DECA team was unable to learn more about the status of this venture during the country visit. “Uzbek Telecom and Megafon Enter the Uzbek Market.” UzDailyuz, October 2, 2021, http://www.uzdaily.com/en/post/63564.
4 This justification was shared in multiple interviews.
5 VEON is a Russian company, registered in the Netherlands, that operates under the Beeline brand in nine countries, including several from the former Soviet Union. https://www.veon.com/our-brands/
access prices have dropped dramatically over the past four years, and interviews confirmed this. However, price-setting mechanisms remain opaque, and there is anecdotal evidence that Beeline’s wholesale access prices are higher than those of state-run companies.

**FIGURE 3: Elements of a telecommunications network**

---

Since 2018, the Government (through UzbekTelecom) has built out at least 10,000 kilometers per year of fiber optic lines with plans to reach more than 80,000 total kilometers across the country by the end of 2021.7 This has allowed UzbekTelecom to hold a de facto monopoly position on the fixed broadband market, especially outside major cities. Detailed information on how well different regions, districts and localities have been connected is not publicly available. Several DECA team interviewees confirmed that fiber optic lines are extending up to or near many targeted “social facilities” such as schools and healthcare clinics in the regions. However, they also...

---


noted that last mile — or even last meters! — connectivity and additional infrastructure such as WiFi routers and computers in the facilities often are missing.

**FIGURE 4:** Total length of fiber optic communication lines, thousand km, 2013-2021

![Graph showing total length of fiber optic communication lines, thousand km, 2013-2021](image)

Source: MITC

Financing for the national fiber optic network buildout has been provided by the Japan Bank for International Cooperation (JBIC), which agreed to a $138.5 million USD loan in 2019. The World Bank’s Digital CASA Uzbekistan $50 million USD project also includes plans to support infrastructure development, but the project has not been approved after nearly three years of preparation. Discussions with EBRD for a $100 million USD loan also have not materialized.

MNOs have also been expanding their middle-mile and last-mile connectivity infrastructure. The total number of mobile base stations in Uzbekistan has grown to around 35,000 as of September 2021. Due to licensing requirements, MNOs have been encouraged to reach more rural, less profitable locales. According to the most recent publicly-available sources from 2019, MNOs deliver 2G, 3G, and 4G/LTE services, with almost full coverage of the population by 2G (98%) and 3G (75%) networks, and 4G coverage concentrated in larger cities and towns, reaching around 43% of Uzbekistan’s population. However, this information is likely outdated. UCELL, for example, reported that its 4G network is available today in 80% of Uzbekistan’s populated points and that coverage will expand to 95% by the end of 2022.

---

8 Ibid
10 The Digital CASA - UzbekistanProject Concept was issued by the World Bank in September, 2018 but the project still does not have a date set for Board review and approval.
Interviewees reported, and the DECA team observed, that the quality and reliability of mobile internet drops off quickly when travelling between cities. For example, mobile connectivity is unavailable on the high-speed train from Tashkent to Bukhara. In Karakalpakstan, interviewees reported that connectivity is almost nonexistent in many places outside Nukus except along major roadways. According to UCELL, discussions are underway among MNOs to form a consortium that will invest in developing high-speed telecommunications infrastructure along major transit corridors.

UzbekTelecom recently announced a $26 million USD project to invest in technologies to expand internet bandwidth; U.S. company Winncom Technologies Corp. won the bid. This project may help improve Uzbekistan’s internet speeds and quality. Ookla’s most recent Speedtest data from July 2021 shows Uzbekistan’s average fixed broadband download speed slightly improved since February 2021 (from 38.84 Mbps to 40.9 Mbps), although its relative global ranking has dropped three points since July 2020, from 90th to 93rd. Average mobile broadband download speed showed more improvement, from 11.20 Mbps to 18.61 Mbps, which maintains its global ranking of 118th from a year ago. As most people in Uzbekistan access the internet through mobile networks, any improvements in mobile broadband speeds and coverage are important victories for driving greater adoption and use.

Uzbekistan has around forty Internet Service Providers (ISPs), with Sarkor, Sharq, Sola, and Turon holding the largest shares alongside UzOnline (UzbekTelecom’s retail fixed broadband provider). These ISPs have seen demand

---

14 As of January 4, 2021, the Ministry of Information Technologies and Communications lists 437 companies with current licenses to provide telecommunications services. (https://mitc.uz/ru/pages/reestr_license) However, according to numerous local experts interviewed during the DECA team’s field visit, the number of active ISPs is far lower.
grow exponentially since COVID-19 hit (more than 10x according to one interviewee), but they compete only in the major cities (Tashkent, Bukhara, Samarkand, and Navoi). UzbekTelecom’s UzOnline is the only available option outside major cities. Despite rapidly growing demand across the country, the regulatory environment discourages new ISPs from entering the market. ISPs must register as a legal entity and have a license to operate. In the past, licensing has been encumbered by political interests and marred by bribery scandals. For existing ISPs, incentives to invest in network expansion may be low and financing options limited due to burdensome taxes and uncertain regulatory requirements. One interviewee reported that some ISPs have been forced to remove their infrastructure off of “social facilities” because only government-owned telecom providers would be allowed to service government bodies.

The Government is aware of the regulatory challenges for telecommunications market players and has made some moves recently to reduce some regulatory and tax burdens. The approach, however, consists of piecemeal amendments or replacements of some regulations. MITC has not proposed any systemic overhaul of the outdated institutional and legal frameworks and regulations governing the telecommunications sector. No national broadband development strategy provides vision or guides planning. The long-promised restructuring of UzbekTelecom has not made any progress.

With private sector investment and competition stymied, the Government justifies its top-down, centralized approach to building out Uzbekistan’s digital connectivity infrastructure. This affects development of other critical, core elements of digital infrastructure needed for a thriving digital economy and society. Uzbekistan does not have a top-tier datacenter nor cloud services. Without these elements in place, industries, businesses, and tech startups will have difficulties developing products and services that are regionally and globally competitive.

**BOX 1: Opportunities for broadband network development using shared network infrastructure**

Construction and improvement projects for any national, regional, or local network infrastructure in Uzbekistan provide opportunities to improve broadband coverage. “Network infrastructure” includes any major interconnected, infrastructure system built in a networked manner such as energy supply grids, water supply and sewage systems, roads, and railroads. Digital connectivity infrastructure such as fiber optic cables and mobile network equipment can be built together with, or added on top of, other network infrastructure. For example, upgrades to roads, railroads and water systems that involve expensive digging projects can plan to include ducts for fiber optic cables at relatively little extra cost — a “dig once” policy. The World Bank recently approved two new major infrastructure projects in Uzbekistan, one to support construction and improvements to the energy supply grid and the other to improve municipal infrastructure in medium-sized cities. Putting management and information resources in place to coordinate project planning and implementation among the lead government entities on national and sub-national levels on these kinds of infrastructure projects could be a cost-effective way to expand Uzbekistan’s broadband coverage more rapidly.

Several interviewees noted that the lack of a reliable energy supply increasingly constrains internet availability and usage in Uzbekistan, even in Tashkent.

*Source: World Bank*  

---

15 A notification procedure for new market entry, rather than licensing, is considered global best practice.

Next-generation broadband development: 5G. While expanding 4G coverage in Uzbekistan still requires further investment, the Government has begun testing 5G services. UCELL has made 5G commercially available in Tashkent, although it reported during its interview with the DECA team that it has less than 100 users of the network. The company is still exploring viable business models. UCELL also plans to build 5G networks localized around each of the country’s 13 IT Parks to facilitate digital companies and startups. News reports from 2019 noted that UzMobile also began 5G testing, but the DECA team could not confirm whether the project moved past a pilot stage. Huawei reportedly has provided network equipment for 5G pilots as part of its cooperation with Uzbekistan on the “Safe City” project, but DECA team interviews indicated that the “Safe City” project largely has stalled. Importantly, the Government has not started reforms to spectrum allocation procedures that are necessary for a successful, market-driven, country-wide 5G rollout. Most interviewees — both public and private sector alike — viewed 5G as “too soon” for Uzbekistan, in large part because of the significant financial investments required. It was the interviewees’ opinion that investment stay focused on bringing high-quality, reliable broadband to the entire country and cover transportation corridors, public spaces, etc. This is consistent with the Digital Uzbekistan 2030 strategy.

2.1.2. DIGITAL INCLUSION AND DIGITAL DIVIDES

For the majority of Uzbekistan’s population, mobile internet is the internet. The Government recently announced that as of July 1, 2021, there were 27.5 million mobile subscribers in Uzbekistan, of which nearly 25 million were individual users. This is an almost 9% increase over the number of mobile internet subscribers from July 2020. The data do not indicate how many mobile users are subscribing to broadband services.

Less than 10% of the population have fixed broadband services, although the number has been steadily rising since 2013. No data is publicly available on whether COVID-19 has accelerated adoption of fixed broadband services. Quality and reliability of fixed broadband is generally better than mobile and more suitable for productive educational and economic activities. For long-term, resilient economic and social development, Uzbekistan will need to connect many more people to fixed broadband services.

Affordability. The costs of internet access packages have been relatively stable since 2018 in Uzbekistan according to the ITU’s standard “baskets” of services, although the pandemic does appear (at least temporarily)

---

18 Spectrum refers to different frequencies of electromagnetic radiation. Regulators designate specific frequency ranges (or bands) for different purposes, including telecommunications. Some bands (e.g., WiFi) are unlicensed, meaning that anyone can use them with the proper equipment. Licensed spectrum requires a regulator’s approval to broadcast (e.g., cellular networks or FM radio). Licenses are typically allocated to telecommunications network operators through spectrum auctions. Uzbekistan’s telecommunications regulatory framework and spectrum allocation processes are not currently designed to hold open, transparent auctions, including on 5G bandwidths.
to have driven up high-consumption mobile data package prices. Uzbekistan is still above the ITU’s global target of less than 2% of GNI per capita for higher-consumption data and broadband packages.

**FIGURE 7: Cost of internet**

<table>
<thead>
<tr>
<th>Average Cost of Internet as % of GNI per capita</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Broadband</td>
<td>3.5</td>
<td>2.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Mobile Cellular</td>
<td>1.0</td>
<td>1.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Mobile Data &amp; Voice high consumption</td>
<td>2.5</td>
<td>2.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Mobile Data &amp; Voice low consumption</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
<td>Fixed Broadband</td>
<td>0.5</td>
<td>1.0</td>
<td>1.5</td>
</tr>
</tbody>
</table>

*Source: ITU, Digital Development Dashboard*

Most interviewees said that the internet was not unaffordable (though no one said it was inexpensive, either). The move to online education during the COVID-19 pandemic pushed families to prioritize household internet access. The 80,000 Soum (7.45 USD)/month package offered by UzMobile was popular. Quality and reliability, however, were frequent complaints. As one father of four in Karakalpakstan remarked, during peak evening demand times, he would have to line the kids up in school class order to take their turn online.

While official data is not available, anecdotally, smartphone penetration is growing rapidly. Relatively inexpensive devices made in China are widely available for sale in online stores, national chain stores, and in bazaar storefronts. Average prices range between $80-100 USD. However, the memory capacity on these less expensive devices is limited, which affects internet usage. One interviewee described students managing device storage limitations by repeatedly downloading apps and subsequently deleting them, depending on their immediate need.

Notably, businesses and organizations all complained about the high cost of internet services. Commercial packages can be four to ten times more expensive than household packages. Smaller organizations can manage with less-expensive, more restrictive data packages intended for individuals. For larger businesses and IT startups, this is not a realistic option. Some businesses also complained about the lack of affordable data storage and cloud services.

**Digital literacy and skills.** Digital literacy can mean different knowledge and skill requirements in different contexts. The skills needed to successfully navigate mobile internet, for example, can be different than those required for basic online internet usage. The EU has developed a digital competence framework with five core
competence areas: 23 (1) information and data literacy; (2) communication and collaboration; (3) digital content creation; (4) safety; and (5) problem-solving. These serve as a set of indicators for measuring and understanding basic, intermediate, and advanced digital literacy in countries.

Although the Digital Uzbekistan Strategy highly prioritizes digital literacy for the population, Uzbekistan has not developed a national digital competence framework for citizens comparable to the EU’s. This is a critical gap in the Strategy’s plans to improve the public’s digital literacy. According to data tracked for reporting on SDG 4, Uzbekistan’s digital literacy on several competence measurements is very low. For example, less than 7% of youths and adults can create electronic presentations, only around 14% know how to send emails with attachments, and just under 40% have copied or moved a file or folder.

**TABLE 1: Digital literacy**

<table>
<thead>
<tr>
<th>COMPETENCE</th>
<th>(%) youth and adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copied or moved a file or folder</td>
<td>39.4</td>
</tr>
<tr>
<td>Used copy and paste tools to duplicate or move information within a document</td>
<td>22.4</td>
</tr>
<tr>
<td>Sent emails with attached files (e.g. document, picture, video)</td>
<td>14.1</td>
</tr>
<tr>
<td>Used basic arithmetic formula in a spreadsheet</td>
<td>10.5</td>
</tr>
<tr>
<td>Created electronic presentations with presentation software</td>
<td>6.7</td>
</tr>
<tr>
<td>Connected and installed new devices</td>
<td>5.4</td>
</tr>
<tr>
<td>Found, downloaded, installed, and configured software</td>
<td>4.6</td>
</tr>
<tr>
<td>Transferred files between a computer and other devices</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Source: UNESCO, 2018

Advanced “computer literacy courses” for children and adults are offered through some of the regional IT Parks, but they are expensive at 1,000,000 Soum (93.00 USD) for a month. The Government’s network of 200+ IT Centers across the country have begun offering one-month basic digital literacy courses for 100,000 Soum (9.27 USD). While this is a good first step, several interviewees in Tashkent and the regions noted that most older adults will not see the value for themselves. They also noted that a shortage of qualified teachers has made course offerings more limited in practice.

The Digital Uzbekistan Strategy also calls for regional universities to improve digital literacy and skills of regional governors and administration (“Khokimyat”), and employees of state agencies and organizations by training them on IT, digital literacy, and cybersecurity. The target is to train 12,000 employees. Again, a digital competence framework has not yet been developed for these programs.

**Usage and content.** For most of Uzbekistan’s mobile internet users, Telegram is the internet. People use Telegram channels to shop for clothes, catch up on news, and check in with their local health clinics. With relatively limited online content options, most people use their smartphones for instant messages, voice calls, and games. One of the big challenges to developing Uzbekistan’s digital society and economy is creating interesting, educational, and entertaining content in local languages (e.g., Uzbek, Tajik and Karakalpak), not only in Russian (see Pillar 2).

---

The urban/rural digital divide. The Digital Uzbekistan Strategy’s targets to bring high-speed internet connections to all the country’s healthcare facilities, schools, villages, and mahallas by 2022 is helping to bridge internet access divides between cities and more rural communities. With this infrastructure in place, innovative, local ISPs may be interested in building out last-mile networks more rapidly and help bring down prices. In addition, the network of 200+ IT Centers that the government is opening around the country (see fuller explanation in subsequent sections) may be able to serve as public access points for at least some young people in rural areas. The existing Government Public Services Centers (see Pillar 2) also provide public access points to the internet. The DECA team observed one in use in Nukus, Karakalpakstan.

The greatest digital divides between urban and rural communities center around digital literacy and skills. Youth living in rural communities are far less likely to use the internet. Lack of interest is a significant contributing factor. This points again to the importance of developing useful, interesting digital content in local languages.

The Gender Digital Divide. As life has moved online, so have the gaps between men’s and women’s development outcomes. Barriers and constraints on girls’ and women’s ability to access and use the internet and contribute to the development of digital technologies and solutions impede their full participation in the social and economic life of their communities and countries. This is called the Gender Digital Divide (GDD). Closing the GDD is imperative for ensuring women and girls have better and more opportunities to access healthcare, education, jobs, and civic participation.

Globally, the main causes of the GDD can be broadly categorized as issues of affordability, availability, appetite, and ability. Cutting across them all are social and cultural norms and expectations around girls’ and women’s roles generally, as well as their relationship to technology. For example, cost concerns may limit the number and sophistication of smartphones in a household. When the supply of phones or computers is limited, women’s and girls’ access is not prioritized. Affordability concerns can also impact internet availability for women and girls; lower-cost internet access plans are usually more restrictive and lower quality. Poor user experience may lead to less interest — or appetite — by women and girls to use the internet or see it as a useful resource. More than that, online harassment and concerns about security and privacy can discourage women from becoming active internet users. The ability to use digital technologies productively and safely requires literacy, skills, and confidence that may not be provided or encouraged for women and girls. Pursuing science, technology, engineering, and mathematics education may also be actively discouraged, which also narrows the pipeline of potential female leaders and role-models in technology fields.

In Uzbekistan, there is evidence that all these barriers contribute to a deep gender digital divide. Social norms and cultural expectations are preventing the full digital inclusion of women and girls. Girls are less likely to have access to smartphones and computers. While concerns about online safety and appropriateness of content may be legitimate, these do not appear to be being addressed in a systematic manner, but rather may serve as an excuse for keeping women and girls offline. The DECA team heard from IT sector educators (public and private) that families are less willing to pay for classes for their daughters. Even where girls are included, they tend to be funneled toward data entry or graphic design and away from higher-paying skills such as coding or IT systems management.

Addressing gender disparities in the education and promotion of women and girls in tech is especially important for Uzbekistan’s long-term digital development. Women make up 37% of students enrolled in Uzbekistan’s
universities. Women’s participation in management of private enterprises is among the lowest in Central Asia, and women entrepreneurs are often not taken seriously. It was confirmed during fieldwork that women have less access to investment and entrepreneurship. If women run a business, it is considered an additional source of income for families — an add-on rather than an equal contribution. During interviews it was confirmed that women were expected to assume traditional roles such as childcare. Among startup founders, only three startups out of 100 are led by women in Uzbekistan. In technologically advanced markets, the proportion of women founders in startups is 28%.

Women are especially rare in technical fields: only 16% of technical university students are women and only 11% of those who apply for startup incubation and acceleration programs are women. Some programs promoting women and girls in IT professions exist, such as UNDP’s “Startup Initiatives” program, Technovation, Digital Generation Ladies, which aim to support young woman-led early stage startups by building skills and providing mentoring, training, networking, office space, and access to capital.

Additional donor-supported initiatives such as TumarisTech and IT Women.UZ offer digital development education programs to women and girls. The Tumaris Tech project, developed by IT Park Uzbekistan with USAID support, launched free online courses for young women ages 16-35 years in all regions of the country.

### 2.1.3. REGIONAL SNAPSHOTS

#### Autonomous Republic of Karakalpakstan, Digital connectivity infrastructure and affordability:

Broadband mobile networks cover approximately 78% of settlements in the region. Compared to the other regions, there are few operators providing fixed broadband services, mostly due to the low level of infrastructure development. The largest market share is occupied by the national ISP Uztelecom. Others include East Telecom and TPS. The cost of the tariff plans varies from $2 USD to $15 USD (or 3% to 20% of the average income). Prices for smartphones vary significantly from 60% to more than 200% of monthly income per capita. The cost of a laptop is in excess of four times the average monthly income. The Government’s assessment of digital infrastructure of the region rates several territories of Karakalpakstan as unsatisfactory.

---


33 The research team uses $74 USD as the average monthly average income in the region.

Strategy includes plans to develop telecommunication infrastructure and mobile networks in Karakalpakstan, including expanding broadband telecommunications, constructing optical fiber communication cables (including to health facilities) organizing high-speed telecommunications services, and expanding and modernizing the networks of mobile operators UCELL and MobiUz.

**FIGURE 8: Mobile Broadband coverage (3G (blue), 4G (purple))**

**Bukhara region, Digital connectivity infrastructure and affordability:** Broadband mobile networks cover 78% of settlements. 3G and 4G mobile internet coverage is concentrated in the city. In 2020, only 61 internet base stations were installed in Bukhara Region. There are six internet providers in the region. The affordability of software and hardware remains comparatively low. Based on research team calculations, the cost of the tariff plans ranges from 2% to 17% of average incomes. Prices for smartphones also vary from 40% to more than 200% of per capita monthly income. The cost of a standard laptop model may exceed two times the average monthly income.

The Government assessed the regions’ infrastructure as moderate. Initiatives under the Digital Uzbekistan Strategy include further expansion of digital infrastructure. It includes laying fiber optic cable in 193 instances, connecting 244 healthcare facilities to the internet, and providing those facilities with internet-enabled equipment.

**FIGURE 9: Mobile Broadband coverage (3G (blue), 4G (purple))**

**Namangan region, Digital connectivity infrastructure and affordability:** In Namangan, combined 3G and 4G mobile internet covers the entire region. Broadband mobile networks are available in up to 80% of settlements. In 2020, 128 internet base stations were installed to improve mobile broadband coverage. The affordability of the software and hardware remains comparatively low. The cost of the tariff plans varies from 3% to 18% of the average income. Prices for smartphones vary from 60% to more than 300% of per capita monthly income. Based on the DECA research team’s calculations, the cost of a standard laptop model may exceed five
times the average monthly income per capita. The Government’s assessment of the digital infrastructure of the region rates several territories of Namangan as high compared to the other regions.

The Digital Uzbekistan Strategy calls for further development of the digital infrastructure of Namangan. The roadmap includes initiatives to provide high-speed data transmission network to health facilities in the region, fiber expansion of broadband optical networks, expansion of wireless broadband networks in public places, gradual connection of all postal facilities to the broadband internet, as well as creating a geographic information-analytical geoportal “Digital Namangan.”

**FIGURE 10:** Mobile Broadband coverage (3G (blue), 4G (purple))

Source: [UCELL data](https://www.itu.int/en/myitu/Publications/2021/06/28/13/22/Global-Cybersecurity-Index-2020), regional borders elaborated by authors

### 2.1.4. THE DIGITAL ECOSYSTEM’S Achilles Heel: Cybersecurity

Despite its critical importance to developing an open, secure, and trusted digital ecosystem, cybersecurity is not given explicit focus in the Digital Uzbekistan Strategy. The Government has made some efforts to put leadership and institutional frameworks in place, but the approach has focused on the national security aspects of cybersecurity and largely ignored the broader social and economic impacts of poor cybersecurity. A lack of resources and commitment have left Uzbekistan’s cybersecurity systems undeveloped and falling farther behind, with many government systems and most businesses, organizations, and individuals unprotected. This is reflected in various global indices, where Uzbekistan’s standing is low and has even dropped in recent years.35

A draft Law “On Cybersecurity” that is slated for adoption by the end of 2021 is intended to provide mechanisms for protecting information and communication technologies from modern cyber threats, define the rights and responsibilities of state bodies, enterprises and organizations related to cybersecurity, and harmonize the related laws and regulations.36 The draft law was not prepared with stakeholder engagement or input from the private sector and is modelled after Russia’s law (according to DECA team interviews) without much adaptation to Uzbekistan’s context. A Presidential Decree has called for a national cybersecurity strategy to be developed, including a regulatory framework to protect critical infrastructure from cyber-attacks, but this effort has not yet been launched.

---


36 See Appendix D for links to laws, regulations, and Presidential decrees.
Uzbekistan’s Cybersecurity Center is a State-Owned Enterprise controlled by the State Security Service of the Republic of Uzbekistan. UzCERT37 (Uzbekistan Cybersecurity Emergency Response Team) is part of the Cybersecurity Center. While the Cybersecurity Center is formally tasked with working with both the public and private sectors, its position under the State Security Service indicates that the Government views cybersecurity primarily as a state security matter rather than a cross-cutting digital ecosystem issue.

The Cybersecurity Center is tasked with a wide range of responsibilities, including: (i) collecting and analyzing data on threats to information security and developing recommendations for effective organizational, software, and technical solutions to counter them; (ii) coordinating cybersecurity activities with telecom operators and law enforcement agencies; (iii) examining, testing, and certifying hardware and software products and information systems; (iv) helping government agencies and organizations develop and implement information security policies and systems; (v) developing proposals for improving the regulatory framework to ensure the information security of state systems and resources, as well as the national segment of the internet; and (vi) keeping national internet users informed about emerging threats to information security. Its consulting services to businesses and organizations include information security audits, penetration testing, assisting in the recovery or destruction of data from electronic storage media, conducting cybersecurity review of the websites in the “.UZ” domain, and examining the information systems for compliance with information security requirements. Thus far the Center has been primarily focused on protecting key government systems that are viewed as critical to national security.

The Cybersecurity Center cooperates with various multilateral organizations38 and is developing bilateral relationships with Russia, India, Japan, Malaysia, Republic of Korea, United Arab Emirates, and the Republic of Poland, among others. According to cybersecurity experts interviewed by the DECA team, the Cybersecurity Center most often turns to Russian specialists for help in cybersecurity capacity-building trainings while companies from the U.S., Israel, and Europe (e.g., CISCO, Fortinet, Checkpoint, Juniper) provide hardware solutions.

Despite these institutional arrangements and efforts, local experts point out that the Cybersecurity Center lacks sufficient high-level technical specialists and resources to perform its functions effectively. TUIT University is currently the only educational institution in the country that offers a degree in information security. Most of the specialists working in Uzbekistan received practical and theoretical skills abroad. As a result, government systems (particularly those seen as “non-critical”) remain vulnerable. Several high-profile cyberattacks occurred in 2021. The self-identified Clone Security Group hacked the websites of eleven regional authorities (khokimyats). The group left a message on one of the hacked websites stating that it had gained access to the entire IT system and recommended the khokimyat hire “real” IT specialists.39 Several other serious, unpublicized cyberattacks are discussed in professional circles, including the hacking of encrypted databases in a large Ministry, as well as the systems of two insurance companies and one private bank.

Although it falls within its mandate, the Cybersecurity Center does not provide regular capacity building and training activities, and its consulting services are limited. As a result, the overall level of cybersecurity awareness and capacity among businesses, organizations, and the general public is low (see Pillars 2 and 3 for more details). Other parties may conduct occasional cybersecurity awareness and training events, and there are a few companies on the market providing services. For example, the Central Bank of the Republic of Uzbekistan and Kaspersky Lab recently held two seminars on cybersecurity; UZCARD Ventures held a one-day event in July 2021 focused

---

38 These include the International Telecommunications Union (ITU), the Organization of Islamic Cooperation-Computer Emergency Response Team (OIC-CERT), and the Regional Anti-Terrorist Structure of Shanghai Cooperation Organization (RATS-SCO).
on cybersecurity. Mars Solutions, Expert Pro, Sharifa, Softline and Jet infosystems are some of the companies providing cybersecurity consulting services, but the type and scale of their operations remains limited due to prevailing lax attitudes toward cybersecurity among private and public sector organizations. The companies are more involved in protecting the IT perimeter of organizations and in some cases creating layered protection. Systems whose implementation and maintenance require high-quality specialists are underutilized. Services related to training employees and compliance with regulatory requirements are in their infancy. There are no companies in the country whose work on information security would be certified according to the ISO 27001 standard.

2.2. PILlar 2: DIGITAL SOCIETY, RIGHTS, AND GOVERNANCE

Digital Society, Rights, and Governance focuses on how digital technology intersects with government, civil society, and the media. It is divided into three sub-pillars: 1. Internet Freedom explores elements of the digital ecosystem that enable and impede individuals and institutions to exercise human rights and fundamental freedoms online. 2. Civil Society and Media identifies key institutions and how they report on, advocate around, and influence freedoms online. 3. Digital Government looks at the government’s efforts to manage its internal IT processes and systems, deliver citizen- and business-facing e-services, and engage with the public through digital channels.

KEY TAKEAWAYS:

<table>
<thead>
<tr>
<th>DIGITAL SOCIETY, RIGHTS, AND GOVERNANCE</th>
<th>RELEVANT RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The Government maintains strict regulatory controls over the internet landscape, hampering development of a robust online information ecosystem</td>
<td>1. Expand digital inclusion by supporting and strengthening civil society, media and tech-startups’ capacity to produce and disseminate digital content in local languages (Uzbek, Tajik, Karakalpak)</td>
</tr>
<tr>
<td>• The public is producing and consuming more and more digital content and engaging with the Government through online platforms, but awareness of online risks is very low</td>
<td>2. Accelerate resilient digital government transformation</td>
</tr>
<tr>
<td>• Diverse, multi-platform, high-quality educational and business content in local languages is sorely lacking</td>
<td></td>
</tr>
<tr>
<td>• Uzbekistan has committed to digital government transformation as a critical part of the ambitious Digital Uzbekistan 2030 Strategy, but the implementation remains challenging and unsystematic</td>
<td></td>
</tr>
</tbody>
</table>

INTRODUCTION

Uzbekistan’s digital society is growing rapidly, though unevenly, with signs of both promise and concern. The Government views internet governance as a national security issue and maintains strong regulatory controls on who can say what online. Independent media and civil society organizations have limited resources and capacity to develop an online information presence robust enough to fully counterbalance government-backed outlets. The general public’s knowledge of online risks is low, and there is some evidence of rising radical religious digital content. At the same time, national and community-level bloggers are thriving. More and more people are going online for news, entertainment, shopping, and civic engagement. The Government itself uses digital platforms to communicate with citizens, gauge public opinion on the approaches and results of its ambitious reforms agenda,
and respond to feedback and criticism. In some cases, the Government has acted on information from citizens who have identified corruption and abuse of power by mid-level civil servants.

The Government continues to prioritize digital transformation of its operations and services, naming digital government as one of the pillars of the Digital Uzbekistan Strategy. In a fairly short time, the government managed to digitize its main services, launch a unified portal of interactive public services (my.gov.uz), and begin the process of digital transformation of government bodies. Businesses are pleased with faster, simpler online registration processes, while in-person government services centers are helping to build citizens’ confidence and trust. However, this process to date has been unsteady, as government institutions have overlapping and often competing mandates with a siloed approach to the development and implementation of related programs and projects. In addition, the Government has limited engagement with the private sector and civil society organizations. Achieving the Government’s ambitious vision for a 21st-century digital government will require committed, consistent leadership, institutional and organizational reforms, and significant investments in technology and human resources.

2.2.1. GOVERNMENT’S HOLD ON INTERNET, MEDIA AND CIVIL SOCIETY

Uzbekistan’s Constitution protects the rights to freedom of association and expression (including mass media), guarantees the right to gather and disseminate information, and prohibits censorship. Numerous legal requirements that compel registration with authorities, restrict funding sources, limit data privacy protections, and broadly define illegal content create important carve-outs to these constitutional protections. The Government thus holds many tools to exert broad control over media, civil society, and individual bloggers and activists. As a result, the capacity and growth potential of independent media and civil society organizations (CSOs) is significantly restrained.

Media and civil society organizations are subject to government registration requirements. While these requirements have been simplified for media in recent years, thereby reopening doors to some foreign and exiled journalists, others continue to have difficulty receiving accreditation, including Radio Free Europe/Radio Liberty, Internews, and the Eurasia Foundation. The registration process for CSOs reportedly remains burdensome. Foreign funding of online media outlets and CSOs is subject to vigorous state control.

Any website engaged in the dissemination of information at least once every six months is considered “mass media” and is subject to official press registration with the Center for Mass Communications (CMC) of the Agency for Information and Mass Communications (AIMK). In effect, as the International Research and Exchanges Board (IREX) 2019 Media Sustainability Index reports, “only the state can decide who is permitted to practice journalism” in Uzbekistan. Nevertheless, unregistered bloggers have taken an increasingly prominent place in the country’s media landscape, and the government has thus far looked the other way. Recent legislative proposals would grant bloggers the right to “conduct journalistic investigations,” among other things, but these have stalled. The OSCE has a media program in Uzbekistan that is working to open dialogue between journalists, Parliament and executive ministries.

The Personal Data Act (PDA) enumerates several privacy rights, but it also carves out exceptions “in order to ensure state security” and does not apply to personal data obtained by the law enforcement authorities. This is similar to comparable laws in Russia and Kazakhstan (though notably Kyrgyzstan’s law is less restrictive). ISPs and mobile service providers are required to store user data for three months. Under regulatory amendments introduced in 2014, operators of “public access points” must install surveillance cameras on their premises to “ensure [the] safety of visitors.” Additionally, public access points are required to retain a “registry of internet web resources” used by customers for three months. A recent “data localization” amendment to the PDA

40 The parliamentary Public Fund for Support and Development of Independent Print Media and News Agencies of Uzbekistan allocates state subsidies; these are primarily granted to state-owned and pro-government outlets.
requires that the personal data of citizens be processed by “technical means physically located on the territory of Uzbekistan.” This puts citizens’ data within easy reach of Uzbekistan’s law enforcement agencies. New rules went into effect in April 2021 that require international companies and platforms to localize servers in Uzbekistan; the stated aim is to increase the speed of downloading content by internet users. Within weeks, the Government issued warnings to Twitter, VKontakte, WeChat, TikTok and Skype over violations of the personal data law, followed by restrictions on TikTok, Twitter, and VKontakte in July 2021 because personal data of Uzbekistan’s citizens was stored outside of the country. The State Center for Personalization under the Cabinet of Ministers is the designated regulator under the law.

Various laws and measures give the Government the ability to censor and restrict online content. In 2018, the government adopted a resolution “On measures to improve information security” by establishing rules for blocking access to online sources that publish “banned information.” This includes anything deemed to: call for extremism, separatism and/or fundamentalism; sow national, ethnic, or religious enmity; promote illegal drugs; disclose information constituting state secrets; and distribute pornography. Defamation or public insult of the President through online media carries heavy penalties. Spreading false information and “fake news” is subject to criminal prosecution. The Government can block information sources that allegedly violate these content restrictions without a court order.

Uzbekistan has a history of restricting access to certain websites for non-transparent reasons. For example, until relatively recently, multiple websites were unavailable, such as Buzzfeed, Lurkmore, Soundcloud, Voice of America, BBC Uzbek, Deutsche Welle, Reporters Without Borders, Eurasianet.org, and AsiaTerra. Before that, restrictions were removed from media sites like Fergana, an independent media outlet. Komil Allamzhonov, the Head of AIMK at that time, reported on his Facebook page that “technical problems were identified and eliminated that prevented the full operation of these web resources in Uzbekistan.”

**BOX 2: Access restriction: How it works**

- The Center for Mass Communications and the State Center for Personalization (SCP) monitor the internet on an ongoing basis for “banned information” and violation of data localization requirements, respectively. The CMC and SCP notify Uzkomnazorat of any identified violations.
- Uzkomnazorat holds regulatory enforcement powers related to internet governance. It will send an order to fix the violation to the offender, who must comply.
- If the company does not comply with the requirement, access to its website is made limited.

The access can be restored if the company localizes its servers and reports this to Uzkomnazorat.

Technical aspects: Telecom operators place technical means of countering threats with power supply in separate racks at their sites throughout the country, but do not have access to devices. Technical means of countering threats analyze all internet traffic (packets) of users according to a number of parameters and decide whether to allow it (by default), limit the speed (as applied to TikTok) or block prohibited sites.

Sources: Habr⁴¹; Spot.uz⁴²

---


Journalists and bloggers interviewed by the DECA team said that they and their colleagues do not generally feel threatened, persecuted or censored by government authorities. However, self-censorship is expected and widely practiced. All interviewees stressed that criticism of the President and his family and close associates is unacceptable; there is an unspoken agreement on this across society. Interviewees thought that in most cases where media and bloggers were targeted by the Government, it was on a local level and due to individual government managers’ fear that criticism could cost them their job and not systematic persecution by the State.

Overall, Uzbekistan’s digital ecosystem lacks organizations with sufficient funding, capacity and experience to effectively defend and advance internet freedom. International donor media programs — like OSCE’s activity to open dialogue between journalists, Parliament and executive ministries, and UNESCO’s activity to work with journalists, students, and journalism faculty to raise awareness of the existence and dangers of fake news — are slowly helping to improve the landscape.

2.2.2. GROWING ONLINE ENGAGEMENT, FOR BETTER AND FOR WORSE

Despite tight Government controls, the overall trend toward digital media is positive. The COVID-19 pandemic helped drive growth of online news outlets when some newspapers and magazines could not issue printed versions for several months. Readers have numerous online news options, including Anhor.uz, Daryo.uz, Gazeta.uz, Kun.uz, Repost.uz, Spot.uz and Uznew.uz. Women actively participate in the media as bloggers, journalists, and human rights activists. Among the top public activists named by the Yuxalish Movement and the Institute of Social and Economic Initiatives in 2019 were two women, Aziza Kurbanova and Aziza Umarova. Lola Islamova, the editor in chief at Anhor.uz, is a prominent independent journalist and opinion leader.

Citizen journalism is also on the rise. For instance, Abdufatto Nuritdinov’s YouTube channel Popular Control, which is produced in and focuses on news about the small provincial town of Asaka (pop. 110,000) has ratcheted up 19,000 subscribers and an impressive (almost) 4.8 million views of content since 2013. He reports on locally relevant topics, with recent videos focusing on housing and medical care. The Government reportedly responds to public criticism from bloggers on social media. Blogger Azamat Shamuzafarov, for example, criticized AIMK about the unavailability of certain websites. AIMK, at his request, investigated and provided a public response.

YouTube has close to ten channels in the Uzbek language that top a million subscribers. YangiKulgu, a comedy-entertainment outlet, is first with more than three million subscribers. The majority of the top 50 channels (by subscriber base) focus on entertainment, news, Islam, food, and individual celebrities. Notable exceptions are UzFact (382,000 subscribers/49 million views), which covers topics on science, technology and global issues, and MFaktor (280,000 subscribers/26 million views), which is dedicated to encouraging entrepreneurs and startups and helping them “understand “factors for success and failure.”

The number of social media users in Uzbekistan increased 44% from 2020 to 2021, reaching 4.6 million people by January 2021 (about 13.6% of the population). Current estimates for the number of Facebook users range from 1.3 to 3 million, two-thirds men and one-third women. Interviewees uniformly reported that Facebook has far fewer users than other platforms but that it is perceived as a space for serious discussions. At least some

---

45 Ibid.
Facebook groups are reportedly being used for grassroots organizing and mobilization by local and community activists.\(^{46}\) Instagram has an estimated 3.5 million users.\(^{47}\) About 120 influencer accounts have more than 500,000 followers, with the top ten influencers logging 1 to 3 million followers. Notably, all of the top ten influencers are based in Tashkent.\(^{48}\) Around 150 TikTok accounts have more than 250,000 followers.\(^{49}\) In fall 2019, the Government tried to capitalize on the global growth of social media to bring attention to Uzbekistan as a tourist destination by hosting the first (and only, to date) global “World Influencers Congress.”\(^{50}\)

Telegram is unrivaled in Uzbekistan among instant messaging apps. An estimated 18 to 19 million users in the country rely on the low-data demand, optimized mobile platform, with encryption protocols that allow for greater anonymization.\(^{51}\) The majority of Telegram users are under 35, 43% women and 57% men.\(^{52}\) According to one source, Telegram is more popular (per capita) in Uzbekistan than anywhere else in the world.\(^{53}\) It functions as news media, social media, e-commerce, digital marketing, political discussion forum, community-organizing, and government engagement/feedback platform. The Kun.uz news channel is most popular, with over 1.2 million subscribers.\(^{54}\) UNICEF uses its channel to reach more than 147,000 youth across the country with engaging information, educational programming, polling, and recruitment campaigns. UCELL reportedly charges $24 USD to run a single advertisement on channels with 50,000 or more subscribers.\(^{55}\)

The Government of Uzbekistan has unofficially adopted Telegram as the preferred platform for communicating with the population, despite the app’s reputation for being uncooperative with government authorities. The official @koronavirusinfouz channel has almost 1.5 million subscribers and has been actively used to share information and raise awareness of the disease, especially during the early days of the pandemic.\(^{56}\) Various bodies and officials on all levels of government have opened channels to share and gather information, including the

---


\(^{49}\) Ibid


\(^{52}\) Ibid


President’s Office, effectively using it as an informal feedback platform.\(^{57}\) Citizens generally see this as a positive development. Interviewees reported that these channels have been used effectively by citizens to call attention to corruption and abuse, especially on mid-management and regional levels of government. One reported story in 2019 led to the firing of a Deputy Minister of Agriculture.\(^{58}\)

While the rapid adoption of digital media has had many positive effects, Uzbekistan’s population may be more vulnerable than others to the downsides and risks of digitalization. Awareness within the general population of data rights and protections, cybersecurity risks, misinformation and disinformation, and online safety is very low. According to interviews, the Government has not prioritized raising the public’s capacity to understand, recognize and respond to these issues. Of the 86,679 “.uz” registered domains, only 12,500 have SSL security certificates.\(^{59}\) According to Kaspersky Lab Bulletin 2020, almost 11% of all users of online banking services were attacked in a single year by malicious software or viruses.\(^{60}\) Child online protection received some attention a few years ago when the online game “Blue Whale” allegedly encouraged suicide among some groups of teens;\(^{61}\) this led to the passage of a law on protecting children from information harmful to their health. However, there is no consistent, systemic approach to educating parents, teachers, youth, and civil society about online harassment, cyberbullying, and other such risks.

Religious extremism is also establishing a rising presence on popular digital platforms. During DECA interviews, independent female bloggers described feeling threatened and repressed by online bullying and harassment from religious conservatives. They noted the severe beating that progressive blogger Miraziz Bozorov received in March 2021, allegedly at the hands of an angry, religious mob. According to Viktor Mikhailov, Director of the Center for the Study of Regional Threats, an increasing number of young people are falling under the influence of Islamist recruiters through online channels. “Perhaps, in the general mass, the number of radically minded young people is not relatively high, but the sharp increase in their number, which we record in social networks, cannot but cause concern.” DECA interviewees noted that radical Islamic ideologues communicate in Uzbek, attracting attention due in part to the relative scarcity of other content in local languages. This may also make it hard for content moderators at global platforms like Instagram or YouTube to notice what’s going on – as they presumably do not have a lot of Uzbek-speaking staff.

### 2.2.3. CONTENT IS KEY

A critical issue for the development of Uzbekistan’s digital ecosystem is the lack of high-quality content in Uzbek, Tajik, and Karakalpak languages, especially professional, educational, and high-quality entertainment content. Local media outlets, journalists, and bloggers working in these languages in general lack skills for investigative journalism and data analysis. Many interviewees highlighted the lack of professional information and news about Central Asia, which hinders the opportunity to build regional identity. Activities including the USAID-funded Central Asia Media Program are important efforts to address this content need.

---


The country’s official, national language is Uzbek, recognized as the native language of about 80% of the population. The use of different languages varies by region. In Tashkent and Navai, the main language is Russian, and Russian is the lingua franca for IT and business-related content. Approximately 4.8% of Uzbekistan’s population is ethnically Tajik and speaks Tajik as a first language. In the Republic of Karakalpakstan, where 2.2% of the country’s population is concentrated, the main language is Karakalpak.

Most national-language (Uzbek) content is entertainment; there is a great need for educational content in Uzbek, Tajik and Karakalpak. In response, some public figures, business representatives, and companies are launching projects to create content in Uzbek. For example, the MFaktor channel was launched by Uzbek businessmen to promote business content in the Uzbek language. UZCARD launched its podcast PRO FINTECH about fintech and digitalization. Content in Tajik is mostly developed in Tajikistan.

During the COVID-19 pandemic lockdown, TV lessons for students were broadcasted via UzDigital TV, cable, and IP-TV for students in first through eleventh grades. Lessons were held in Russian and Uzbek, and in Karakalpak for residents of Karakalpakstan, accompanied by sign language interpretation. However, most of the video content was distributed through high-data demand platforms such as YouTube, creating additional access gaps for people outside Tashkent who rely on more affordable, low-data demand mobile internet access via smartphones. The One Million Coders portal and the Udacity platform were localized into the Uzbek language.

**FIGURE 11: Major Ethnic Groups in Central Asia**

---


2.2.4 DIGITAL GOVERNMENT CHALLENGES AND SUCCESSES

The Government has made important progress in digitizing public services, providing digital services to citizens, and implementing digital solutions within government bodies.\(^{65}\)

Despite the Government’s strong commitment to digital government transformation, the implementation of reforms remains challenging and unsystematic. The major obstacles to the effective transformation include digital infrastructure gaps, lack of financial resources, an inadequate legal and regulatory environment, institutions with overlapping and often competing mandates, and a siloed approach to the development and implementation of related programs and projects. Inadequate baseline data on the current state of digital development further impedes effective monitoring and evaluation of adopted strategies and policies. The government lacks efficient mechanisms for financing, planning, monitoring, and evaluating digital projects. In addition, government’s limited engagement with the private sector and civil society organizations, lack of donor coordination, and inadequate digital skills among government employees often result in the duplication of efforts and an ineffective use of resources. Lack of public trust in digital technologies and online services, poor digital literacy and public awareness, the growing digital divide between urban and rural populations, and the digital exclusion of women, the poor, and people with disabilities further hampers the digital transformation reforms.

**BOX 3: Digital government vs. e-government**

*Digital government* refers to the innovative way of using digital technologies as an integrated part of governments’ modernization strategies to create public value with active engagement of government actors, non-governmental organizations, businesses, citizens’ associations and individuals.

*E-government* refers to delivering services online and achieving operational efficiency.

*Source: OECD*

**Digital government vision and strategic priorities.** The Digital Uzbekistan 2030 Strategy highlights the critical role of the digital government for improving public service delivery, efficiency, transparency of governance and facilitating digital inclusion and stakeholder engagement. To increase the share of digital public services to 60% by 2022, the government aims to create and integrate state information systems and resources, unify information in state databases, and optimize and streamline procedures for the provision of public services. In 2020, only 30% of more than 700 information systems in government agencies are connected to the “electronic government.”\(^{66}\) One deputy head of each government agency will serve as Chief Digital Officers and be responsible for digital transformation. The project initiated by the MITC, jointly with the Ministry of Justice, will digitize all administrative procedures and automate interagency communication processes. It aims to eliminate paper-based operation, ensure openness and transparency of activities, and improve delivery of public services. The government also plans digital skills development and IT certifications for civil servants.

---

\(^{65}\) To grasp the reach of digital government services, it is useful to understand the governmental structure in Uzbekistan. See Appendix A for an overview of this structure.

The 2020-2022 roadmap defined the following priorities for digital government transformation:

- Establishment of the Digital Tashkent program to manage city services and creation of an integrated information environment for social facilities, industrial, road transport and communal infrastructure.
- Extension of the Open Data Portal with information on public procurement, registration of patents, medicines and medical products, public transport traffic, and land use.
- Unification of an e-government billing system: an online payment and monitoring options for individuals and legal entities to pay all state taxes, fees, fines and other mandatory payments.

**Leadership and institutions for digital government.** The top-level leadership for the digital government transformation is provided by the Cabinet of Ministers. The Coordination Commission for the implementation of the Digital Uzbekistan 2030 Strategy conducts monthly hearings of reports by government leaders and local executives on the implementation of the digital transformation initiatives, regional and industrial programs, and adopted roadmaps. It also considers new projects and, if necessary, introduces changes to the digital transformation programs and roadmaps of the organizations, regions, and industries. Together with regional authorities, the Coordination Commission formed regional working groups to drive the implementation of digital transformation road maps in 29 pilot cities.

MITC is authorized to provide strategic directions to government institutions, supply technical and legal support, and ensure inter-agency coordination for digital government and implementation of the Digital Uzbekistan 2030 Strategy. The Minister assesses the state of digital adoption across the government agencies, organizes the hearing of reports of deputy leaders on digitalization on an ongoing basis and submits monthly reports to the Cabinet of Ministers on the implementation of the Strategy, programs, and roadmaps, as well as departmental digital transformation programs. The ambitious transformation the Government wants to introduce in a relatively short time frame, as well as a lack of resources and need for more diverse expertise, hinder the capacity of government bodies to work together, analyze best international practices, and introduce future-proofed initiatives.

The e-Government Project Management Center was established under the MITC by Presidential Decree on April 28, 2020. The Center provides organizational and methodological support for the implementation of e-government projects, and coordinates development and integration of information systems, information resources and databases across government agencies. The Center conducts regular surveys on satisfaction with online public services among businesses and citizens and makes their results publicly available.

The government authorities at the national and regional level are involved in the development and implementation of relevant programs and projects, and report quarterly. According to an April 2020 Presidential decree, one of the deputy heads of all ministries and departments has been assigned as the relevant Deputy Head of Digital Responsibility and served as CDO. Their major responsibilities include:

- Developing and implementing, in a timely manner, departmental digital transformation programs and widespread adoption of information systems and resources
- Creating the conditions necessary to further expand the provision of electronic public services through mobile devices and other forms of electronic interaction

---

68 Ibid
Taking measures to ensure openness and transparency of the activities of agencies, the placement of open data, and other information on the internet

Ensuring the information security of the departmental digital infrastructure, as well as the protection of electronic data and documents.

UZINFOCOM is assigned as the single integrator for the development and support of government information systems and the technical operator of the e-Government Data Center.69

The Public Services Agency, established under the Ministry of Justice in 2017, is responsible for public services delivery to individuals and legal entities. The Agency launched 201 district Public Services Centers, including 48 branches in remote areas. The Public Services Centers serve as one-stop shops for traditional public services. The research team visited the Public Services Centers in Nukus and Bukhara, which were modern and organized.

The Centers also help with access to online public services via the government services portal, called the “Unified Portal of Interactive Public Services” at my.gov.uz.70 Portal services are divided between citizen and business services. The portal has a mobile app application and official accounts on Telegram, YouTube, Facebook and Instagram. The information on the portal is available in Uzbek and Russian languages. The Public Services Agency conducts regular online surveys on public service and publishes the results on their official social networks.71

**International cooperation and donor support.** The Government’s digital transformation is supported by various donors, international development organizations and countries. The recently completed “Public Administration Reforms and Digital Transformation” project was supported by UNDP.72 It helped to improve delivery of public services with greater accountability, transparency, and responsiveness to citizen’s needs and to ensure better access to legal information. UNDP reaffirmed the organization’s commitment to support the country’s people-centered, “green,” and resilient development, particularly in the wake of the COVID-19 pandemic. The ongoing EU-funded project “Improved Public Service Delivery and Enhanced Governance in Rural Uzbekistan”73 provides support to the Government of Uzbekistan to develop people-centric public service delivery and strengthen the local governance system in addressing environmental, social, and economic concerns. The project also supports the country’s digitalization processes and facilitates online service delivery during the COVID-19 outbreak. The World Bank provides analytical and expert support and capacity building for the development of the open data ecosystem.

Uzbekistan strengthened cooperation with Estonia in electronic government and digital development, focusing on improvement of online public services, mechanisms for inter-agency online interactions, and training of government employees.74 The Korean Government has been actively supporting e-government development in Uzbekistan for many years. In 2020, the Uzbek-Korean Center for Cooperation on e-government and the

---


71 Social accounts may be found on Facebook: [http://t.me/davxizmat](http://t.me/davxizmat), Telegram: [https://www.facebook.com/davxizmat/](https://www.facebook.com/davxizmat/). Accessed October 19, 2021.


The digital economy was established in Tashkent. The German Society for International Cooperation (GIZ)-funded project “Environmentally-oriented Regional Development in the Aral Sea Region” supports Uzbekistan and Kazakhstan in addressing climate resilience and agriculture development.

The Digital Uzbekistan 2030 Strategy identified priority initiatives to be implemented in cooperation with other countries to enhance digital government in various sectors, including: enhancement of public services delivery and development of “smart justice” with Estonia; “smart tourism,” “smart agriculture,” and “e-healthcare” initiatives with Turkey; “smart energy,” and “safe city” with Germany; “smart customs” with Singapore; “open data” with the UK; “digital education” with Finland; and “digital archive” with China.


**Capabilities, culture, and skills.** The most pressing challenge to advancing digital government development in Uzbekistan is the inadequate capacity of government staff in digital skills. The resolution of the Cabinet of Ministers on additional measures for further training and skills of employees of state and economic management requires government agencies to assess the ICT skills and qualifications of their employees and support certification activities. However, due to a lack of training programs and resources, the government workforce is unable to continuously acquire digital skills. The growing public demand for people-centric online and mobile services requires innovative approaches to developing digital skills.

**Government online services (my.gov.uz portal).** The Government of Uzbekistan is improving public service delivery by leveraging digital technologies. Currently 270 online services are available for businesses and citizens via the unified portal at my.gov.uz. The portal has been operating since 2013 and serves as a single point of access to online services provided by government agencies. Among the most popular online services for businesses are those related to issuance of digital ID for online services (OneID), online business registration, tax reporting and payments, licenses and permits for business activities, cadaster, customs, government procurement, investor relations, and access to potential foreign markets to export fruits and vegetables. The most popular online services for individuals include those related to issuance of digital ID for online services (OneID), medical appointments, pension, social security, employment, utilities, registration of real property rights, and cadaster. The Government plans to increase the number of available online services through the portal to 300 by the end of 2021.

**OneID system for user authentication.** Aiming to simplify access to online services provided by government agencies, the MITC implemented the Unified Identification System “OneID” as a single sign-on authentication. According to MITC, the system provides users with secure access to multiple public services on the government portal. Users do not need to create separate accounts for different services or government websites and can register OneID accounts without visiting any government agency in person. After the registration in the

---


Unified Identification System, users confirm their personal account using digital signature keys. At this stage, the government is implementing interoperability of OneID systems with ID card registers and biometric identification.

**Digital signature.** To ensure more secure access to online transactions, users can use digital signatures. Individuals and companies can apply for digital signature service through the government services portal.\(^80\) They can access them online from the Registration Center\(^81\) or at Public Service Centers in the form of an electronic document with a private key and corresponding certificate. According to interviewed experts, the Government recently introduced smart cards with embedded digital signatures.

**BOX 4: Digital signature vs. electronic signature**

*Electronic signature* refers to verification applied to a document electronically vs. a signature on a physical piece of paper.

*Digital signature* requires a digital certificate from a certificate authority (CA) to vet a user’s identity. The certificate is bound by cryptography to the signed document, creating a unique digital fingerprint. Digital signatures also embed a public key infrastructure (PKI) into the signing process. PKIs generate two keys — one public and one private — to identify the signer and the entity requesting the signature. Both the digital certificate and PKI provide stringent identification and security for sensitive legal documents.

**Electronic payments for online public services.** Individuals and organizations can make electronic payments for online public services.\(^82\) The single online billing system integrates digital payment solutions such as PayMe, Upay and Click. The interviewed experts project that 8.5 million online payment transactions will be made by mid-2021.

**Mobile applications for government services.** The Government launched the mobile application myGov in 2020 to give access to electronic government services,\(^83\) but only 36 public services out of 270 online services are available to citizens and businesses from this app. Users can get notifications about the status of their applications. According to the experts, the Government committed to provide access to 100 mobile services by the end of 2021. To ensure secure access to government online services via mobile devices, the Government is planning to implement Face ID.

**Uptake of online government services.** To improve uptake of online services, the Public Services Agency introduced incentives for citizens, such as discounted payments for online public services and a 50% refund for delayed online services. The employees of PSCs also serve as intermediaries to teach the population how to access e-government services via the portal. However, many public services related to citizens, including passport issuance, are still provided only offline.

During the COVID-19 lockdown, online public services became more essential than ever. Current statistics at the government services portal show that 738,600 people are registered users. The number of applications for online services directly via the portal increased from 2.6 million in 2020 to 4.3 million by September 7, 2021. The number of applications received through PSCs increased from 4.4 million in 2020 to 5.3 million by

---


September 7, 2021. The total number of applications for online services increased from 7 million in 2020 to 9.6 million by September 7, 2021.

At the same time, analysis of information gathered from the desk research and interviews with stakeholders shows that receiving online government services is still bureaucratic, with frequent office visits, duplication of requested paper documents, long processing time, complex complaints processes, lack of coordination among public agencies, and inconsistencies in data held by public institutions.

**BOX 5: What are people-centric public services?**

“People-centric” means taking the needs and voices of people into account when designing, delivering, and evaluating public policies and services. Governments can do this by directly involving citizens in decision-making processes and by collecting and analyzing data that can be used both to evaluate the performance of policies and services against people’s needs and expectations and to anticipate these needs. Broadly, a people-centric approach is one where governments consult citizens about their needs and encourage their direct participation in policymaking and service design and delivery.

(Source: OECD)

Despite the growing number of online applications for public services during the pandemic, the uptake of online government services, especially by women, is still low. Only about 32% of users are women. This stems from cultural norms, whereas men (especially in more socially conservative regions) tend to interface more with government service providers.

Ongoing awareness-raising and digital literacy efforts are not systemic. Although the Government provides users with feedback mechanisms for online services, there is little evidence that the feedback is used for improving online services. Special programs are needed to improve access to online government services, especially for rural populations, marginalized groups, and people with disabilities. In addition, mobile services highly relevant for women such as applications for maternity leave, application for childcare subsidies, and vaccination services for children, are yet to be developed.

**Digital transformation of municipal services.** Citizens can get information about municipal services and supporting regulation at the portal of municipal services [www.ek.uz](http://www.ek.uz). They can also ask questions about Homeowner Associations (HOAs), utilities, and utility payments. The portal shows statistics on citizen queries submitted during the year, how many have been addressed, and how many are delayed. However, the portal doesn’t provide information on types of queries, categories of users, regions, and municipalities. There is limited information on utility payment options.

The Government has committed to implement the “Digital Tashkent” initiative. The integrated online system for municipal services will include public transportation, healthcare, education, online payments for utilities, and a new unified information system “My Home.” The following services have been already implemented: the Unified Information System for the online purchase of electronic tickets for aviation, railway and other transport services, and the Unified Information System for student grading and report cards in electronic form. The Unified Information System “Mening Uyim” is being introduced for online payment for utilities (natural gas, electricity, drinking water, and hot water).

---

84 “Towards People-Centric Public Services.” 2019. OECD Government at a Glance 2019. [https://www.oecd-ilibrary.org/sites/6c26b0ba-en/index.html?itemId=/content/component/6c26b0ba-en](https://www.oecd-ilibrary.org/sites/6c26b0ba-en/index.html?itemId=/content/component/6c26b0ba-en).

During the COVID-19 pandemic in 2020, the government, together with the administration of Tashkent, launched the mobile self-safety application to notify users of possible contact with a COVID-19-infected person. The application was developed based on the successful experience of South Korea, Singapore, Israel, Italy, and France.

**Government information systems and digital infrastructure.** The departmental information systems are used for managing customs operations, taxation, financial management, land and real estate properties, commercial registration, and social services, among others. The government has implemented a single system for e-document flow and a secure email system. It is expected that the e-Government Center, jointly with UZINIFICOM, will develop an integrated system for informing and notifying citizens about e-government services and the government organizations that deliver the services.

The interdepartmental integration platform was implemented to improve data sharing among government agencies and enable seamless delivery of online services. An April 2020 Presidential decree obliges government organizations to interact exclusively through the integration platform for all information systems and resources used for public services. 124 web services of 110 state information systems are connected to the platform, and more than 475 million requests were processed in 2020.

Work is underway to modernize the integrated platform and transfer it to a new architecture. The next version of the platform should enable direct communication between government agencies and entrepreneurs.

However, according to the interviewed experts, only 30% of 700 government information systems are currently connected to the integration platform. The government agencies mostly continue to work in a siloed manner and lack capacity and financial resources for integration of databases and digital systems. Mid-level managers have little knowledge or understanding of the benefits of digitalization. Bureaucratic culture is fearful of innovation and change. Government entities lack experienced leadership who can drive internal reforms.

**Government data management.** According to information gathered from desk research and field interviews, most government authorities and agencies in Uzbekistan still share departmental data based on bilateral agreements (agency to agency). The data exchange between government institutions remains ineffective due to fragmented regulatory frameworks, lack of system integration, and poor data governance. While demand for evidence-based policies and services is growing, government capacity for data management, data sharing, and data analytics remains weak.

The Government of Uzbekistan launched an open data initiative in 2015, with the support of the donor community, and has been promoting open data through regulation and awareness-raising campaigns. The World Bank has been supporting a government program on “Capacity building and implementation for the development of the open data ecosystem” since 2019. Currently, 130 public institutions release data on the open government data portal.

However, the government authorities still show considerable resistance to open data in practice. Lack of clear guidance on the level of disaggregation, data anonymization, and fees creates regulatory barriers that often result in data access denial. Lack of available tools for data analysis have led to limited use and reuse of available open data.

---


Consolidation, simplification, and harmonization of existing legal and regulatory frameworks is needed to reduce barriers to using open data by citizens, companies, and organizations. The government also needs to involve stakeholders and potential users in identifying priority areas for open data. This will help the project to achieve its intended impact: to significantly enhance the transparency and accountability of public administration, provide opportunities for participatory governance, and create new services for citizens and businesses.

Public participation and citizen engagement. Uzbekistan has been gradually improving citizen engagement and participatory governance through online tools. The government created a single platform for public initiatives (e-petitions portal) and various channels for public discussions on upcoming legislation and regulations. Citizens and businesses can file complaints via the “Virtual Office” of the President of Uzbekistan. Government authorities and organizations are required by Presidential decree (“On the radical improvement of the system for raising legal awareness and legal culture in society”) to provide public communication channels on social networks. However, there is limited data on how actively citizens use these digital instruments to provide inputs on public policies, decision-making, and service delivery.

To facilitate engagement of citizens and organizations and to improve transparency and accountability of the government institutions, the Government implemented the Open Government Data portal, the Open Budget portal, and the Government Procurement portal among other online instruments.

Engaging the IT Park. The Government is engaging the IT Park and its resident businesses in developing digital solutions for the public sector. According to the Presidential decree from April 28, 2020, government organizations can conduct competitions exclusively among residents of the IT Park for the development, implementation, integration, and technical support of information systems and software products with a total value of up to one billion soums. Interviewed experts, however, indicated that this mechanism of collaboration with the domestic private sector remains not sufficiently utilized.

Digital government progress in global benchmarks. The 2020 United Nations e-Government Development Index shows that Uzbekistan has improved its performance in digital government development in recent years (Figure 12). According to the Index, Uzbekistan has significantly improved online service delivery despite moderate infrastructure development and human capacity.

---

According to the OECD anti-corruption reform monitoring report, Uzbekistan’s efforts to enhance public services via digital technologies has had a positive anti-corruption effect. Uzbekistan scores 44th out of 187 countries on the Open Data Inventory 2020 ranking.

The latest government efforts to encourage public participation and citizen engagement in governance have been reflected in relevant global indices. According to the e-Participation Index by the 2020 UN e-Government survey, Uzbekistan’s average scores are higher than global, regional (Asia), or sub-regional (Central Asia) scores (see Figure 13).

Source: UN, 2020

The E-Participation index (EPI) is a supplementary index to the UN E-Government Survey. It assesses how governments enable participation by providing citizens with public information and access to information without or upon demand (e-information), engage citizens in contributions to and deliberation on public policies and services (e-consultation), empower citizens through co-design of policy option and co-production of service components and delivery modalities (“e-decision making”).
Cybersecurity. Uzbekistan’s Cybersecurity Center and UzCERT provide services for government agencies. These include examination of state information systems for compliance with systems and information security requirements, information security audits, and services for the recovery and destruction of digital data from electronic storage media. But the absence of a national cybersecurity strategy and lack of regulations means the country lacks a unified cybersecurity system and legal framework to protect critical infrastructure from cyber attacks. Moreover, there is no definition of the rights and obligations of state bodies, enterprises and organizations and the coordination of their activities. In the public sector, there is a need for cybersecurity talent, as well as an increase in overall cyber hygiene among public servants.

2.2.5. REGIONAL SNAPSHOTs

The Autonomous Republic of Karakalpakstan, Digital government: Within the framework of the Digital Uzbekistan 2030 Strategy, the government plans to expand digital infrastructure in public organizations of Karakalpakstan, introduce information systems in public administration, and improve the use of interactive public services by individuals and legal entities. For example, the government plans to expand services in the district post offices to create additional access to interactive public services. Government plans for the pilot introduction of the system in 13 mahallas and its further full implementation in the region.

Bukhara region, Digital government: Under the Digital Uzbekistan 2030 Strategy, the Bukhara region will implement a range of initiatives aimed at digital transformation of public administration. Key initiatives include introduction of a single information system mahalla in the region and the connection of local executive bodies leaders to the electronic system “e-Decision.”

Namangan region, Digital government: The Digital Uzbekistan 2030 Strategy plans to further develop information systems in public administration of the Namangan region. The list of initiatives includes implementation of the automated information system for outdoor lighting control, developing an e-guest information system, and others.

Source: UN, 2020\(^{(101)}\)

---

2.3. PILLAR 3: DIGITAL ECONOMY

Digital Economy This pillar explores the role digital technology plays in increasing economic opportunity and efficiency, trade and competitiveness, and global economic integration. This pillar assesses the opportunities and barriers to adoption of digital financial services, e-commerce, and digital trade. It also examines strengths and weaknesses in the local digital talent pool and the tech startup environment.

KEY TAKEAWAYS:

<table>
<thead>
<tr>
<th>DIGITAL ECONOMY</th>
<th>RELEVANT RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Widespread reforms are building a foundation for a digital economy, but the reforms are mostly top-down and state-led</td>
<td>1. Stimulate the development of digital finance, e-commerce platforms, and digital adoption across economic sectors</td>
</tr>
<tr>
<td>• Digital financial services are evolving, but the market is lacking management competencies and digital financial literacy</td>
<td>2. Support the digital startup ecosystem</td>
</tr>
<tr>
<td>• E-commerce is developing on the local market, but uneven in cross-border trade</td>
<td>3. Invest in digital entrepreneurship and the IT talent pipeline</td>
</tr>
<tr>
<td>• The digital startup ecosystem is nascent and largely driven by government-backed entities</td>
<td></td>
</tr>
<tr>
<td>• The drive for digital transformation across all sectors of the economy is resulting in high unmet demand for digital and IT talent</td>
<td></td>
</tr>
</tbody>
</table>

INTRODUCTION

Over the past four years, widespread reforms in Uzbekistan have driven a rapid transition toward a more digital economy, led by the banking and financial services sector. The COVID-19 pandemic has helped spur needed cultural changes that have led to increased use of digital technologies and digital services, accelerated the growth of e-commerce, and focused attention on digitalization in different sectors of the economy. Still, crucial challenges persist that hinder further development, most notably the lack of IT skills and digital literacy among the population, and insufficient capacity of government officials and top management to support the transformation. This includes a lack of effective mechanisms for engaging the private sector — arguably a legacy of Uzbekistan’s Soviet past.

2.3.1. REFORMS FOR THE DIGITAL ECONOMY

Uzbekistan’s economy has become more open and market-oriented since the launching of widespread liberalization reforms in 2017. The potential of private entrepreneurship was unleashed, contributing to the annual growth of real GDP from 4.5% in 2017 to 5.6% in 2019. The COVID-19 pandemic showed that the economy remains resilient to shocks. While GDP growth slowed to 1.6% (estimated) in 2020, it is expected to rebound to 6.2% in 2021, thanks in part to continuing reforms and pandemic management.¹⁰² Several important digital economy-related Presidential acts, programs, strategies, laws and regulations have been proposed or passed related to

the government’s institutional framework. President Mirziyoyev has expressed a vision to increase the share of the digital economy in overall GDP from the current 2% to 30%, through ongoing reforms.\textsuperscript{103}

Three priority areas of the Digital Uzbekistan 2030 Strategy focus on these efforts: digital economy; national IT sector; and IT education. The digital economy pillar calls for the adoption of more than 400 IT services in different sectors of the economy, the introduction of disruptive technologies, the digital transformation of banks and financial organizations, and the development of e-commerce and e-payments systems. The national IT sector pillar envisions “smart” solutions and alternative financial models. The IT education pillar includes training more than 580,000 people in computer programming as part of the “One Million Coders” and “IT Nation” initiatives, and improving digital literacy and information security by government employees at various levels.

Uzbekistan has made a lot of progress in the past three years. Two Presidential decrees in 2018\textsuperscript{104} established the institutional framework to help drive the development of the digital economy and identified digital transformation as one of the key government priorities. They served as a foundation for the Digital Uzbekistan Strategy.

Digital Financial Services were identified as a strategic area in the E-Commerce Development Program for 2018–2021 (ECDP), including improving the enabling environment by easing the ability to receive payment for third parties and promoting electronic payments.\textsuperscript{105} As a result, the “Law on Payment and Payment Systems” was passed in 2019, which has been key to the development of the digital financial services sector. In addition to the law on payments, the Central Bank approved the “Rules for the Issue and Circulation of Electronic Money in Uzbekistan.” These two regulatory acts introduced important concepts of payment institutions and agents as entities providing payment services and electronic money, including e-wallets. In July 2021, the Coordination Council for the implementation of the National Strategy for Increasing the Availability of Financial Services approved the National Strategy for Increasing Financial Inclusion for 2021-2023 (the Financial Inclusion Strategy), developed by the Central Bank of the Republic of Uzbekistan and the World Bank, with the main goal to create a dynamic, innovative, and inclusive financial system.\textsuperscript{106} However, during fieldwork, interviewees expressed concern that the private sector was barely involved in developing the Financial Inclusion Strategy and may not be involved in its implementation.

In the field of e-commerce development, ECDP prioritized regulatory ecosystem and infrastructure development to grow the e-commerce sector.\textsuperscript{107} However, efforts in 2019 to update Uzbekistan’s 2004 Law on Electronic Commerce did not succeed. Under the Future Growth Initiative, USAID proposed recommendations for e-commerce regulation improvement in Uzbekistan based on global best practices that can be used to strengthen changes into the Law on Electronic Commerce.


\textsuperscript{104} “On measures of further improvement of information technologies and communications sphere” and “On measures to develop digital economy in the Republic of Uzbekistan”


Despite the fact that the Digital Uzbekistan 2030 Strategy prioritized digital economy development, it does not emphasize the startup and venture capital ecosystem, leading to a lack of effective regulation in this area. A draft law “On Startups,” was to be adopted by the end of 2020, but has been delayed by bureaucratic constraints. The draft law defines several concepts, but it does not appear to be aimed at involving the private sector.

In 2018 and 2019 two regulatory acts encouraged the creation of investment and management companies to attract investment, primarily from foreign investors and introduced a list of priority innovations, and experimental start-up projects recommended by the Ministry of Innovative Development for venture financing. In 2020, the government established the National Venture Fund “UzVC”. The adopted regulations provided an important stimulus for venture capital development, but missed important provisions to involve the private sector, and did not meet international venture fund standards.

In general, the country’s regulatory framework is missing key provisions to: stimulate private investment and private sector participation in startups; protect the rights of venture capitalists; allow local investment and VC funds to invest in foreign startups; permit convertible loans, options, and crowdfunding; update contracting rules that align with the operating realities of startups and venture funds; simplify procedures for closing a company; regulate investment in foreign companies and funds, and provide rules for chartered capital increases, as well as for the distribution of risks and risk insurance. Revision and adoption of the current draft laws “On startups” and “On limited partnership” with necessary changes could solve these problems.

### 2.3.2. EVOLVING DIGITAL FINANCIAL SERVICES

The fintech market came to life in 2004 when several state-controlled banks created the Common Republican Processing Centre of Uzbekistan (CRPCU). The first real fintech player was Paynet in 2005. In 2017, reform of the financial sector began, which pushed the development of fintech and digital financial instruments. Yet, a national payment gateway still does not operate in the country. Interviewees noted that the Central Bank of the Republic of Uzbekistan is interested in introducing a gateway to the market and currently is analyzing international experience, but the DECA team did not find any mention of this work in the media.

The law “On payments and payment systems,” adopted in 2019, defined the roles of players in the digital finance ecosystem and introduced the concept of e-money. It was a very important development for the sector. The COVID-19 pandemic has impacted the payments market and consumer habits: the increased demand for remote payments for services and goods has become a powerful catalyst for the development of digital financial services. However, the market still lacks digital financial inclusion, management capabilities, and overall digital financial literacy among the population, especially in rural areas to conduct a successful digital transformation of the financial sector, the government needs to ensure cooperation with the private sector.

**Digital financial service penetration and inclusion.** According to the 2020 IFC Report, *Enhancing Financial Capability and Inclusion in Uzbekistan*, 36% of surveyed adults in Uzbekistan report having an account at a formal financial institution. In this, Uzbekistan lags behind the average levels of account ownership compared to other European and Central Asian (ECA) economies. Thirty-two percent of respondents reported using some type of debit, credit, or salary card (the most widely used payment card was UZCARD at 86%). The main instruments

---

108 Presidential decree “On additional measures to improve the mechanisms for financing projects in the field of entrepreneurship and innovation” and the Cabinet of Ministers resolution “On the activities of investment and management companies.”


110 National payment gateways allow smooth and safe interoperable work of national and international payment systems. They can also improve consumer protection by safeguarding customer transaction data in each transaction.
for digital payments are bank-issued debit cards.\textsuperscript{111} Twenty-three percent reported using mobile payment service applications such as Click or PayMe.\textsuperscript{112}

The population continues to distrust digital finance and prefers to make payments and keep money in cash. This is especially noticeable in regions where people line up at ATMs on the weekend to withdraw cash. The 2020 IFC report finds that 78\% of respondents keep savings at home in cash, compared to only about 10\% who reported saving in formal financial institutions.\textsuperscript{113} In 2019, the size of Uzbekistan’s informal economy (as a percentage of “official” GDP) was 52\%, the highest in Central Asia.\textsuperscript{114}

The same report shows significant variation in financial inclusion across regions and in rural vs. urban areas. Forty-three percent of respondents in urban areas reported having a bank account, while only 27\% of respondents from rural areas did. Digital financial services offer an opportunity for reaching the financially-excluded and underserved segments of the population, particularly in remote regions and communities.

While IFC highlighted a low gender gap in transaction account ownership among the respondents, male respondents reported using mobile payment-service applications more frequently than their female counterparts (26\% vs. 20\%). The same disparity was observed in the use of payment-service applications by urban residents compared to their rural counterparts (29\% vs. 16\%) (see figure 14).\textsuperscript{115} While the low level of financial inclusion is more pronounced in rural areas, financial institutions concentrate their operations in or around urban centers. Though the Financial Inclusion Strategy aims to increase access to financial services for low-income citizens living in rural areas, it is not clear how digital financial services will be used to accomplish this task.

\textbf{FIGURE 14: Account ownership (including payment cards, mobile payment service application accounts)}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{chart}
\caption{Account ownership (including payment cards, mobile payment service application accounts)}
\end{figure}

\textit{Source: IFC Financial Capability Survey, 2020}\textsuperscript{116}

\begin{itemize}
\item \textsuperscript{116} Ibid.
\end{itemize}
Digital financial service providers. Currently, digital payment services are provided by UZCARD and HUMO interbank payment systems, 32 commercial banks, and 29 licensed payment organizations (fintech companies) that have developed mobile payment apps. Commercial banks issue bank cards on the UZCARD and HUMO payment systems, expanding the infrastructure of these payment systems. Even though there were 23.7 million active bank cards in Uzbekistan by the beginning of 2021, they were only held by 7-8 million unique cardholders. More than 438,400 payment terminals were issued to around 300,000 unique points of sale (POS), and about 11,800 ATMs.117 Most POS have more than one terminal, but UZCARD and HUMO announced integration of the payment systems by the end of 2021, which will allow use of cards issued by both payment systems in one terminal. The number of users of digital bank services grew significantly over the past three years (see figure 15).

FIGURE 15: The number of digital bank services users

As of 2019, HUMO and UZCARD have been successfully integrated with Visa, Mastercard, Union Pay International, and Mir international payment systems. This improves access to international e-commerce platforms for the local population and increases the confidence of international tourists who can use their bank cards to pay for local services and goods.

As of today, almost all of Uzbekistan’s 32 banks offer online banking services. All banks have mobile apps for individuals, and 20 banks have mobile apps for both businesses and individuals.119 Two banks took their apps even further: JOYDA by UZPROMSTROYBANK also works as a marketplace and Apelsin by Kapitalbank was turned into a bank’s digital branch.120

However, the implementation of fully-fledged digital banks requires regulatory changes and technology adoption of remote identification (verification of a customer’s identity using digital authentication tools), as well as consumer education. Some digital banks, such as Anorbank and TBC UZ, have already started developing the

---

culture of digital banking. The banks in the country prefer to integrate the latest technologies such as biometric identification.

More than 20 business entities have become licensed payment services organizations since 2019, including OSON, CLICK, E-CARD, Wooppay and Alifmobile. They can issue e-money and operate as electronic money system operators. During field interviews, the expert estimated that in 2020, more than 1.5 million electronic wallets had been opened in Uzbekistan, but most of the transactions from these electronic wallets were for mobile services’ payments.

**BOX 6: Digital wallets, e-wallets and mobile wallets**

“Wallets” are one of the most popular digital payment methods, providing both buyers and sellers with a streamlined payment experience.

**Digital wallets** are technologies that electronically store credit card numbers, debit card numbers, or loyalty card numbers on the cloud. The money stays in the user’s bank or credit card account. A digital wallet keeps details to make transactions easier. With digital wallets such as Google Pay, Masterpass, and Visa Checkout, available in the US and European markets, one can go not only cashless, but also cardless. Wooppay Uzbekistan is launching the country’s first digital wallet.

**E-wallets (such as CLICK and Payme)** are prepaid wallets that require money to be loaded prior to any transaction. The e-wallet can either be accessed on the e-wallet’s website or applications via laptop, tablet, or phone. Some e-wallet functions include storing credit and debit card information, storing funds (e-money), keeping coupons or loyalty credits, enabling payment for purchases at physical or online stores, and peer-to-peer transfer.

**Mobile wallets** can be installed on phones as an application and allow “tap to pay” in stores, often using Near Field Communication (NFC) technology. With a mobile wallet, a user typically pays by tapping a terminal or scanning a QR code with a smartphone or device such as a smartwatch or fitness tracker. The DECA team could not identify examples of mobile wallets in Uzbekistan at this time.

Sources:


**Digital financial literacy and management capabilities.** Overall, the increased penetration of smartphones, improved accessibility and affordability of the internet, and the proliferation of online banking services and mobile payment apps make financial products and services more available to historically disconnected segments of the population. However, during interviews of digital finance sector players, respondents emphasized the low digital financial literacy of the population, including around topics of financial planning and information security. They noted that the penetration of digital financial services is hampered by a lack of understanding. Low digital financial literacy is exacerbated by public distrust of financial institutions and low overall digital literacy. Financial institutions have responded with education efforts. For example, TBC bank opens public locations where bank employees explain how to install and use the bank’s app as well as teach customers the basics of digital security.

**The financial sector is dominated by state-owned institutions.** The 13 state-owned banks accounted for 86% of the total sector assets and 90% of overall credit in 2019.121 The Government intends for the digital financial sector to become more competitive.

---

transformation of all banks to be complete by 2022, offering a variety of online services, credit products, and the ability to remotely open and make deposits into accounts. However, during interviews, the respondents highlighted the lack of management knowledge and experience among financial sector management, especially in state-owned banks. The sector reforms should include massive education of management and the adoption of international best practices.

**Needs for further development.** Overall, policymakers in Uzbekistan recognize the importance of developing digital financial services. The Financial Inclusion Strategy calls for “development of digital financial services by creating favorable conditions for new fintech companies to enter the market, introducing a remote identifications system, and modernizing the national payment system.” To succeed with reforms, the Government needs to cooperate and engage with the private sector. Together, they can address the main regulatory, technological, cultural, and digital literacy obstacles. Regulatory changes could promote competition in the payment services market. Updated regulations could also free the market to address inadequate or non-existent information security practices and develop remote identification systems needed to expand access to digital financial services. Public confidence in digital payments needs to be improved through education programs on financial literacy and information security. Developing local experts who can help design and implement reforms that are responsive to Uzbekistan’s market are critical.

**BOX 7: Uzbekistan at the leading edge of innovation: ATTO**

Uzbekistan’s transportation sector is actively adopting cashless payment. A unified automated payment system, known as the ATTO card, was launched in the Tashkent public transport system in 2020. ATTO was established in 2019 on the initiative of the Ministry of Transport of Uzbekistan, with the support of the international holding BPC Group. ATTO is 75% owned by UZCARD and 25% owned by the Ministry of Transport. ATTO was the first company in the Commonwealth of Independent States (CIS) region to introduce payments for public transport services through a transit operator’s mobile app, using the NFC protocol. It also offers payment options from a card balance via a QR code generated in the ATTO application. Notably, in addition to transport cards, the public transport terminals accept bank cards from UZCARD and Humo, as well as international payment systems such as VISA, Mastercard, China Union Pay, and MIR.

Today Tashkent passengers pay with bank and transport cards with contactless NFC technology. At the end of 2020, the number of cards sold exceeded 180,000. Stationary and portable validators that read card data are available in buses and subways across the capital.

Introduction of transport cards brings socio-economic effects. The system helps collect data that can be analyzed to optimize bus routes, decrease transportation costs, and reduce intervals between arrival of buses. The implementation of technology throughout the country is estimated to cost around $12 million USD. By 2021, only a quarter of the project has been implemented.

**Source:** Spot.Uz

---


2.3.3. GROWING E-COMMERCE

According to the UNCTAD B2C E-commerce Index, Uzbekistan lost 8.4 points and moved from a rank of 94 in 2019 to 107 out of 152 countries in 2020.124 The Index consists of four indicators related to online shopping: account ownership; share of individuals using the internet; postal reliability; and secure internet servers.

### Table 2: UNCTAD B2C E-commerce Index, 2020

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>USA</td>
<td>87</td>
<td>93</td>
<td>94</td>
<td>90</td>
<td>91.0</td>
<td>-0.7</td>
</tr>
<tr>
<td>47</td>
<td>Georgia</td>
<td>71</td>
<td>61</td>
<td>64</td>
<td>98</td>
<td>73.6</td>
<td>0.5</td>
</tr>
<tr>
<td>55</td>
<td>China</td>
<td>61</td>
<td>80</td>
<td>54</td>
<td>58</td>
<td>70.1</td>
<td>1.3</td>
</tr>
<tr>
<td>60</td>
<td>Kazakhstan</td>
<td>87</td>
<td>59</td>
<td>63</td>
<td>64</td>
<td>68.2</td>
<td>-0.4</td>
</tr>
<tr>
<td>61</td>
<td>Mongolia</td>
<td>76</td>
<td>93</td>
<td>60</td>
<td>31</td>
<td>65.0</td>
<td>7.6</td>
</tr>
<tr>
<td>65</td>
<td>Azerbaijan</td>
<td>81</td>
<td>29</td>
<td>49</td>
<td>82</td>
<td>60.0</td>
<td>-1.8</td>
</tr>
<tr>
<td>97</td>
<td>Kyrgyzstan</td>
<td>80</td>
<td>40</td>
<td>47</td>
<td>11</td>
<td>44.3</td>
<td>8.0</td>
</tr>
<tr>
<td>107</td>
<td>Uzbekistan</td>
<td>30</td>
<td>37</td>
<td>50</td>
<td>30</td>
<td>37.0</td>
<td>-8.4</td>
</tr>
<tr>
<td>116</td>
<td>Pakistan</td>
<td>24</td>
<td>21</td>
<td>35</td>
<td>50</td>
<td>21.5</td>
<td>-1.2</td>
</tr>
<tr>
<td>121</td>
<td>Tajikistan</td>
<td>36</td>
<td>47</td>
<td>36</td>
<td>1</td>
<td>30.0</td>
<td>4.3</td>
</tr>
<tr>
<td>143</td>
<td>Afghanistan</td>
<td>18</td>
<td>15</td>
<td>29</td>
<td>7</td>
<td>17.1</td>
<td>-1.1</td>
</tr>
<tr>
<td>Median</td>
<td></td>
<td>71</td>
<td>47</td>
<td>50</td>
<td>50</td>
<td>17.1</td>
<td>4.3</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>59</td>
<td>52</td>
<td>53</td>
<td>50</td>
<td>17.0</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Source: UNCTAD

E-commerce and digital trade continue to face many challenges. The main barriers for e-commerce and digital trade development include lack of e-commerce culture and underdeveloped trade and customs regulations, as well as challenges in the transportation, logistics, and distribution infrastructure.125 Another key barrier is the lack of regulation and use of remote identification systems. Telecom infrastructure limitations — insufficient broadband mobile internet penetration in rural areas — is also a barrier to development. The lack of consumer digital literacy and basic understanding of cybersecurity may lead to increased online frauds connected to online purchases. The e-commerce sector lacks a talent pool with the necessary skills to support further growth and international expansion.

According to UZCARD, at the end of the first half of 2021, compared to the same period last year, the e-commerce volume of payments increased by 68% and the number of sellers - by 45%.126 According to the E-Commerce Association of Uzbekistan, over the past five years, the e-commerce market in the republic has amounted to about $1.2 billion USD.

**Private sector development.** Many individual companies currently have an internet presence with websites, Telegram, and social media, while e-commerce platforms are growing in popularity. Local platforms used at the local B2B/B2C level include LeBazar, ZoodMall, Beatybox.uz, Mato.uz, Abad.uz and others. ZoodMall and AliExpress are foreign platforms used by local customers. Amazon and eBay are not officially present on the Uzbekistan market — there is no way for consumers to order goods on these platforms, but Amazon has given access to local manufacturers. ZoodMall also has started hosting local producers. Bulletin boards such as Olx promote e-commerce by fostering a culture of shopping and selling online. The main products purchased online are health and beauty products, clothing, and shoes.

During interviews, LeBazar shared their experience in business development. They said that with the COVID-19 outbreak, consumer culture changed significantly. People began to order more products online, and increasingly use delivery services and digital payments. Nevertheless, the culture of offline shopping is very strong, especially outside Tashkent. LeBazar’s partnership with food store network Korzinka is a critical component of their business model. Since LeBazar does not use warehouses, but collects orders at stores and delivers to customers, Korzinka’s internal logistic operation systems are configured to be interoperable with LeBazar systems. LeBazar noted that their work with other stores was not always successful, precisely because of other stores’ lack of logistical readiness. The partnership with Korzinka also determines LeBazar’s regional expansion, since the platform works only in those regions where there are Korzinka networks.

**Government initiatives.** The State Postal Service developed a national online trading platform to further develop e-commerce and promote the purchase of locally made products. The national online trading platform Unisavdo.uz began to function in a test mode in February 2021. The Government of Uzbekistan hosts a National Register of E-commerce Entities, supported by the e-Government Center, which registers information on e-commerce participants, assesses development of e-commerce, and prepares legislative recommendations. Participation in the Register is voluntary and free of charge, and businesses may join if their sales through e-commerce exceed 80% (for both goods and services). One benefit of participation is a single tax of 2% of income for entities registered in Uzbekistan. However, the lack of transparency in tax regulation prevents new members from joining the Register. Currently, only 80 companies are listed in the Register.
The Government has launched an online platform for domestic software products and IT services, IT-Market, to serve as a database of domestic IT companies and software developers, help them promote their products and services in domestic and foreign markets, and act as a platform for public information and dialogue to address practical issues of the digital economy. Research did not uncover if the platform has been operationalized or to what extent it has been useful for ICT companies.

In February 2021, the Ministry of Investments and Trade and Digital Invest LLC established a joint venture, Digital Holding, to provide consulting assistance on the implementation of platforms, innovation, and technological activity in the finance and e-commerce sectors. Digital Holding will also help create a system for marking and tracking the movement of certain types of goods and promote the introduction of advanced technologies in the areas of information security, business support systems, and data storage.

Within the framework of the “Strategy for the Development of Agriculture,” development of the software platform “Agroplatform” is underway, scheduled to launch at the end of November 2021. The platform is designed to strengthen contractual discipline and implement mutual settlements between service providers in the agro-industrial field. It integrates the databases of more than twenty ministries and departments, to streamline document flow and the provision of online financial services. Active work is underway to launch an electronic agro-industrial trade portal, “Marketplace,” in a test mode. The portal is intended for farmers, agricultural producers, large clusters, agrologic centers, processors, and small and large retail chains. The marketplace will be especially relevant for residents of settlements with low penetration of financial services and for low-mobile categories of agricultural producers. The launch of this system is scheduled for January 2022.

Dehkan farms are household farms, often limited by land fertility, irrigation resources, marketing channels, the scale and consistency of production, and digital skills. They mostly sell to local farm markets or for self-sufficiency. Forward-looking e-commerce solutions could help them gain access to larger markets.

**Cross-border trade.** According to the World Bank Doing Business 2020 report, Uzbekistan ranks 152 out of 190 in ease of cross-border trade. Cross-border e-commerce is hampered by customs regulations, and the fact that billing systems of major international e-commerce platforms have not yet extended to Uzbekistan.

Uzbekistan is neither a member of the WTO nor the Eurasian Economic Union (EAEU), though it is aligning its customs code with the EAEU trading bloc and has made moves to cut tariffs, with hopes to join the EU’s GSP+ scheme. In May 2021, the President highlighted the need to pay special attention to the possible connection to digital platforms operating within the EAEU on tax and customs administration, industrial cooperation, labor migration, and tourism. These initiatives would help increase Uzbekistan’s digital trade with EAEU countries.

**Infrastructure.** E-commerce infrastructure includes logistics, fulfillment and delivery, digital payments, and internet penetration.

---

140 Digital Invest LLC is an enterprise established by MegaFon PJSC and USEM Telecom LLC in the Russian Federation.
143 Uzbekistan is an observer of the EAEU, which currently has 5 members (Armenia, Belarus, Kazakhstan, Kyrgyzstan, and Russia).
Fulfillment and delivery are critical parts of the e-commerce process. Customers expect to receive goods in a timely manner. Merchants need locations to store inventory that are integrated with delivery systems. Customs procedures need to be efficient and transparent to facilitate cross-border e-commerce. Uzbekistan does not have large fulfillment centers and has relatively underdeveloped logistics channels.

During fieldwork, respondents, and specifically the Uzbekistan E-commerce Association, highlighted the lack of a strong postal system and difficulties with last-mile parcel delivery. There is no vehicle fleet with a capacity of up to 1500kg for the transportation of consolidated mail.

In the country, most online shops are small without large inventories. Logistics and delivery are often the responsibility of the merchant, further fragmenting scale opportunities. Outsourced delivery services are underdeveloped, especially outside of Tashkent. During interviews, one bank shared that they must hire independent courier services, as the State Postal Service does not have sufficient delivery capacity, even in Tashkent.

The logistics to support cross-border trade also require development. No public-private partnership exists between the state, online stores, and logistics companies for simplified or automatic customs declarations.

According to a USAID report, highlighted by the experts of the Uzbekistan e-Commerce Association, the country lacks a payment systems aggregator. To implement online payments, a store must contract with each payment operator separately, an unreasonable waste of time and money.

Uzbekistan’s e-commerce is quickly developing on the local market but is sporadic in cross-border export trade. This presents an opportunity for growth, provided that the government and the private sector work closely to overcome existing barriers. The Uzbekistan E-commerce Association can play an important role by helping to raise awareness of e-commerce and lobby the government for favorable policies.

2.3.4. NASCENT DIGITAL STARTUP ECOSYSTEM

A startup ecosystem consists of people, startups in various stages, and established organizations which interact as a system to create new startups. The startup ecosystem includes funding and support organizations (incubators, accelerators, co-working spaces); service provider organizations (legal, accounting); large organizations; universities; and research organizations.

Uzbekistan’s startup scene is nascent and largely driven by government-backed organizations that lack experience and capacity. Large enterprises are not interested in cooperation with startups. Uzbekistan is missing a coordinated and methodological approach to startup ecosystem development. Each government body tries to cover all stages of a startup’s development, from ideation to scaling and entering foreign markets. Duplication of work results in less focus on participants and diffusion of energy.

While the Ministry of Innovative Development (MID) is mandated to be the main coordinator for start-up ecosystem development, it is mainly engaged only in the development of scientific and bio-startups. This is only a segment of the startup ecosystem but one which nevertheless commands a large investment of time and financial support.

---


In practice, the IT Park, under the jurisdiction of the MITC, is the main player in the startup ecosystem development. It is rolling out offices and programs to cover all regions in the country. Benefits for the residents of the IT Park are provided based on the principle of extraterritoriality and extend through 2028. They include lower income taxes (7.5%), corporate and social tax (0%), and customs payments for the import of goods and services (0%).148 The IT Park is among the more prominent hubs, attracting entities providing services for ICT training, hardware development, robotics, internet service exports, data processing and storage, e-commerce, fintech, online education, e-government, Internet of Things, medtech, and agrotech. The IT Park also hosts the “Smart City” initiative and the “Safe City” initiative, hackathons such as Hack4Region149 and runs 5G pilots with UCELL in Tashkent and regions. The IT Park has services for startup incubation, acceleration, and IT skills development.150 It also manages skills initiatives such as IT Academy, One Million Coders and Digital University.

In addition, the Agency for Youth Affairs, established in 2020 by Presidential decree, engages in the development of entrepreneurship and startups and conducts start-up incubation and promotional programs. Yet, the IT Park and the Agency for Youth Affairs operate independently and do not coordinate their activities with each other or the MID.

**TABLE 3: Government bodies with responsibilities related to the startup ecosystem**

<table>
<thead>
<tr>
<th>Ministry of Innovative Development (MID)</th>
<th>IT Park (under the Ministry of Information Technologies and Communication)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Responsible for:</strong></td>
<td><strong>Responsible for:</strong></td>
</tr>
<tr>
<td>• Implementing a unified state policy on innovative, scientific and technological development</td>
<td>• Creating favorable conditions for the development and production of products and services in IT</td>
</tr>
<tr>
<td>• Developing the innovation and startup ecosystem (In practice it mostly focuses on the support for scientific projects)</td>
<td>• Providing residents with infrastructure and modern laboratories, including special regimes for IT Park resident businesses</td>
</tr>
<tr>
<td>• Improving the regulatory framework for the introduction of innovation and technology</td>
<td>• Supporting the IT market: IT education, software development, startup ecosystem incubator and acceleration programs</td>
</tr>
<tr>
<td><strong>Support structures under the MID:</strong></td>
<td><strong>Support structures under the MID:</strong></td>
</tr>
<tr>
<td>• Fund for Support of Innovative Development and Innovative Ideas, intended to finance the development of science and scientific research ($5 million USD)</td>
<td>• Developing IT skills through the IT Academy, One Million Coders, and Digital University programs</td>
</tr>
<tr>
<td>• Science accelerator programs through the Center of Advanced Technologies</td>
<td>• Coordinating university partnerships and organizing national network of startups</td>
</tr>
<tr>
<td>• Tax preferences, soft loans, assistance with patents, certification, licensing, and international markets access through the technological park “Yashnabad.”151</td>
<td><strong>As part of the implementation of these areas:</strong></td>
</tr>
<tr>
<td></td>
<td>• More than 150 IT Centers were created; more than 500,000 participated in the One Million Coder project</td>
</tr>
<tr>
<td></td>
<td>• 450 companies became IT Park residents and enjoy tax and customs benefits</td>
</tr>
<tr>
<td></td>
<td>• More than 100 startups have been trained through the incubation and acceleration program</td>
</tr>
</tbody>
</table>

---


As can be seen in Figure 16, most of the startup ecosystem elements are still missing in the country or do not provide support for startups in all stages.

**FIGURE 16: Digital startup supporting ecosystem**

![Digital startup supporting ecosystem diagram]

<table>
<thead>
<tr>
<th>Stage</th>
<th>% of total</th>
<th>YoY growth (in average 2018-2021)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-seed/seed</td>
<td>80-85%</td>
<td>+200</td>
</tr>
<tr>
<td>Startups</td>
<td>10-15%</td>
<td>+30</td>
</tr>
<tr>
<td>Scale up</td>
<td>2-5%</td>
<td>+2</td>
</tr>
</tbody>
</table>

Source: Elaborated by authors. Illustrates only regular and ongoing programs, initiatives, and funding.

As can be seen from Table 4, the majority of startups in the country are at the very early stage of development. The main obstacles to their transition to the next stage are lack of funding, industry competencies, and talents.

**TABLE 4: Digital Startups Stages**

<table>
<thead>
<tr>
<th>Stage</th>
<th>% of total</th>
<th>YoY growth (in average 2018-2021)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-seed/seed</td>
<td>80-85%</td>
<td>+200</td>
</tr>
<tr>
<td>Startups</td>
<td>10-15%</td>
<td>+30</td>
</tr>
<tr>
<td>Scale up</td>
<td>2-5%</td>
<td>+2</td>
</tr>
</tbody>
</table>

Source: DECA research team analysis based on key informant interviews
Access to funding. In a mature startup ecosystem, financing avenues include grants, angel investors, and VC funds. Lack of access to financial resources remains the main obstacle to launching and scaling startups in Uzbekistan. Nearly all startups (89%) noted the lack of funding for development and highlighted it during interviews as a prime barrier. Existing government financial support programs focus mostly on SMEs and only provide commercial loans. This instrument does not work for startups as it requires collateral and funding for repayment.

Grant-based funding is provided mainly by donors and state non-profit organizations such as UNDP’s Startup Initiatives Project, the Center for Support of Youth Entrepreneurship, USAID, and others. Most grant programs are ad hoc and not systematic, creating unpredictable financial support.

Interviewees noted that many startups are founder-financed. Others allow investors to take a majority stake. Interviewees noted the demise of several startups tied to founder ambition or interest that floundered over time when the founder left or lost motivation.

The country lacks an angel investor community, important for financing early-stage startups. Interviews conducted for the GIZ Startup Ecosystem Report suggest there are 10-15 active business angels, only half of which are tech-savvy.

The venture capital ecosystem in Uzbekistan is in its infancy. The Ministry of Innovative Development established the UzVC National Venture Fund ($1.5 million USD) in 2020, but has not completed the search for a private management company to operate it. The fact that public funds will be transferred to a private management company is a good signal for the market. However, the proposed arrangement between UzVC and the management company has not been attractive to private VC funds.

As a result of these issues, early-stage startups do not have sufficient funding to survive and grow. Later-stage startups are forced to structure transactions to attract venture capital financing in foreign jurisdictions, which requires additional knowledge and resources.

In 2021, the first private VC fund, “Semurg Ventures” was launched in Uzbekistan with $5 million USD. The investment strategy of the fund covers scalable projects at the initial stage of development in financial, insurance, B2B SaaS, and agro-technologies with an average funding of $50,000–$150,000 USD in exchange for less than 30% of the share in the project.

Support organizations. There are several private coworking spaces around Tashkent that promote IT-based startups, including: GroundZero, which hosts events and offers training; Curiosity Marker Space, which aims to be a coworking space with in-house lab space; and C-space coworking space.
Tech4Impact, Brand.uz, and Startupfactory.uz are other players who support startup activities such as the Startup Mix Conference, Cleantech Acceleration, and the Technovation Girls Challenge. However, most of these initiatives are ad hoc. They do not have self-sustaining business models and rely mostly on support from government or donors, not from the private sector.

Uzbekistan has established several government-backed innovation hubs and accelerators that offer services and programs to support innovative MSMEs and startups such as those run by IT Park and Yashnabad Technopark. Westminster University is setting up the InnoWIUT Entrepreneurship Lab to accelerate startup culture, host an accelerator program, and support a student-in-residence program with larger companies. Inha University’s Center for Supporting Active Entrepreneurship provides incubation support with workspace, infrastructure, mentorship, and a fledgling incubation and acceleration program.

Because incubation and acceleration programs are carried out by state organizations and not by the private sector and are mostly not industry-specific, the participants do not always receive high-quality programs and mentors.

**Large companies.** According to the Startup Ecosystem Review 2020, more than 50% of startups noted a lack of interest by large companies to partner with startups, which complicates scalability. While state-owned commercial enterprises, companies, and banks dominate the economy of Uzbekistan, they are practically not engaged in the development of the startup ecosystem, since it is easier for them to purchase a ready-made foreign technological solution. The main reason for ignoring cooperation with startups is lack of knowledge and strategies for innovative development.

There are a limited number of technological partnerships between large organizations and tech startups. UZCARD, an interbank payment system, provides a successful example of how a systemic player can engage the sector by bringing together corporate expertise, funding, and tech transfer. The UZCARD approach can be used in any sector of the economy.

**BOX 8: UZCARD is a corporate leader of the startup fintech ecosystem**

UZCARD provides an example of how anchor companies in a sector can stimulate the startup ecosystem. One of the priority areas of UZCARD is to create a favorable environment to support new startups in the field of financial technology. The company plans to form a new pool of partners through which additional transactions are generated, which in turn increase the Company’s revenues.

To achieve this goal, UZCARD launched the corporate Fintech Accelerator and the CVC fund “UZCARD Ventures.”

Fintech Accelerator will carry out activities in three areas:

- Automation of internal decisions when interacting with startups
- Integration of start-up solutions to expand UZCARD infrastructure
- Act as a “soft-landing point” for foreign startups when entering the fintech market

The $1,000,000 USD corporate venture capital fund “UZCARD Ventures” invests in early-stage startups in various sectors of the economy with an average investment of $50,000–$150,000 USD for a 10–20% minority stake.

Sources: UZCARD

Talent and universities. There is a significant market shortage in IT skills, as well as business and entrepreneurship-related hard and soft skills. 47% of respondents in the Startup Ecosystem Review, conducted by Uzbekistan Venture Capital Association (UzVCA) in 2020, named the lack of qualified specialists as a key challenge for startup development.161

There are a limited number of entrepreneurship courses at universities and no available technical entrepreneurship courses. TEAM University is the only private university that provides education in entrepreneurship.

Universities are barely involved in acceleration and incubation programs. Traditional organization models and bureaucracy make them unattractive partners for business. As a result, students do not have the opportunity to create startups within university programs and can’t obtain the necessary experience and skills to do so when they graduate.

The lack of knowledge, experience, and mentors also contributes to the fact that most startups do not have capacity to grow and scale. They focus only on a city or national scale, without reaching foreign markets. This situation is aggravated by a need for professional and business content in the Uzbek language, especially for the population outside Tashkent.

Good data on Uzbekistan’s startup environment is difficult to find. Information about Uzbekistan is not available in main indices like the Global Competitiveness Index (GCI). In 2019, according to the Startup Friendliness Index that analyzes the potential for cities to advance entrepreneurship, Tashkent ranks 24 out of 37 cities among both developed and developing economies.162

Overview of the existing landscape. The Startup Ecosystem Review finds 30% of startups are developing projects in fintech, 27% in marketplace, 24% in MedTech, 18% in EduTech, 15% in enterprise resource planning (ERP), and 15% in automation of government services and others (some startups cross more than one category).163

More than half (56%) of startups are based in Tashkent, 7% are in Andijan, and the rest are distributed across the country. This does not differ from the most technologically developed countries, where the bulk of startups are based in capitals or major cities (such as London, Berlin, Paris, Tel Aviv, and Seoul).164

---

164 Ibid
FIGURE 17: Digital startups summary

TOTAL RESPONDENTS

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-20</td>
<td>48%</td>
</tr>
<tr>
<td>21-25</td>
<td>23%</td>
</tr>
<tr>
<td>26-30</td>
<td>16%</td>
</tr>
<tr>
<td>31-40</td>
<td>10%</td>
</tr>
<tr>
<td>40+</td>
<td>5%</td>
</tr>
<tr>
<td>5+ y.o.</td>
<td>3%</td>
</tr>
<tr>
<td>4 y.o.</td>
<td>5%</td>
</tr>
<tr>
<td>3 y.o.</td>
<td>5%</td>
</tr>
<tr>
<td>2 y.o.</td>
<td>5%</td>
</tr>
<tr>
<td>1 y.o.</td>
<td>63%</td>
</tr>
<tr>
<td>-1 y.o.</td>
<td>20%</td>
</tr>
</tbody>
</table>

FOUNDER AGE

INDUSTRY SECTOR

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>FinTech</td>
<td>30%</td>
</tr>
<tr>
<td>Marketplace</td>
<td>27%</td>
</tr>
<tr>
<td>MedTech</td>
<td>24%</td>
</tr>
<tr>
<td>EduTech</td>
<td>18%</td>
</tr>
<tr>
<td>ERP</td>
<td>15%</td>
</tr>
<tr>
<td>Other</td>
<td>15%</td>
</tr>
</tbody>
</table>

COMPANY AGE

SECTOR

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>b2b</td>
<td>42%</td>
</tr>
<tr>
<td>b2c</td>
<td>40%</td>
</tr>
<tr>
<td>b2c2c</td>
<td>21%</td>
</tr>
<tr>
<td>b2g</td>
<td>15%</td>
</tr>
<tr>
<td>Other</td>
<td>9%</td>
</tr>
</tbody>
</table>

DEVELOPMENT STAGE

<table>
<thead>
<tr>
<th>Stage</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-startup</td>
<td>29%</td>
</tr>
<tr>
<td>Start-up</td>
<td>63%</td>
</tr>
<tr>
<td>Scale-up</td>
<td>8%</td>
</tr>
</tbody>
</table>

STARTUP CONCENTRATIONS BY REGION

<table>
<thead>
<tr>
<th>Region</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tashkent</td>
<td>56%</td>
</tr>
<tr>
<td>Andijan</td>
<td>9%</td>
</tr>
<tr>
<td>Samarkand</td>
<td>7%</td>
</tr>
<tr>
<td>Bukhara</td>
<td>5%</td>
</tr>
<tr>
<td>Ferghana</td>
<td>5%</td>
</tr>
<tr>
<td>Others</td>
<td>18%</td>
</tr>
</tbody>
</table>

DEVELOPMENT NEEDS

<table>
<thead>
<tr>
<th>Need</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investments</td>
<td>89%</td>
</tr>
<tr>
<td>Network/ Mentorship</td>
<td>56%</td>
</tr>
<tr>
<td>New Staff</td>
<td>50%</td>
</tr>
<tr>
<td>Skills</td>
<td>25%</td>
</tr>
</tbody>
</table>

CURRENT SALES

<table>
<thead>
<tr>
<th>Sales Tier</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No revenue</td>
<td>51%</td>
</tr>
<tr>
<td>Less than $10,000</td>
<td>34%</td>
</tr>
<tr>
<td>$10-100,000</td>
<td>13%</td>
</tr>
<tr>
<td>More than $100,000</td>
<td>2%</td>
</tr>
</tbody>
</table>

CAPITAL NEED

<table>
<thead>
<tr>
<th>Capital Tier</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>$100-500,000</td>
<td>29%</td>
</tr>
<tr>
<td>$10-100,000</td>
<td>21%</td>
</tr>
<tr>
<td>No need</td>
<td>10%</td>
</tr>
<tr>
<td>More than $500,000</td>
<td>8%</td>
</tr>
</tbody>
</table>

Source: UzVCA

The breakdown by industry shows that most startups are developing projects in the fintech and e-commerce industries. High demand from the financial sector, where banks and other institutions are actively developing new digital services, drives development of startups in fintech. The creation of a legal framework for electronic money has particularly spurred innovation.

In other sectors, lack of relevant new regulations and demand for innovations has resulted in fewer startups and absence of startups with deeptech solutions.166

The demographics of startup founders in the country, who tend to be younger men, is also a reflection of the underdevelopment of the startup ecosystem. Despite a number of initiatives to attract women in digital entrepreneurship and startups, the share of women founders remains very low. A report by TUZ Ventures and IT Park estimates the number at 13%,167 while UzVCA reports 2%.168 Social and cultural norms remain the main barriers to women starting their own businesses. Women interviewees stated that it is much easier for male founders to get funding. There are also a limited number of women role models in the sector.

Considering that many government startup support events target young people (on average, 29 years of age,) older adults with more business experience may interpret this as evidence that it is too late to launch startups themselves.169

The insufficient startup ecosystem does not allow startups to launch, grow, and scale. Existing startup ecosystem development programs are lacking a holistic strategic vision and necessary regulatory support as discussed in section 2.3.1. The number of startups is relatively small, and the survival rate is quite low. Predominantly, startups focus on the local market and do not have knowledge, experience, or financial backing for international expansion, even within the region. The lack of demand from large companies and support from universities leads to instability of the startup ecosystem and scarcity of innovative startup products.

### 2.3.5. UNMET DEMAND FOR DIGITAL AND IT TALENT

The COVID-19 pandemic has had a significant impact on the way people work, communicate, and socialize. As more people turn to digital and online solutions and services, the need to build a freelance culture and increase IT skills among the population has become even more critical.

Uzbekistan has a very young population: in 2018, 57% of the population were under the age of 30; 33% were under the age of 18. The youth population is also plagued by unemployment and undereducation — 42% of those ages 18–30 are not employed or enrolled in school. This rises to 66% for young women, 77% for young people with disabilities, and more than 90% for young people with severe disabilities.170 The inability to educate and employ a growing young population may be a main reason for social unrest or violent extremism in the country.

---


167 “The Startup Ecosystem of Uzbekistan.” 2021. TUZ Ventures/IT Park. https://drive.google.com/file/d/1oZEDp05a2YCNrXRXLuN1ssuZSzMZJu0K/view


169 “The Startup Ecosystem of Uzbekistan.” 2021. TUZ Ventures/IT Park. https://drive.google.com/file/d/1oZEDp05a2YCNrXRXLuN1ssuZSzMZJu0K/view

The Government recognizes the need to prepare youth for modern careers and equip them with foundational, job-specific, transferable, and digital skills. IT education is one of five priority areas in the Digital Uzbekistan Strategy. Planned activities include the creation of public-private partnerships for IT education, promotion of online IT education, opening of IT schools and centers, and partial compensation for IT education costs.

In 2020, two Presidential decrees established the phased creation and planned activities of specialized IT schools in cities throughout the regions\(^\text{171}\) and created an industry council to improve professional qualifications and competencies in IT.\(^\text{172}\) These are moves in the right direction but, national educational IT programs cannot currently satisfy the existing demands for IT professionals, not to mention addressing potential future market developments.

**Demand-side IT skills development.** The demand for IT expertise is accelerating. According to HH.uz, the need for IT specialists in January-November 2020 increased by 76.3% compared to 2019.\(^\text{173}\) Most vacancies (90.4%) were in Tashkent (though Tashkent’s population is 8% of the country), followed by Samarkand and Fergana. Government positions have drawn IT specialists from the regions to the capital, a familiar “brain drain” problem affecting rural areas and less populated cities around the world. Digitalization and IT ecosystem development are depressed further in the regions as a result.

The shortage of IT specialists is especially noticeable in software development. There is a severe lack of highly qualified programmers, artificial intelligence specialists, and business analysts. As one respondent highlighted, “It is a catastrophic deficit. For a start — it is the catastrophic shortage of young people with sufficient basic mathematics education. And, as a result, a huge and growing shortage of qualified engineering personnel in all industries, in IT in the first place.”

During interviews, the respondents specifically highlighted a shortage of Java developers, developers of mobile applications for iOS and Android, UI/UX designers, QA\(^\text{174}\) specialists, and information security professionals. There are practically no specialists in machine learning and data science. A lack of professionals is also common among IT project and sales managers, digital marketing specialists, and professional digital trainers.

Faced with a limited talent pool, many IT companies run their own training and education programs in-house. Monday IT in Bukhara initially trained IT specialists for their own projects, then, seeing additional need, created the Monday Academy to develop IT skills for non-employees. But as an IT Park representatives highlighted, “No [amount of] graduates of universities or self-taught and trained in companies will save the situation [with the shortage of IT talents]. You need to start IT education in primary school.”

There is a strong need for market analysis to assess the demand for IT specialists in different sectors and help match it with the supply.

---

\(^{171}\) “On measures for further improvement of the education system in the field of information technologies, development and integration of scientific research with it industry,” [https://lex.uz/docs/5032131](https://lex.uz/docs/5032131).

\(^{172}\) “On measures for cardinal improvement of the qualification assessment system and providing the labor market with qualified personnel,” [https://lex.uz/docs/5203492?query=%D0%97%D0%BE%D0%BD](https://lex.uz/docs/5203492?query=%D0%97%D0%BE%D0%BD).


\(^{174}\) User Interface (UI), User Experience (UX), Quality Assurance (QA).
**Supply-side IT skills development.** The government has prioritized human capital and IT education through short-term and long-term programs, which include the development of IT Park and its initiatives, support for public and private schools and universities, and online education.

**FIGURE 18: Digital education ecosystem**

Source: Elaborated by authors

**Training and schools.** IT Park and its IT Academy play a foundational role in IT education and skills development. The IT Academy is the primary agency responsible for the “One Million Coders” project, which is an online course on basic programming. The localization of the One Million Coders portal and the Udacity platform into the Uzbek language has been completed and the project aims to train at least 2,000 students by the end of 2020. IT Park is rolling out offices and programs to cover all regions in the country.

In 2020, Uzbekistan launched 14 specialized public schools for in-depth study of computer science and information technology. The government plans to open 82 schools in 2021, 64 in 2022, and 45 in 2023. University teachers from TUIT and other institutions deliver instruction in the schools.

---


In 2019, “President Schools” started opening across the country, providing STEAM education in English. Four schools already operate in Tashkent, Namangan, Khiva, and Nukus; ten more will open in 2021.

Such schools will widen the reach of specialized IT education for children in the regions, particularly for girls who have traditionally had fewer opportunities for technical instruction. However, government resources in the regions for implementing such programs, providing access to computers, and training teachers remain extremely limited.

The private sector offers a limited number of training centers, schools, and alternative forms of IT education. The instruction offered is typically centered on coding and programming, however, without meeting the market needs for sectors including data science, cybersecurity, and machine learning.

---

Some of the most advanced private schools are working to build connections with the private sector and international expertise. For example, NAPA Technopark and NAPA Edu Hub introduced an internship program for their students. In 2020, the head of Khan Academy Uzbekistan, Botir Arifdzhanov (also founder of LeBazar and Paynet) asked the President to help create a new IT school with approaches similar to School42.\(^{179}\) Khan Academy Uzbekistan\(^ {180}\) is a unique fully donor-driven project, which tries to create and distribute modern content in the Uzbek language throughout the country.

**Higher Education.** There are 21 universities and colleges offering IT education and 14 foreign affiliate programs,\(^ {181}\) though only 9% of the population pursues tertiary education\(^ {182}\) and most of the labor force is engaged in low-skill occupations.\(^ {183}\) Uzbekistan’s spending on higher education is amongst the lowest in the world, made worse by the high cost of attending university and conditions that promote corruption and nepotism within university admissions.\(^ {184}\) Experts estimate that around 8,000 students graduate annually from universities with IT and digital specializations.

---

The leading technical university is Tashkent University of Information Technologies (TUIT), which offers degrees in ICT, software engineering, computer engineering, and telecommunication technologies. In 2019, TUIT opened a joint faculty with the Belarusian State University of Informatics and Radioelectronics, which provides education on AI. During university holidays, the university, together with the mahalla, organizes digital skills courses for women.

Inha University in Tashkent (IUT) was founded in 2014, in cooperation with Inha University in the Republic of Korea and became the first foreign university to confer degrees on IT specialists in Uzbekistan. TUIT implements several projects aimed at training qualified specialists and increasing practical cooperation between the university and the private sector.

Amity was opened in Tashkent in 2019 and became the second foreign university to offer IT degrees. Amity is a branch of a leading private university in India. The university trains specialists in information technology, engineering and computer technologies, economics, tourism management, and business management.

Westminster University and Turin Polytechnic University in Tashkent are among other international universities that provide IT education.

IUT and other universities have established close cooperation with international IT companies, such as SAP, ORACLE and Microsoft, and host their computer labs and R&D offices. EPAM Systems opened a digital lab at TUIT for students. ORACLE Academy is also accessible to students. Huawei opened the “Seed for the Future” program with TUIT, a two-week internship for ten students to study telecommunications networks, 5G, big data, cloud services and IoT at Huawei. The IT Park is working to open “Digital University” in partnership with private sector companies including EPAM.

AKFA University (est. in 2019) and Tashkent International University of Education (est. in 2020) are private institutions focused on preparing IT specialists and training a new generation of teachers with knowledge for the digital economy.

However, large companies do not yet sponsor specialized departments at universities, close cooperation between universities and the IT sector remains very limited, and there are no comprehensive programs for internships, employment and mentoring. Most universities do not have courses on IT entrepreneurship, which limits students’ abilities to develop their own startups in the digital sector.

**Cooperation among science, business, and the public sector.** IT Park currently has partnerships with only three out of 21 universities offering IT education. Most universities have examples of successful cooperation with research centers, but not with the private sector.

Cooperation between science, academia, business, and the public sector remains limited for several reasons. Government regulations are focused on institutions of higher education, but there are no measures to encourage

and support their cooperation with the private sector. Additionally, public universities inherited Soviet models, in which universities provide instruction, but not research, and, as a result, lack research centers, which make them less attractive for private sector cooperation. In turn, the private sector does not have experience supporting educational programs or organizing internships.

Despite multiple efforts to develop IT talent in the country, the supply of specialists badly lags the market demand. The problem is especially acute in the regions. The government has limited resources to promote educational initiatives and its cooperation with the private sector is in its infancy.

Programs offered by the IT Park are aimed at developing basic IT skills. The availability of online education and professional content in the Uzbek language remain limited, complicating access to IT professions in the regions. There is an acute shortage of teachers in the private and public educational segments.

**Cybersecurity.** Cybersecurity remains a highly underdeveloped sector of the digital economy. Uzbekistan's general public largely lacks cybersecurity literacy and the ability to recognize frauds in digital payments and online activities, which is a barrier for the financial sector to introduce more digital solutions. The rise in fraud, system outages, and data breaches erodes consumer trust in digital financial services. The broader financial services sector should recognize the need for collaboration across all players. Banks, mobile money providers, other third-party providers in the financial ecosystem, and the regulator need to cooperate to promote better cybersecurity policies and practices.

The banking sector lags in the implementation of cybersecurity measures. The Central Bank issued an order in 2019 for banks to develop and implement their own information security roadmap, intended to serve as a model roadmap for the industry. Experts interviewed by the DECA team believe none of the banks fully complied with the model cybersecurity requirements. Many have not implemented effective anti-fraud systems, leading to serious risks for banks and their clients. The Central Bank also mandated creation of a single agency that would collect data on incidents of cyberattacks, but this order also has not been implemented.

The Cybersecurity Center and Central Bank cooperate to scan for vulnerabilities in business systems. Yet their conclusions and recommendations are often treated as formalities by companies and ignored. Companies do not appreciate the importance of penetration testing services, which are most often carried out only in projects that require compliance with Payment Card Industry Data Security Standards (PCI DSS). Few major companies know about global organizations such as the Center for Internet Security and its prioritized set of actions to help companies and organizations address data hacks and cyberthreats; interviews indicated that no company to date has implemented a risk-based threat assessment. Plans to respond to cyber threats remain ineffective because few companies have put in place even a rudimentary Security Operations Center (SOC) or a Security Information and Event Management (SIEM) system.

There are practically no cybersecurity startups in the country. The public sector does not work with startups in this segment, and large private companies prefer to purchase ready-made, certified solutions from abroad.

Some recent public events have begun to raise awareness of cybersecurity risks among private sector companies' managers. However, those companies that do hire cybersecurity specialists must bring them from other countries, usually Russia. The country lacks specialists in cybersecurity and information security. Realizing that need for local specialists will grow with time, TUIT has increased enrollment at the Faculty of Information Security since 2020. OSCE Uzbekistan, together with Softline Education, with the support of the MITC, launched a project aimed at basic and advanced cybersecurity training. The target audience of this project are heads of enterprises,
organizations, ministries and departments, cybersecurity line managers and technicians, and teachers of specialized educational institutions.

2.3.6. REGIONAL SNAPSHOTs

THE AUTONOMOUS REPUBLIC OF KARAKALPAKSTAN

Digital education: There are 10 universities in the Republic of Karakalpakstan, as well as a branch of TUIT, a technical college, and eight specialized IT schools. In 2019, the TUIT branch granted 28 students (20 men and eight women) a bachelor’s degree with IT specializations. Of these, 10 students received grant support. There are 17 IT Centers under construction in the Republic of Karakalpakstan. The centers employ 16 teachers. In 2020, 1,001 students studied in the IT centers of Karakalpakstan. In 2021, the student population grew to 1,223, 60% of which were female. 607 of the students received grant support from the IT Park. The classes include basic training for front-end and back-end development, and other topics. Nukus (the capital of the region) received a “high” rating in a government assessment of digital education development. ¹⁹¹

The government plans to develop digital education starting from kindergarten. The Karakalpakstan roadmap of the Digital Uzbekistan Strategy includes initiatives on equipping preschools in the district with computer and video equipment. Other activities include equipping regional schools with computer equipment and introducing a single system for attendance, grading, and student progress, the “Electronic Diary” program.

FIGURE 21: IT Center locations across the region

Digital economy/startup/IT sector: The government of Uzbekistan assessed the level of the digital economy development across the districts of Karakalpakstan. The result showed a low level of digital economy development in general: the share of IT services among market services is 2.8%. The assessment covered the use of electronic invoices and online cash registers, introduction of automated electricity metering systems, and the state of the local IT services market. Karakalpakstan has branches of the IT Park, though only two resident companies. There are seven e-commerce organizations. The Digital Uzbekistan Strategy calls for the introduction of information systems in agriculture. This includes creation of the integrated information system “Milk Processing,” a livestock inventory control system, and the information system “Smart Greenhouse.”

A recent Presidential decree, “On measures for the comprehensive socio-economic development of The Republic of Karakalpakstan 2020 – 2023” is aimed at developing IT infrastructure in the region, attracting businesses, and facilitating further adoption of digital technologies. A phased installation and launch of mobile stations based on 4G/5G technologies will be carried out throughout the region. The government plans to implement fiber optic networks in more than 290 settlements, construct up to 150 new base network stations and modernize 200 stations, and connect each settlement to the internet at a speed of at least 10 Mb/hour by 2023.

**Digitally-related programs and activities from donors:** UNDP promotes a digital approach to entrepreneurship development in Karakalpakstan. Within the UNDP-UNFPA Joint Programme “Building the resilience of local communities against health, environmental and economic insecurities in the Aral Sea region,” funded by the Government of Japan, UNDP runs a series of workshops on digitalization, particularly the use of e-commerce, fintech and social media. (The Programme also contributes to the fighting climate change — see Section 2.4.2.) During 2020-2021, it ran 12 workshops in Bozatau, Karauzyak, and Chimbay districts, attracting a total of 166 participants, including 89 women.192

The World Health Organization, in partnership with the Government of Uzbekistan, conducts a comprehensive health system assessment in the Karakalpakstan region. It aims to increase access to hospital care for people living in the Aral Sea region, while also looking for opportunities to strengthen primary care, including through the use of digital health technologies.193

**BUKHARA REGION**

**Digital education:** There are four universities in the Bukhara region,194 including Bukhara State University and Bukhara Institute of Engineering and Technology. The region has its own Bukhara State Medical Institute and up to 390 private and public medical institutions. Bukhara also has a branch of TUIT. The branch currently enrolls 78 male students and only five females. They study economics and management in the field of ICT, information security, software engineering, computer engineering (the most popular with 38 students), radio and mobile communications, and telecommunication technologies.

There are seven IT Centers under construction in the Bukhara region. The centers employ nine teachers. In 2020, the IT Centers enrolled 1,692 students. In 2021, the student population declined to 1049: 582 women and 467 men. 723 of the students received grant support.

The government assessed digital education in the Bukhara region at the highest level. Nationally, only 13 (6%) districts were included in the “green” list alongside Bukhara.

Under the Digital Uzbekistan Strategy, the government plans to expand the introduction of information technologies in education. Activities from the roadmap include extension of fiber optic communication lines to secondary schools, computer equipment to connect secondary schools to the “Electronic Diary” system, and training for secondary school teachers and parents on the use of the system.

---


Digital economy/startup/IT sector: In Bukhara, there are 12 resident companies of the IT park. Four are software companies, and seven are e-commerce entities. The share of IT services among market services is 2.1%.

The region is devoted to the development of the tourism and hospitality industry. The roadmap under the Digital Uzbekistan Strategy includes promotion of historical monuments, and development of foreign tourism potential in cultural and tourism facilities. The government also plans to introduce information systems in agriculture — for example, a single electronic database information system for livestock inventory. The strategy also prioritizes digitization of public utilities. The government plans to install and connect consumers to electric metering equipment.

NAMANGAN REGION

Digital education: The region has three universities: Namangan State University, Namangan Institute of Civil Engineering, and Namangan Institute of Engineering and Technology. There is also a regional branch of TUIT with 68 students obtaining a bachelor’s degree with IT specializations, such as software engineering, ICT economics and management, and telecommunications technology. 61 TUIT students are male and only seven are female.

Namangan also has two Presidential Schools. There are currently 409 private and public medical institutions.

There are 13 IT centers in the region, employing up to 40 teachers. In 2020, the IT centers enrolled 1,275 students. In 2021, the student population tripled to 3,633, of which 70% are male. 3,379 of the students received grant support from the IT Park.

Under the Digital Uzbekistan Strategy, the government plans to expand digital infrastructure for schools. The initiatives include constructing fiber optic communication lines to preschool educational institutions, and equipping preschools with computers and video equipment. Other initiatives cover establishment of a school specializing in in-depth training in computer science and information technology.
Digital economy/startup/IT sector: There are eight resident companies of the IT park in Namangan. Seven are software companies and one is an e-commerce entity. The share of IT services among market services is 3.2%. IT Park resident DataSite Technology LLC, whose startup project Zip24 attracted an investment of $1.2 million USD from Sturgeon Capital, is originally from Namangan, where it has an office and the team of developers.

In general, the government assessed the regional efforts at a high level. Namangan’s roadmap includes plans to install and connect consumers to electric metering equipment.

### 2.4. DEEPER DIVES: HEALTH AND CLIMATE CHANGE

#### 2.4.1. DIGITAL HEALTH

According to the World Health Organization (WHO), digital health is “the field of knowledge and practice associated with the development and use of digital technologies to improve health.” Digital Health includes eHealth and mHealth. Digital health can be scaled and sustained in any economy because it is a cost-effective instrument of delivering health services such as medical care, health education, and telemedicine. In Uzbekistan, digital health is in its nascent stage, but there are plans to execute a digital transformation in the sector.

**TABLE 5: eHealth & mHealth**

<table>
<thead>
<tr>
<th>eHealth</th>
<th>Electronic health (eHealth) is the cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health care services, health surveillance, health literature, and health education, knowledge and research.</th>
</tr>
</thead>
<tbody>
<tr>
<td>mHealth</td>
<td>Mobile health (mHealth) is a component of eHealth, involving the provision of health services and information via mobile technologies such as mobile phones, tablet computers, and personal digital assistants</td>
</tr>
</tbody>
</table>

---


197 Ibid, 40.

From our fieldwork, interaction in Uzbekistan with the Deputy Minister of Health Abdulla Azizov, we understand that the government is actively looking for international partnerships and rolling out policies to enhance digital health in Uzbekistan. Overall, there is political will and commitment to achieve this target.

Uzbekistan has high potential for leveraging digital transformation in the public health sector. The focus should be on unlocking opportunities for cheap and sustainable financing for local companies that are developing information systems or digital health solutions. Uzbekistan’s health sector might be able to take advantage of the growing number of available open-source, public-source digital health systems. This will help create domestic private sector partners for the government to: (i) enhance the digitalization of the health sector and increase the quality of health care services in target region; (ii) optimize the public health services using digital technologies like mapping and monitoring the spread of infectious diseases, and supplies of drugs and vaccines; (iii) organize digital literacy and skills training sessions for the medical community, Ministry of Health (MoH) and general public; (iv) and build a health information system that can be easily accessed and understood by hospitals and pharmacies at large.

Existing reform frameworks and support. The regulatory and institutional framework to support digital health is in its nascent stage. The Government started making serious efforts to digitize the health sector in 2018. Their primary focus was to revamp health information systems and build capacity in the sector. The Government introduced two training programs and received some expert support on digitizing health information systems. COVID-19 created a true urgency to digitize public health services, prompting swift changes including the appointment of four new Deputy Health Ministers in July 2020, including Abdulla Azizov, to exclusively focus on an agenda to digitally transform the health sector.

In February 2021, as part of a Presidential decree, a list of pilot projects was introduced wherein artificial intelligence will be used in the healthcare and pharmaceutical sector for diagnosis of pneumonia, breast cancer, and forecasting the need for medicines. At the same time, a resolution was passed wherein the MoH formed a limited liability company (referred to as IT-Med LLC) for digitalization of the health sector. The MoH has introduced a pilot project in the Syrdarya region where IT-Med will act as an implementing body. They intend to remodel health services by introducing digitalization of health information systems and establishing health insurance systems to provide universal coverage throughout the country by 2023. Currently the health management system in Uzbekistan is limited to paper records only. Medical staff are encouraged to use digital platforms, but they are also required to complete manual recording.

The Deputy Health Minister is expecting the Digital Health Strategy for 2025 to be launched and adopted by Presidential decree, tentatively in September 2021. The master plan for this strategy and eHealth has been developed with technical assistance from KfW, the promotional bank of Germany, and international expertise from Canada, South Korea, and Lithuania. Recently, this master plan was reviewed by the European Association of e-Health and it is currently being reviewed by the experts from the Russian Federation. The master plan...
has more than 100 projects to be implemented before 2025. Further, the Government is planning to develop an integrated IT system across ministries and agencies to help reduce corruption and improve transparency in recruitment.

The Government, with assistance from GIZ, acquired the open-source software openMEDIS\(^{204}\) to establish a digital inventory and maintenance system for high-tech healthcare equipment. However, the system was not fully implemented nationwide. Currently, the MoH manages the MedStat program, a database where data is collected from 26 forms used in public health centers, and the State Committee on Statistics hosts eStat 3.0 software, a networked desktop application used by public health institutions for annual reporting\(^{205}\). Separately, there is only one company in Uzbekistan that specializes in providing consulting services to medical clinics and healthcare institutions\(^{206}\). Recently, KfW has committed $40 million USD for health sector digitalization, but the terms of the funding are not finalized. There have been a few small additional projects and assessments conducted by WHO and the World Bank Group.

**Testing telemedicine.** During the COVID-19 pandemic, the world embraced telemedicine as a scalable substitute for in-person medical appointments. Uzbekistan launched its first telemedicine clinic, in Muynak, Karakalpakstan, under the supervision of the Republican Specialized Scientific Practice Medical Center, but it was not successful\(^{207}\). There were several reasons for the failure: i) insufficient staff training; ii) lack of basic infrastructure at primary healthcare centers; iii) failure to install required software; and iv) lack of population-wide record keeping. In a similar timeframe, the China-Uzbekistan telemedicine system was launched in Tashkent to conduct remote diagnosis\(^{208}\). Recently, the National Chamber of Innovative Healthcare of Uzbekistan and the Republican Specialized Scientific and Practical Medical Center of Cardiology has begun a pilot project to demonstrate the possibilities and benefits of telemedicine\(^{209}\). Telemedicine can help reduce costs, provide easy access to healthcare services, streamline physicians’ work, and improve therapy guidance. Yet to fully unlock this potential, telemedicine should be supported with a basic regulatory framework, which is currently lacking.

**Involving and growing Uzbekistan’s digital health private sector.** The Government is taking a top-down approach to digital transformation of the health sector. The domestic IT sector is largely excluded, and the potential value of the private sector’s contribution is not appreciated. The Government largely ignores the startup ecosystem and does not provide incentives for private sector involvement. The private sector’s capital and expertise needs to be fully developed and utilized for digital innovation in the health sector.

The MoH believes that certain systems, such as CORE (which involves individual medical records) and privacy policies and standards, need to be put in place before the local private sector can be effectively engaged. Key systems are purchased instead from foreign vendors. The DECA team believes that involving local private companies much earlier, in projects alongside international companies, would create two important benefits. Such collaboration would: (i) gradually build the capacity of the domestic companies through collaboration

---

Digitization of public health is a challenging task. The Health Information System (HIS) in Uzbekistan is highly fragmented, lacks key digital components, relies on fractured data collection and sharing, and lacks clarity in terms of standardization and governance structure. Uzbekistan lacks a comprehensive HIS strategy that would involve the private sector and provide standardized terms and conditions. The sector has not adopted any international standards for digitized health and the medical community still uses paper-based records.

From an administrative standpoint, coordination between the ministries (like MoH and Ministry of Innovation Development) is insufficient, lacking clarity around designated roles and responsibilities. MoH also lacks a sufficient number of experienced health professionals who can guide and work in harmony with the IT-Med professionals.

**BOX 9: USAID involvement in digital health of Uzbekistan**

Since September 2018, USAID has funded the program “Establishing a Health Information System” in Uzbekistan. Under this program, WHO’s Uzbekistan office has been providing technical support to the government to strengthen the Health Information System (HIS) and eHealth.

Challenges related specifically to health data management systems include:
- lack of e-database at public institutions for patient-level data;
- use of outdated computers by health facilities in remote areas;
- lack of computer access at some health facilities;
- lack of IT personnel for sub-district and district level institutions;
- lack of active broadband connection for sub-district institutions; and
- limited feedback on institutional performance (existing feedback centers on reporting requirements and progress only).

Common challenges, cited by WHO interviews and DECA team research include:
- paper-based records;
- lack of basic digital literacy among staff;
- slow internet connections; and
- non-uniform recordkeeping.

Recommendations:
- DMS digitalization;
- internet speed improvements and hardware upgrades;
- creation and adoption of a unified database for all health facilities;
- creation of a database-linked reporting network;
- expansion of IT personnel; and
- digital training for all HIS users.
FIGURE 24: Overview of public health sector under the Ministry of Health

Ministry of Health
(Republic level health care facilities, specialty medical centres, Republican centre for emergency medicine, maternity hospitals, dispensaries, Regional Pediatric multi-specialty centres, Republican centre of sanitary and epidemiological surveillance, Republican centre for HIV/AIDS relief, Research Institute of Haematology and Blood Transfusion, Republican research centres, medical education institutions and universities, Institute of Health and Medical Statistics)

Regional or Viloyat Health administrations (Regions, Tashkent city, Republic of Karakalpakstan)
(Republican multi-specialty medical centres, Regional specialized hospitals, maternity hospitals, dispensaries, Regional Pediatric multi-specialty centres, Regional centres for emergency medicine, Regional sanitary and epidemiological units, Regional centres for HIV/AIDS relief, Regional blood transfusion stations)

Tuman Medical Union
(Central tuman multi-specialty outpatient clinic, central tuman hospital with emergency medical services unit, tuman sanitary and epidemiological units)

City Medical Union
(Central city multi-specialty outpatient clinic, central city hospital with emergency medical services unit, city sanitary and epidemiological units)

Rural medical stations, obstetric centres and dispensaries (small towns and rural areas)

Family Polyclinics, obstetric complexes, specialized hospitals and dispensaries (large cities and viloyat centres)

Source: WHO Report on Situational Analysis of Data Management System in Uzbekistan in 2020

FIGURE 25: Overview of the health information system in Uzbekistan

The State Committee of the Republic of Uzbekistan on Statistics

Ministry of Health
(Institute of Health and Medical Statistics)

Regional Health Department

Regional Health Department

Tuman or City Medical Union

Tuman or City Medical Union

Sub-District level health care facilities

Statistical Departments of Regions, Karakalpakstan and Tashkent City

National Disease Control Programmes and Sanitary and Epidemiological centres

Tuman or City Statistical Divisions

Private health care facilities and public health facilities under other ministries

Source: WHO Report on Situational Analysis of Data Management System in Uzbekistan in 2020

DIGITAL ECOSYSTEM COUNTRY ASSESSMENT

Uzbekistan DECA Findings

SECTION 2: DECA FINDINGS

Uzbekistan DECA Findings

Uzbekistan DECA Findings

Uzbekistan DECA Findings
2.4.2. CLIMATE CHANGE

Uzbekistan is highly vulnerable to climate change. The country faces potential increases in temperature, extreme weather events, land degradation, and continued expansion of deserts and arid areas. The climatic shift already is putting stress on Uzbekistan’s limited water supplies, resulting in increased water shortages in some regions. Cross-border water disputes between Uzbekistan and its neighbors have recently re-emerged. The Republic of Karakalpakstan, situated next to the Aral Sea, and the Bukhara region face issues with soil degradation and increasing desertification.

Digital technologies offer the potential to prevent and address some of the climate change challenges Uzbekistan is facing. For example, an agri-tech start-up in Brazil called Agrosmart uses data analytics to make predictions about soil, weather conditions, and crops to help farmers save water and energy. Importantly, it is designed to transmit data on a 3G network. In Nigeria, Agronovate is using IoT and AI to build a smart mobile storage system for small farms that will eliminate food waste and help reduce their carbon footprint. Studies and pilots are also underway using satellite data and blockchain technologies to incentivize regenerative agricultural practices.

Uzbekistan and the donor community are taking steps to address climate change in the country. On the national policy level, the Government has developed a National Policy Framework for Water Management, as well as a Strategy for Transition to a Green Economy 2019-2030 (Green Strategy). The Green Strategy aims to reduce greenhouse gas emissions by 10%, bring the share of renewable energy sources to more than 25% of total electricity generation, and provide access to energy to 100% of the population and sectors of the economy. The Digital Uzbekistan Strategy includes numerous program proposals that would integrate digital technologies into sectors including agriculture, water, and forestry. The proposed programs call for development and use of information systems, platforms, and innovative technologies to improve agricultural outputs and manage water supply monitoring and use. It additionally calls for the creation of unified national databases on agricultural R&D and geo-information, as well as the establishment of information-sharing systems among relevant government bodies. Programs for the Republic of Karakalpakstan and the regions of Bukhara and Namangan include effective agricultural and water management systems among their top priorities.

Projects and activities led by the Government and various donors are planned or already underway. The Jizzakh Organic cluster in the Jizzakh region launched an effort this year to use drones to map and monitor land, crops, and vegetation. The Tashkent Institute of Irrigation and Agricultural Mechanization Engineers has partnered with Huawei to launch a project on “smart” agriculture using control, monitoring and data processing systems based on 5G technologies, IoT, and intelligent sensors. The Global Disruptive Tech Challenge 2021 aimed to identify and support disruptive technologies and innovative approaches to landscape restoration in the Aral Sea.

---

region with a focus on agricultural, forestry, sustainable economic development, information and knowledge. The winning proposal creates honey gardens with help of international irrigation practices in the Aral Sea basin.

In Kuva District, Ferghana region, the European Union has piloted an innovative solution to manage water accounting, popularly known as “smartsticks,” which monitor the amount of water discharged to farmers. They have helped increase efficient water distribution, decrease related conflicts, improve timely irrigation fees, and reduce over-irrigation. Another project in the Ferghana region, supported by UNDP, aims to create integrated services for agricultural producers around climate change adaptation and gender. Additionally, an integrated pest management program is under development that will launch agrometeorological stations in pilot districts.

While these many initiatives and commitments are encouraging, Uzbekistan must address numerous obstacles and challenges to effectively address climate change with digital and emerging technologies. These include issues around legal, regulatory, and institutional frameworks, financing and investment, infrastructure, and human resources.

A 2015 Cabinet of Ministers Resolution imposed restrictions on the import, sale, and use of drones without a permit. Recent amendments to the Criminal Code put heavy penalties on the illegal import, sale, purchase, storage and use of drones, with potential prison sentences from three to 10 years imprisonment. Regulations for using blockchain technologies are focused on cryptocurrencies. In 2020 the Government began the creation of Central Asia’s first regulatory sandbox for blockchain technology development, but this initiative appears stalled. It was intended to create favorable conditions for startups and help attract foreign investment. Newly implemented data localization regulations, however, could contravene these purposes. The continued siloing of data within government bodies and the limits of publicly accessible datasets also create obstacles. To unlock the full potential of digital technology to address Uzbekistan’s climate change challenges, the country must continue to strengthen and expand its digital infrastructure. This requires the growth of a world-class cadre of innovators and specialists, as well as high-capacity broadband networks, datacenters, and cloud computing.

BOX 10: Developing Emerging Technologies in Uzbekistan

Emerging technologies such as the Internet of Things (IoT), big data, artificial intelligence (AI), blockchain, robotics, drones, and more hold tremendous potential to grow countries’ economies and help solve intractable development challenges. Recognizing these opportunities, the Government of Uzbekistan has started to put in place institutional frameworks and conduct pilot projects to test the possibilities.

In mid-2021, the Scientific Research Institute for the Development of Digital Technologies and Artificial Intelligence was established under the MITC and partnered with TUIT’s Scientific and Innovative Center of Information and Communication Technologies and the Scientific and the Practical Center of Intellectual and Software Systems at the Mirzo Ulugbek National University. The Institute’s mandate is to conduct fundamental and applied research and implement government orders and programs. It is leading the preparation of a national strategy for the development of AI that is intended to provide principles and focus areas for use of artificial intelligence in various economic sectors.

---


The Agency for Space Research and Technology under the Cabinet of Ministers was established in 2019 with responsibilities to oversee development and use of technology for unmanned aerial vehicles such as drones, as well as remote sensing satellites.\textsuperscript{222} The Agency is piloting projects related to the agriculture, transport, forestry and geology sectors. For instance, approximately 1,160 square kilometers of the Samarkand region have been monitored and recorded by satellites, creating digitized maps of 2,455 kilometers of roads, then integrated into a digital platform using AI.\textsuperscript{223}

Uzbekistan’s large research Institute of Physics and Technology was established in 1943, conducting fundamental and applied research and scientific and technical developments on topics including semiconductor physics, electronics, optoelectronics and photonics, and solar energy conversion. The Institute is internationally recognized and partners with a wide range of research institutions from France, Korea, the United States, and Australia, among others.

There are also early developments in robotics and 3D printing. Several robotics companies are operational, and the Government has ambitions to use robotic surgery in public health.\textsuperscript{224} The Russian-manufactured robot “Promobot,” was deployed as a surveillance tool in the stores of the largest supplier of security equipment in Tashkent this year. In 2018, the Yashnabad Technopark began manufacturing 3D printers for the domestic market\textsuperscript{225} and robotics for export.\textsuperscript{226}

USAID/Uzbekistan can partner with Uzbekistan’s government and industry to achieve and sustain an open, secure, and inclusive digital ecosystem by strengthening the necessary enabling environment, improving education, and investing in the private sector. USAID/Uzbekistan can focus its digital ecosystem programming in key intervention sectors such as health and agriculture/climate to help ensure greater, more sustainable impact. Leveraging international experiences and practices to ensure the policy and regulatory framework is ready for holistic and inclusive reforms will support the overall enabling environment for digital transformation. Addressing the gaps in digital literacy, digital skills, and investing in an IT talent pool will have cross-cutting impacts, helping to accelerate the digitalization of economic sectors and the inclusion of women, minorities, and other groups currently being left behind. The digitally enabled private sector will continue the market transformation.

Table 6 below summarizes each recommendation as follows:

**What:** links to the recommendation details  
**Why:** provides the motivation or intended impact of the recommendation  
**How:** summarizes the approach USAID/Uzbekistan can use to implement the recommendation

The detailed recommendations section that follows provides further explanation of how USAID/Uzbekistan can implement each recommendation. These recommendations only provide possible areas of intervention for USAID’s consideration; their inclusion does not imply a commitment by USAID to act on them. When acting on any of these recommendations, information on best practices in digital development program design can also be helpful. The Principles for Digital Development227 and the USAID Digital Investment Tool are great sources. For guidance or technical support on any of these recommendations please contact digitaldevelopment@usaid.gov or request assistance through UTRAMS.

### TABLE 6: Summary of DECA recommendations for USAID/Uzbekistan

<table>
<thead>
<tr>
<th>WHAT?</th>
<th>WHY?</th>
<th>HOW?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner with MITC/IT Park through demand-driven assistance mechanism</td>
<td>MITC/IT Park is a critical player in digital development in Uzbekistan and providing this support will build trust between the USG and GOU.</td>
<td>USAID/Uzbekistan should access the services of pre-competited technical assistance and training mechanisms to develop a short-term, demand-driven program to support the GOU’s immediate needs in implementing Digital Strategy 2030. This could start with policy support, firm-level assistance, and awareness campaigns related to the digital startup ecosystem. An immediate opportunity for USAID/Uzbekistan to build trust with IT Park is to sponsor the cost of conducting a long-delayed and much-needed IT and startup sector market assessment.</td>
</tr>
</tbody>
</table>

---

227 These principles are nine living guidelines that provide best practices for every phase of the project life cycle. They were created in consultation with various international development organizations including USAID.
<table>
<thead>
<tr>
<th>WHAT?</th>
<th>WHY?</th>
<th>HOW?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support last-mile connectivity using innovative business models,</td>
<td>Expanded connectivity, growth of local private sector partners and greater digital inclusion</td>
<td>USAID/Uzbekistan can work with a broad set of national and local stakeholders, including MITC, MNIs, ISPs, schools, healthcare centers and businesses, to design and implement pilots for sustainable, affordable, reliable broadband in last-mile communities.</td>
</tr>
<tr>
<td>financing, and stakeholder engagement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accelerate resilient digital government transformation</td>
<td>The need for and expansion of digital government has been accelerated during the COVID-19 pandemic and Uzbekistan has committed to deliver user-friendly and efficient services that add value.</td>
<td>USAID/Uzbekistan can encourage partnerships between Government, multinational tech companies and domestic private companies to develop IT solutions that meet Government needs and grow the local IT sector. USAID should support an institutional platform for developing digital skills, including cyber-hygiene, across the public sector workforce.</td>
</tr>
<tr>
<td>Promote and support alignment with global best practices in</td>
<td>Improved policy and regulatory enabling environment for growth of civil society, media and private sector, drawing upon national and international expertise</td>
<td>USAID/Uzbekistan should include technical assistance to support regulatory reforms in any programming that includes digital development activities; the range of topics includes telecom sector regulation, cybersecurity, data privacy and protection, IT sector, intellectual property rights, digital trade and commerce, Internet governance, entrepreneurship, Central Asia regional cooperation and harmonization, emerging technologies (5G, IoT, AI, blockchain), and regulatory sandboxes. USAID/Uzbekistan should also encourage Government engagement with local stakeholders and help develop the capacity of local stakeholders to contribute.</td>
</tr>
<tr>
<td>development of policies and regulations for a digital society and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>digital economy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support the production and dissemination of diverse and rich digital</td>
<td>Expanded online expression and inclusion, greater variety of available online information, resources, and entertainment</td>
<td>USAID/Uzbekistan can work with civil society, media, and the private sector to build resilience, develop organizational and operational capacity, and increase supply of educational, informative, entertaining online content in local languages that helps crowd out extremist voices.</td>
</tr>
<tr>
<td>content in Uzbek, Tajik, and Karakalpak languages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support digital transformation of key USAID intervention areas</td>
<td>Grow the digital economy through targeted development and assistance in key sectors</td>
<td>USAID/Uzbekistan can help health sector transformation by rolling out capacity-building training, bringing highly needed international expertise and supporting collaboration between public and private sectors. USAID/Uzbekistan can support multi-stakeholder efforts to use emerging and digital technologies to help improve resilience to climate change impacts on agriculture and water management.</td>
</tr>
<tr>
<td>(health, agriculture, climate)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stimulate the development of a vibrant e-commerce ecosystem</td>
<td>Stronger, more inclusive and resilient digital economy</td>
<td>USAID/Uzbekistan can promote broad digital financial literacy education, expand coverage of the unbanked population with digital financial services, and support adoption of digital financial services and e-commerce by MSMEs with a focus on regions and women-owned enterprises.</td>
</tr>
<tr>
<td>Support development of an inclusive, market-driven digital startup</td>
<td>Stronger startup ecosystem, increased entrepreneurship and private sector participation</td>
<td>USAID/Uzbekistan can provide support for ongoing regulatory reforms and strengthen the IT Park’s capacity to fulfill its mandate, use large government businesses to anchor the incubation and acceleration of sectoral- and industry-focused reforms, develop and provide access to finance for early-stage companies, and facilitate the development of strong national and international networks. USAID/Uzbekistan can prioritize activities to engage more women in startup creation.</td>
</tr>
<tr>
<td>ecosystem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Build digital literacy and digital skills development to bridge</td>
<td>Increased digital trust and inclusion, particularly for marginalized groups; Increased development and demand for digital products and services and expanded work opportunities for Uzbekistan’s youth</td>
<td>USAID/Uzbekistan can learn from, align and coordinate with existing government and donor programs and plans. Engage USAID’s Center for Digital Development to help create a digital literacy toolkit and guidebook for integrating digital literacy training across USAID/Uzbekistan programming. USAID/Uzbekistan can help transform education to ensure the adoption of modern training methods and updated curriculum to meet current and future market demands for digital and business talents and prioritize education and inclusion for women and vulnerable groups. USAID/Uzbekistan can help universities and private schools build international partnerships.</td>
</tr>
<tr>
<td>divides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strengthen cybersecurity policy and enablers (awareness, workforce</td>
<td>Safer, more secure digital infrastructure and use of digital</td>
<td>USAID/Uzbekistan can support strategy and policy development working with USG interagency partners and stakeholders from the public sector, private sector and academia. USAID can also improve cyber hygiene across the population and in civil society and media organizations.</td>
</tr>
<tr>
<td>development)</td>
<td>infrastructure and use of digital technologies</td>
<td></td>
</tr>
</tbody>
</table>
3.1. DETAILED RECOMMENDATIONS

**Partner with MITC/IT Park through a demand-driven assistance mechanism.** To engage in Uzbekistan's digital ecosystem, USAID/Uzbekistan will need to develop a strong, trusted relationship with the Ministry of Information Technologies and Communication, which is the lead partner on many of the programs and projects outlined in the Digital Uzbekistan Strategy. The IT Park under MITC holds the mandate on digital and IT education and IT sector development that aligns most closely with USAID/Uzbekistan’s priorities. USAID should offer MITC/IT Park a demand-driven technical assistance mechanism to address the IT Park’s immediate and medium-term needs to implement Digital Uzbekistan 2030. Assistance could range from policy support on issues such as investment mechanisms (e.g., venture capital, angel investors) and tax incentives, to firm-level assistance (e.g., grants for pre-seed and seed-funding) to awareness campaigns (e.g., targeting women, adult entrepreneurs). Structuring assistance this way can help build trust between USAID and MITC and help demonstrate the broad and deep technical expertise USAID can offer. This relationship could also offer avenues to working with the dedicated Deputy Minister for Digital Transformation in other line ministries — as MITC is playing a coordinating role for digital transformation.

An immediate opportunity exists for USAID to start building a working relationship with IT Park. IT Park urgently needs to conduct an assessment of the current state and potential growth of the IT and startup sectors, but it lacks sufficient capacity and funding. USAID/Uzbekistan could sponsor the assessment and begin partnering with IT Park on startup initiatives based on the findings. The published report will identify areas for public-private partnerships while helping to promote and network Uzbekistan’s startup community with potential international investors.

**Support last-mile connectivity using innovative business models, financing, and stakeholder engagement.** Establishing a trusted, working relationship with MITC can also set the stage for activities related to connectivity infrastructure. As discussed in Pillar 1, the dominance of state-owned enterprises in the telecommunications sector leaves little space for truly independent operators and providers who can help increase access and affordability. However, there may yet be opportunities for USAID/Uzbekistan to engage in this area. For example, the government has prioritized digital connectivity infrastructure for schools, universities, hospitals, healthcare centers, and mahallas. With more and more miles covered by fiber optic cables and mobile networks, the backbone and backhaul infrastructure increasingly is in place to potentially allow growth of smaller, local and alternative internet service providers. Major construction and upgrades of other network infrastructure such as energy grids (gas, electricity, alternative energy), roads, and railroads also present opportunities to incorporate new digital connectivity infrastructure and activate existing digital infrastructure for broader use.

USAID/Uzbekistan could help convene national and local stakeholders, including MITC, MNOs, ISPs, local governments, healthcare centers, schools, civil society organizations, and businesses, as well as other national network infrastructure operators, particularly energy (gas and electrical), to study viable financing, business, and delivery pilot projects for building sustainable, reliable, high-quality, low-cost broadband access in people’s homes and businesses in rural, low-density settlements. USAID/Uzbekistan could, for example, include expanding digital connectivity infrastructure as part of a program that supports the Government’s plans to bring telemedicine to rural communities. Pilots could consider a variety of financing, business, and delivery models such as public-private partnerships, community networks, cooperatives, and public access centers (including the government services centers or internet cafes). Solutions could also leverage currently planned construction and existing network infrastructure to include investments in digital connectivity networks.
Accelerate resilient digital government transformation. Digital government is among the highest priorities of the Digital Uzbekistan Strategy, as discussed in Pillar 2. USAID can support the Government of Uzbekistan in purchasing and implementing secure, effective Information Systems; conducting business process reengineering; delivering services to businesses and citizens efficiently and transparently; and improving citizen engagement. In designing and implementing digital government programming, USAID should partner with established and trusted partners in this space, including UNDP, GIZ and the E-Government Cooperation Center established between the South Korea and Uzbekistan governments. These partners have solidified relationships with the E-Government Projects Management Center. USAID should also build off the concrete recommendations of the E-Government Academy of Estonia, who the agency recently engaged to do a more in-depth assessment of Uzbekistan’s strengths and weaknesses in this area.

USAID/Uzbekistan should consider supporting an institutional platform for developing digital skills, including cyber-hygiene, across the public sector workforce. Potential government partners/champions in this area include MITC (E-Government Center, UZINFOCOM IT Park), Ministry of Innovations, Public Service Agency and PSCs, Goskomstat and Tashkent City. This responds to the growing demand for digital innovations across the public sector particularly in response to COVID-19 and other external shocks. Specifically, USAID/Uzbekistan can encourage partnerships between government, multinational tech companies and domestic private companies. Such partnerships would help the Government and other stakeholders such as the IT Park and Tashkent City Khokimyat implement innovative digital solutions for good governance, inclusive economic growth, and climate resilience. In addition, it will accelerate the secure integration of government systems and the development of data-driven solutions and mobile applications for government services. Local private sector partners include Didox.uz, Factura.uz, and Smartgov Consulting.

USAID experience in digital government also emphasizes the importance of considering key elements such as change management when introducing new digital government solutions, as well as ensuring the correct legal and regulatory frameworks are in place (see also Recommendation #4), particularly around issues such as data privacy. USAID can support the development of case studies around successful government innovation and digital transformation initiatives. USAID, working through local partners and international experts, could facilitate consultations between the GoU, businesses, and citizen groups to ensure that digital government initiatives account for issues such as data privacy and/or do not contravene social norms. Cybersecurity (Recommendation #10) is also a critical element in building citizen trust in government services.

Promote and support alignment with global best practices in development of policies and regulations for a digital society and digital economy. Uzbekistan’s ambitious digital reform agenda and rapid pace of change have not allowed for a systemic, coordinated approach to revising and updating policies or legal and regulatory frameworks that are critical for thriving digital societies and economies. Reforms have proceeded piecemeal without adequate engagement of interested stakeholders. Limited capacity and resources within Government bodies have resulted in a “copy-paste” approach (often of Russian models) that are not appropriately adapted to Uzbekistan’s context. One element of USAID’s potential institutional support to MITC could be demand-driven support on drafting strategies, laws and regulations for key aspects of digital governance. Public-private dialogue could be facilitated in partnership with key stakeholders such as AmCham Uzbekistan, Internet Society Kyrgyzstan and international experts from USAID, World Bank and the ITU.
Using its convening powers to bring together diverse stakeholders and engage international and regional experts, USAID/Uzbekistan can support the drafting of model regulations and provide recommendations in line with global best practices on specific policy and regulatory issues on a range of topics, including telecom sector regulation, cybersecurity, IT sector, intellectual property rights, digital trade and commerce, entrepreneurship, and Central Asia regional cooperation and harmonization. In particular, working with the Government to reform its internet governance and data privacy and protection regulatory frameworks and strengthen the capacity of the implementing entities could help improve human rights and freedom of expression online.

Emerging technologies (AI, 5G, IoT, blockchain) come with many potential risks alongside the benefits. These are in very early stages of development and use in Uzbekistan, which leaves open opportunities for USAID/Uzbekistan to open dialogues with potential stakeholders, encourage international best practices and develop local capacity. For example, the Government is planning to develop an AI Strategy in the near term. USAID/Uzbekistan can help to align Uzbekistan’s approach with emerging global principles by convening local stakeholders and bringing in international experts who can share knowledge and experience from countries that have already adopted and started implementing AI strategies. The OECD.AI Policy Observatory promotes its intergovernmental standard on AI (“OECD AI Principles”) and provides resources to its partners and all interested stakeholder groups. The Global Partnership on Artificial Intelligence is another initiative that aims to foster international cooperation. A well-conducted process could help develop a cadre of domestic AI experts and grow the capacity of local stakeholders.

Using regulatory sandboxes to help test the effects of policies and regulations and working closely with domestic and foreign private sector innovators should be priorities. The GoU began building a framework to develop regulatory sandboxes for blockchain several years ago, but this initiative stalled when the lead agency lost its mandate, and the effort has not yet been resumed due to lack of capacity. Sandbox initiatives that encourage development and testing of technologies to address climate change impacts could be an opportunity for USAID to help Uzbekistan develop an IT sector niche on the global market (see Recommendation #6).

Support the production and dissemination of diverse and rich digital content in Uzbek, Tajik, and Karakalpak languages. As discussed under Pillar 2, there is evidence of demand for educational, informative, interesting, and entertaining online content (including business- and entrepreneurship-related content) in local languages such as Uzbek, Tajik and Karakalpak. The proliferation of this quality content could also crowd out content in local languages that promotes violent extremism. Engaging on the development of Uzbekistan’s media landscape is, however, challenging. Independent media and civil society organizations are treated with suspicion by the Government. The Government’s regulatory frameworks keep internet governance tightly within its control. The definitions of “banned” or “outlawed” content are broad enough to allow the Government to use regulations to prosecute individuals and organizations that are willing to speak online about controversial topics, including human rights. Enforcement can be arbitrary and untransparent. At the same time, the national government appears to welcome some criticism of local and regional government bodies when it has identified corruption and abuse of power among local officials. As a result, USAID should choose topics and areas of media engagement carefully, to avoid putting supported individuals and organizations in the Government’s crosshairs.

Supporting the development of business-related content could be uncontroversial and aligns well with the GoU’s objectives for Digital Uzbekistan 2030. Working with local partners to address online extremism (including growing religious extremism) might be a topic of engagement welcomed by the Government. Likewise, focusing on improving basic cyber hygiene of individuals and small businesses and organizations might serve as a welcome,
less threatening first step towards deeper engagements in the cybersecurity space (see also Recommendation #10). USAID’s Digital Apex mechanism is designed to help USAID’s partners improve their cybersecurity practices. Online cybersecurity trainings could be coordinated with “in-person” content (when the time comes) promoting startup thinking and entrepreneurship (see also Recommendation #8).

Whenever appropriate and feasible, content should be developed for easy accessibility on mobile devices, designed for low-data demand and offline use. Popular platforms such as Telegram, TikTok, and Instagram can be used for content dissemination and awareness-raising campaigns. Promoting the growth of digital content startup companies – Podcasting, for example – could stimulate SME development while enriching the information ecosystem.

Prioritizing online educational content creation and translation also is important, a reality made clear by COVID-19 and the communication needs surrounding it. The Ministry of Public Education, TUIT, other local universities and vocational training centers, the IT Park, IT Centers, and private companies are all important potential partners for developing and disseminating educational content. USAID should also explore partnerships with companies such as Khan Academy or Coursera, who often provide subsidized access to a range of pre-existing business-related courses. These courses could also be translated or subtitled in local languages, with USAID support.

USAID/Uzbekistan should also build on successes and lessons from the USAID Central Asia Media Program and regional partners such as Internet Society Kyrgyzstan. Areas and topics for trainings include: (i) introducing the concepts of internet governance, digital rights, and digital repression, including recognizing and addressing misinformation and disinformation; building operational and business skills to grow and sustain independent organizations; and developing targeted, gender-specific content aimed at bringing more women and girls online and overcoming social stigmas, supporting female bloggers and content creators, and identifying and promoting role models and leaders.

Support digital transformation of key USAID intervention areas (health, agriculture, climate).

USAID/Uzbekistan’s Country Development Cooperation Strategy (CDCS) was not yet released during DECA research, though health, agriculture and climate change presumably will be among the mission’s priorities. Digital transformation of these sectors has been accelerated by COVID-19, though innovations in these sectors also predate the pandemic. USAID/Uzbekistan should engage its technical experts and implementing partners in these sectors, as well as technical experts from the USAID Digital Development Lab, to explore how ICT solutions — including 5G paired with emerging technologies such as artificial intelligence and the internet of things (IOT) — can help advance Uzbekistan’s goals in key social sectors. Some illustrative activities, organized by sector, include:

**Health.** The Ministry of Health is developing its Strategy for Digital Transformation of the Health Sector; the strategy should be released before the end of 2021. This represents an excellent opportunity for USAID/Uzbekistan, as this could coincide with the release of the Mission’s CDCS. USAID/Uzbekistan should coordinate closely with the Ministry of Health and with other donors to identify areas where USAID can best support strategy implementation. This could include digital skills development (see Recommendation #9) and promoting an innovation ecosystem around data-driven digital health solutions and services, driven by public-private partnerships. Engaging private sector partners (both foreign and domestic) could have a positive spillover effect on innovation in health tech, increase investment attractiveness of the startup market, and enhance medical services and service delivery (see also Recommendation #6).
**Climate change/agriculture.** Uzbekistan is one of the world’s most vulnerable countries to the impacts of climate change. Extreme weather events have a direct negative impact on agricultural development and water management, among other sectors. This was witnessed firsthand during the DECA team’s visits to the Autonomous Republic of Karakalpakstan Bukhara Region and the Ferghana Valley. Protecting critical ecosystems, building resilience against the impacts of climate change and promoting the flow of capital toward climate-positive investments are all anticipated elements of USAID’s upcoming Climate Strategy that can be supported through the development and use of digital technologies in Uzbekistan. USAID can provide technical expertise, capacity-building and direct financing through grants in partnership with large enterprises in agriculture and energy. A comprehensive program that uses government resources to help catalyze the private sector can help grow both the demand for and supply of digital solutions for climate change, including solutions driven by emerging technologies.

USAID/Uzbekistan also can bring in international experts and facilitate networking with potential partners to help companies develop and launch industry-focused acceleration programs and venture funds. This would support the Government’s International Innovation Center for the Aral Sea, which is tasked with helping to attract foreign companies and investors to Uzbekistan. USAID/Uzbekistan also could provide funding to the Multi-Partner Human Security Trust Fund for the Aral Sea Region and join the Technical Group on Data and Assessments for the Aral Sea.

These actions could strengthen Uzbekistan’s resilience while growing its knowledge and capacity in use and adoption of emerging technologies such as 5G, IoT, Big Data, and AI. Uzbekistan could leverage its experiments with using emerging technologies to address climate change to develop globally-competitive fields of “smart specialization” and related professions, as well as innovative products and solutions that could be used domestically and exported abroad.

**Stimulate the development of a vibrant e-commerce ecosystem.** Increased penetration of smartphones, improved accessibility and affordability of the internet, and the proliferation of online banking services and mobile payment apps make financial products and services more available to formerly disconnected segments of the population. While the COVID-19 pandemic has negatively impacted Uzbekistan’s economy in the short-term, it has also accelerated the development and adoption of digital technologies, platforms, and solutions, especially in digital finance and e-commerce. USAID should help Uzbekistan build on this momentum by increasing digital financial literacy; expanding coverage for the unbanked population; supporting remote identification tools; and providing firm-level support to underserved MSMEs.

**Increase digital financial literacy.** USAID/Uzbekistan can play a critical role by introducing systemic market education, advocating for and supporting information campaigns around digital payments to improve the financial literacy of rural and underserved populations. The educational and awareness materials should emphasize how to get cashback and other benefits and conveniences as a result of digital payments and non-trading operations; use of mobile applications and new technologies such as QR payments; and protection of consumer rights and cybersecurity.

Telegram and YouTube can be used to bring wide awareness. It is critically important to introduce content in the Uzbek language to reach rural and young populations.
**Expand coverage to the unbanked population.** USAID should support pilot programs in Mobile Financial Services (MFS) development in the regions — these pilots would benefit both service providers and users. With smartphone penetration at 80-90% of the overall Uzbekistan population, MFS initiatives such as mobile-enabled payment systems and mobile banking with security and convenience for transfers, payments and savings through mobile wallets may help to reach unbanked populations. MFS pilots should be based on USSD to cover areas with low broadband and 3G/4G coverage. USSD is a fast, deployable service with a low cost of service and a wide range of operations, reaching all users with a GSM phone, including the oldest and least expensive models. Pilots should also be reinforced by educational campaigns on the benefits of mobile money. USAID should also consider supporting the Central Bank’s initiative on QR payments and explore activities supporting Islamic banking using digital tools.

**Shape evolution of remote identification tools for the digital financial services sector in a manner that ensures human rights protection.** Remote identification tools can help underserved populations (many of whom lack formal government IDs) access financial services. Indeed, in several countries around the world digital ID efforts are pioneered by the financial services industry and scale into other digital government uses later. USAID should focus on supporting the introduction of standards and new technologies in remote identification for the financial sector that are secure, safe and protect individuals’ privacy. This will require a legal framework that provides minimum requirements for authentication system implementation. It is necessary to establish security standards for biometric authentication systems and help providers implement biometric identification technology.

To create a remote identification mechanism that confirms identity with high accuracy, a specialized Identity Exchange Center (IEC) must be created under the regulator of market participants gaining access to the system. The model proposed for consideration assumes remote identification of clients using biometric indicators and information from government databases. New methods could introduce the use of data received from mobile operators to identify individuals.

**Increase adoption of digital financial services and e-commerce by woman owned and regional MSMEs.** USAID/Uzbekistan could initiate business training and education for woman-owned MSMEs in a partnership with Uzbekistan e-Commerce Associations, women’s business associations such as the Association of Women Artisans in Bukhara, and international e-commerce platforms. Training topics could include working with platforms, selling online, and strategically using online services such as advertisement and platform finance. USAID could advocate for special training and education finance programs to wide access to training while ensuring participant buy-in and commitment. Another intriguing possibility would be introducing e-commerce solutions program to dehkan farms. USAID/Uzbekistan could also partner with the e-Commerce Association and local platforms to collect sex-disaggregated data. This will engage the private sector, plan targeted activities, and equip the government and other donors with better market knowledge of woman-owned MSMEs.
Support development of an inclusive, market-driven digital startup ecosystem.
Developing a startup ecosystem is one of the IT Park’s mandates. This provides an excellent opportunity for USAID to partner with the GoU in a technical area (startups, tech entrepreneurship) where the United States is considered a key global leader. USAID should consider anchoring startups to major industry and sectoral players, increasing access to finance for startups, offering training on entrepreneurship and innovation, and building out national and international networks.

Anchor startups to major industry and sectoral market players. UZCARD’s impact on the development of Uzbekistan’s fintech sector (see Pillar 3, Box 7) shows how an anchor firm can drive development of the startup ecosystem. USAID should seek out new anchor firms in the tech sector by consulting with government and industry stakeholders to identify specific, unmet market needs; organizing competitions and events to encourage innovation; working closely with high-potential startups through continuous mentoring and feedback programs; and launching long-term accelerator programs. Partnering with international and local women’s business associations, as well as the IT Park and universities, USAID/Uzbekistan should also recruit more women entrepreneurs through dedicated mentoring and public information campaigns that may help overcome traditional social norms and change perceptions.

Increase access to finance. USAID/Uzbekistan can support programs that provide grants and vouchers for early-stage financing and help develop market capacity for private venture capital funds and angel investing. To develop grant and voucher programs, USAID/Uzbekistan can partner with local organizations like Technovation, as well as the IT Park, and any eventual accelerator programs run by large companies, to introduce small-scale, early-stage financing. The goal of such a program would be to allocate funds on a transparent basis and cover as many startups as possible. Through small grants or matching funds, USAID could also help small startups finance participation in networking events and online classes at lower cost and with minimal risk. USAID/Uzbekistan should also raise awareness of angel investing and venture capital funds, including by translating existing training content into Uzbek. The American Chamber of Commerce and the CIO Club might also assist in this regard.

Introduce programs on tech entrepreneurship, business skills, and content. USAID/Uzbekistan can support the development of entrepreneurial courses and programs in universities such as TEAM, IUT, TUIT, TIUE, and other training programs such as IT-Academy. Project- and workshop-based courses should be included where students can gain experience in running a business, by improving soft and hard skills (from presentations and networking to financing and business planning. Special attention should be given to different investment forms, such as venture capital versus crowdfunding. The introduction of programs and courses are particularly important for non-economic faculties. Special attention should also be given to exchange programs at a regional level and beyond. As mentioned in Recommendation #5, USAID should support the development and/or translation of educational and professional content (e.g. YCombinator, Khan Academy, Coursera) into Uzbek and other local languages.
**Develop national and international networks.** Uzbekistan lacks an independent national business association for the tech/IT sector and international networking beyond Central Asia and Russia is relatively weak. USAID/Uzbekistan can partner with and build on the online success of MFaktor, for example, to establish and support a national business association for the tech/IT sector. USAID can also co-sponsor relevant events with the American Councils and others, to enhance knowledge sharing, international experience, networking, and language learning opportunities for entrepreneurs. USAID can help build connections to emerging startup hubs in places such as Dubai, Istanbul, or the Baltic countries. Besides its shorter programs, such as contests, global startup summits, conferences, training and education programs, USAID can provide support for businesses’ participation in longer programs, such as internships, exchanges, and acceleration programs.

**Build digital literacy and digital skills development to bridge digital divides.** Digital literacy and digital skills development are critical to implementing activities and effecting change across all three DECA pillars. Gaps and needs for digital literacy and digital skills are context-specific: priorities vary depending upon geographic location, gender, disabilities, and other demographics. Shared frameworks, curricula, and materials should be designed for flexibility in different contexts to address varying needs. Beyond basic digital literacy, Uzbekistan also has a great demand for ICT specialists — ranging from software development to more advanced areas such as artificial intelligence. Women have great potential to fill these market gaps. USAID can help by supporting development of digital competence and skills frameworks and accompanying curricula. This would include sector-specific frameworks and curricula for the health, agriculture, and energy sectors and investing in an ICT talent pipeline that prioritizes opportunities for underserved student populations on the wrong side of the digital divide.

**Digital competence frameworks and curriculum development.** USAID should support development of citizens’ and teachers’ digital competence frameworks with related indicators for shared monitoring and evaluation. Drawing from the EU Competence Framework, areas of focus should include information and data literacy (including misinformation and disinformation); communication and collaboration; and safety (including online harassment and its links to offline violence). Development of these frameworks might be coordinated and shared on a regional level across Central Asia. USAID should also support the preparation of teaching and training curricula based on the digital competence frameworks and conduct “train the teachers/trainers” to improve their own digital literacy and ability to teach in a variety of settings including schools, IT Centers, and businesses. The Ministry of Public Education, Ministry of Health and MITC (IT Park) would be important partners.

**Best-practices platform.** USAID should work with the IT Park’s network of IT Centers and the private sector to develop a multilingual platform (English, Uzbek, Tajik) to share knowledge, training materials, experience, and best-practices case studies that can be used by trainers and educators. They should also build in MERL tools and create mobile-accessible content that is geared toward different demographic groups, including adults. USAID should also engage partners to conduct awareness campaigns to broaden use and uptake of the platform’s resources, including by civil society and small businesses.
**Sector-specific digital literacy investments.** The Mission could draft standardized RFP language to be used and adapted across sectoral programs — agriculture, tourism, health, education, and governance — to include digital literacy and skills training activities. This “whole of programming” approach could help strengthen Uzbekistan’s digital ecosystem by reaching the broadest possible number of beneficiary groups. The health sector offers a key example of sector-based digital literacy programming: the DECA team found that some medical professionals struggle to start a computer without assistance and many potential beneficiaries lack required digital skills to benefit from e-services. USAID/Uzbekistan can collaborate with regional players and the private sector to develop a national digital skills program for the healthcare sector and marginalized communities. Such a program will increase overall digital literacy and improve digital health equity.

**Support digital literacy through strategic grants to local and international NGOs.** Building off this DECA, USAID should develop a grants program for public and private universities, local healthcare clinics, vocational training centers, unemployment centers, IT Centers, women’s business organizations, and trade associations who can help bridge digital divides by increasing the digital literacy of underserved or vulnerable populations. MNOs and ISPs may also be effective partners for disseminating mobile-accessible content. Training youth to train younger siblings, parents, and grandparents can be an effective way to transfer knowledge more broadly. Special attention will need to be paid to ensuring women and girls are fully included. Where relevant and feasible, trainings should be linked to employment opportunities.

**Analyze Uzbekistan’s ICT/4IR skills gap.** USAID should launch a study to formally analyze the ICT skills gap in Uzbekistan, including the country’s readiness to embrace the Fourth Industrial Revolution (4IR). This would include industry’s demand for the wide range of ICT and STEM skills, sector-specific demands (health, digital government) and the need for managerial, entrepreneurial and soft skills. On the supply side, the study would analyze the current ICT/STEM curriculum offerings from public and private universities and training centers, vocational education centers, certification offerings from international companies (Microsoft, AWS, etc.) and opportunities to upskill or reskill workers with nontraditional degrees for ICT fields. Finally, the study would address online job platforms, recruitment sites, and communities of practice to better understand how tech jobs are advertised and filled in Uzbekistan. The needs of women, rural populations and disabled citizens would be a special area of focus — to address the digital divides presented throughout this report. USAID could popularize the study results and recommendations working through the American Chamber of Commerce and other private sector entities.

**Promote inclusive education.** USAID/Uzbekistan can design women-oriented specific business courses and training that may be implemented through courses in higher education institutes, special training, or as part of the incubation or acceleration at IT Park. USAID/Uzbekistan should also support women’s fellowship programs to enter university or other tech and business courses — targeting women in rural areas and women whose husbands are labor migrants. It is important to provide adaptive work options such as working online from home and flexible working hours. USAID should also collaborate with NGOs such as the Center for Youth and Children with Disabilities228, universities, and the private sector to ensure opportunities for disabled people and educate employers on their potential.

---

Strengthen cybersecurity policy and enablers (awareness, workforce development).
The Uzbekistan government views cybersecurity as a national security issue and has therefore been wary about accepting outside assistance in this area. However, there is evidence of an opening and incremental, confidence-building engagements can build trust. USAID can work with US government interagency partners such as the Department of State and DHS Cybersecurity & Infrastructure Security Agency (CISA) to identify experts and training materials and integrate cybersecurity into sector-based programming using USAID’s new Cybersecurity Primer.

**Policy/strategy level interventions.** On the policy and strategy level, USAID should partner with the government to convene representatives from the public sector, private sector, academia and civil society to support development of a National Cybersecurity Strategy and legal framework. They should also engage international experts to share knowledge and experience from “best practices” countries such as the United States, Estonia, and South Korea. A legal and institutional framework that creates a safe, secure digital environment and establishes standards and procedural tools that can hold both the government and private sector accountable are necessary to develop a digital ecosystem that can be trusted to protect human rights. A well-conducted process could help raise general awareness and bring expanded cybersecurity knowledge to a broader set of institutions, organizations, and individuals. USAID could also work with AmCham and financial services companies (often the leaders on cybersecurity initiatives) to convene public-private dialogue on risk-based and adaptable cybersecurity policies and practices based on international best practices. A possible first topic could be around security incident reporting and data breach notifications.

**Strengthening cybersecurity enablers.** Public awareness campaigns and workforce development are key cybersecurity enablers and USAID can support Uzbekistan in these areas. For example, DHS CISA has many off-the-shelf communications materials to promote better cyber hygiene, including a collection of cheekily named “Bad Practices” (instead of best practices) that will expose businesses and individuals to hacking, phishing and ransomware attacks. Working with the Government’s Cybersecurity Center, international and local financial services companies, popular platforms such as Telegram, and local universities (e.g., Webster University in Tashkent), USAID could sponsor cyber hygiene awareness campaigns to pre-empt potential cyberattacks and data breaches. Workforce development is another relatively “neutral” area where USAID could provide technical and financial assistance. Working off observations/recommendations from the ICT/4IR skills gap analysis (see Recommendation #9), USAID could work with private universities and tech vocational schools to improve their service offerings and develop innovative talent finance models to make education more readily available to women, rural populations and disabled people who are interested in cybersecurity careers.
Appendices

Appendix A — Government of Uzbekistan: Structure and Responsibilities

The graph below demonstrates administrative-territorial units across the country. The National Administration of Uzbekistan can be represented in three pillars. These are: Tashkent City, 12 regions (also known as oblast or viloyat), and the Autonomous Republic of Karakalpakstan. Regions are divided into districts (known as tumans) and cities subordinate to the previous level (regional or republican). Districts are divided into cities of district subordination, urban settlements, and rural citizen gatherings.

**FIGURE 26: Administrative-territorial division of Uzbekistan**

The figure below summarizes the governance structure in Uzbekistan, showing the separation of powers and levels of subordination.

*Source: Elaborated based on open sources*[^229]

---

FIGURE 27: Powers verticals in Uzbekistan

Government Structure in Uzbekistan

President

Legislative Power
- Oliy Majlis (Parliament)
- Legislative Chamber
  - Senate

Executive Power
- Cabinet of Ministries
- Ministries
  - Khokimiyats (local administrations)

Judicial Power
- Constitutional and Supreme Courts
- Civil Courts
- Mahallas and Auls (Self-governing Bodies of Citizens)

Source: Elaborated by the authors based on open sources
Appendix B — Definitions
Definitions from USAID Digital Strategy 2020-2024 unless otherwise noted.

Cybersecurity: The prevention of damage to, protection of, and restoration of computers, electronic communications systems, electronic communications services, wire communication, and electronic communication, including information contained therein, to ensure its availability, integrity, authentication, confidentiality, and non-repudiation.

Cyber Hygiene: The practices and steps that users of computers and other devices take to maintain system health and improve online security. These practices are often part of a routine to ensure the safety of identity and other details that could be stolen or corrupted.230

Data Privacy: The right of an individual or group to maintain control over, and the confidentiality of, information about themselves, especially when that intrusion results from undue or illegal gathering and use of data about that individual or group.

Data Protection: The practice of ensuring the protection of data from unauthorized access, use, disclosure, disruption, modification, or destruction, to provide confidentiality, integrity, and availability.

Digital Divide: The distinction between those who have access to the internet and can make use of digital communications services, and those who find themselves excluded from these services. Often, one can point to multiple and overlapping digital divides, which stem from inequities in access, literacy, cost, or the relevance of services. Factors such as high cost and limited infrastructure often exacerbate digital divides.

Digital Economy: The use of digital and internet infrastructure by individuals, businesses, and government to interact with each other, engage in economic activity, and access both digital and non-digital goods and services. As the ecosystem supporting it matures, the digital economy might grow to encompass all sectors of the economy — a transformation driven by both the rise of new services and entrants, as well as backward linkages with the traditional, pre-digital economy. A diverse array of technologies and platforms facilitate activity in the digital economy; however, much activity relies in some measure on the internet, mobile phones, digital data, and digital payments.

Digital Ecosystem: The stakeholders, systems, and enabling environment that together empower people and communities to use digital technology in order to gain access to services, engage with each other, or pursue economic opportunities. A digital ecosystem is conceptually similar to, but broader than, a digital economy. Although certain aspects of the digital ecosystem have country-wide reach, other features differ across geographies or communities. The critical pillars of a digital ecosystem include 1) sound enabling environment and policy commitment; 2) robust and resilient digital infrastructure; 3) capable digital service-providers and workforce (e.g., both public and private institutions); and 4) empowered end-users of digitally enabled services.

Digital Identity: The widely accepted Principles on Identification define identity as “a set of attributes that uniquely describes an individual or entity.” Digital identification (ID) systems often require registering individuals onto a computerized database and providing certain credentials (e.g., identifying numbers, cards, digital certificates, etc.) as proof of identity. Government actors can set up these systems to create foundational, national ID programs, or donors or non-governmental organizations (NGOs) for functional purposes to identify beneficiaries, e.g., for humanitarian assistance and service-delivery.

Digital Literacy: The ability to “access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital devices and networked technologies for participation in economic and social life. This may include competencies that are variously referred to as computer literacy, information and communication technology (ICT) literacy, information literacy, and media literacy.”

Gross National Income: The gross national income (GNI), previously known as gross national product (GNP), is the total domestic and foreign output claimed by residents of a country, consisting of gross domestic product (GDP), plus factor incomes earned by foreign residents, minus income earned in the domestic economy by nonresidents. 231

Disinformation: Disinformation is defined as false information spread with the specific intent to deceive, manipulate, or influence behavior. It differs from misinformation because it requires malign intent.

Internet Service Providers (ISPs): ISPs include both fixed-line and wireless technologies. Wireless ISPs operate over unlicensed spectrum. ISPs include both small, local services and global providers.

Misinformation: Misinformation refers to any false or inaccurate information, such as rumors and hoaxes. Social media platforms are regularly used to spread misinformation.

Mobile Network Operators (MNOs): MNOs provide cellular voice and data services. MNOs provide internet services through wireless technologies, operating over licensed spectrum.

Single Sign On: Single Sign On (SSO) is an authentication system that permits a user to access multiple services after going through user authentication only once. This involves authentication into all services the user has given permission to, after logging into a primary service. SSO avoids the monotonous task of confirming identity over and over again through passwords or other authentication systems.

Spectrum: Refers to different frequencies of electromagnetic radiation. Regulators designate specific frequency ranges (or bands) for different purposes, including telecommunications. Some bands (e.g., WiFi) are unlicensed, meaning that anyone can use them with the proper equipment. Licensed spectrum requires a regulator’s approval to broadcast (e.g., cellular networks or FM radio). Licenses are typically allocated through spectrum auctions.

Appendix C — Methodology

The Uzbekistan DECA included three components:

1. **USAID/Uzbekistan engagement:** USAID/Uzbekistan designated one point of contact (POC) within the USAID/Uzbekistan program office. This POC was responsible for leading communication with the DECA implementation team and attending selected interviews during the interview phase. The POC also helped organize the introduction and mid-point presentation at USAID/Uzbekistan online before and after the in-country research. These meetings were important to socialize the DECA purpose and preliminary findings across various USAID/Uzbekistan technical offices. This engagement was not only important for ensuring an appropriate mix of interviewees, but was also critical to building the research team’s understanding of USAID/Uzbekistan’s priorities.

2. **Desk research:** The desk research used a standardized template organized around three pillars: digital infrastructure, access, and use; digital society and governance; and digital economy. The desk research included three components: 1) review of USAID/Uzbekistan’s priorities and digitally relevant programming; 2) quantitative analysis of open-source data and indices to produce regional comparisons (e.g., GSMA, World Economic Forum, International Telecommunication Union); and 3) internet research guided by high-level questions under each pillar about the state of Uzbekistan’s digital ecosystem. The desk research was shared with the USAID/Uzbekistan POC before interviews and was used to inform the interview guide questionnaires.

3. **Interviews:** The research team collaborated with USAID/Uzbekistan to compile a list of target stakeholders across civil society, academia, international organizations, the private and public sectors, and within USAID/Uzbekistan. Initial key informant interviews were secured through the DECA team and USAID/Uzbekistan networks. Additional interviewees were added throughout the research process via referrals from completed interviews. During the interview phase, the DECA team conducted anywhere from four to six interviews per day. Most interviews were attended by at least two team members, with a lead interviewer and a notetaker. To best triangulate findings and to test different interview styles, team members rotated with whom they paired on interviews. Each interviewee was asked a general set of questions which were developed prior to the interview phase, tailored to the interviewee, and based on learnings from previous interviews. To ensure a diverse mix of key informants, the research team evaluated the list of scheduled interviews and conducted additional outreach to fill identified gaps. The graph below shows the 66 stakeholder groups from which the team interviewed 84 individuals (25 female interviewees and 59 male interviewees).
ANALYSIS
The bulk of the preliminary analysis was conducted while in-country. During the three weeks of key informant interviews, the DECA team conducted review weekly meetings. These meetings not only ensured that all team members were briefed on each interview, but facilitated the triangulation of emerging themes that could then be tested in subsequent interviews. Mid-way through the interviews, the team identified primary themes based on these initial findings. Upon completing each interview, the team convened to revisit these themes, confirmed their validity against interview notes, and proceeded to organize the findings around the three pillars outlined in this report.

LIMITATIONS
The research team was limited, to an extent, by their technical expertise. DECA team members were chosen in part for their knowledge of key technical areas identified in a preliminary review. This may introduce some bias — weighting the existing specializations of team members more heavily than areas that may be outside their expertise, such as governance and digital trade.

A large portion of key informants were selected through USAID/Uzbekistan and DECA team networks, which may have excluded stakeholders who are less comfortable engaging with U.S. government representatives. Most interviews took place in Tashkent, Nukus, Bukhara and Namangan; as a result, information is limited to these cities-based interviewees’ knowledge and work across the country. Rather than rigorous qualitative methods (e.g., thematic coding), analysis of interview notes depended on triangulation of findings within the research team, who attempted to balance thematic gaps by consulting technical experts and seeking out additional interviewees.

RESEARCH TEAM
The DECA team was composed of digital development generalists and specialists with technical expertise in digital infrastructure and connectivity, digital government, digital economy and the startup ecosystem. Technical experts among the team attended most interviews that were relevant to their expertise.
Appendix D — List of Laws and Regulations

4. Law on introduction of amendments and additions to the law of the Republic of Uzbekistan “on electronic commerce,” 2015.05.22, https://www.lex.uz/docs/2650295
5. Law on payment and payment systems 2019.11.01 https://lex.uz/ru/docs/4575788
6. Law on PPP, 2019.05.10, https://www.lex.uz/docs/4329270
9. On additional measures for the accelerated development of the national system for the provision of public services, 2020.01.31, https://www.lex.uz/docs/4720391
10. On additional measures for the widespread introduction of modern information and communication technologies in tax administration, 2020.06.05, https://www.lex.uz/docs/4844692
11. On additional measures to create conditions for the development of active entrepreneurship and innovation, 2018.05.05, https://www.lex.uz/docs/3723266
12. On additional measures to further create favorable conditions for the population and business entities when using public services, to reduce bureaucratic barriers in this direction, 2021.03.23, https://www.lex.uz/docs/5339625
13. On additional measures to improve financing mechanisms for projects in the field of entrepreneurship and innovation, 2018.11.24, https://www.lex.uz/docs/4076954
14. On additional measures to improve the mechanisms for financing projects in the field of entrepreneurship and innovation 2018.11.24 https://lex.uz/docs/4076954
15. On additional measures to improve the mechanisms for introducing innovations in the industry and the economy, 2018.05.07, https://www.lex.uz/docs/3723559
16. On additional measures to improve the qualification and skills of employees of state and economic management bodies, state authorities in the sites and the procedure of carrying out their certification for the use of technology and technology in work 2011.10.27 https://lex.uz/docs/1889172
18. On additional measures to improve the system of control over the implementation of information technologies and communications, and to organize their protection, 2019.09.14, https://www.lex.uz/docs/4665551
21. On amendments to the Regulation on the procedure for the formation and maintenance of a database of legal services of state bodies and organizations, 2018.05.25, https://www.lex.uz/docs/3750311

22. On approval of the Regulations for the formation of open data, their placement and processing, 2015.12.28, https://www.lex.uz/docs/2849048

23. On approval of the Regulations on the procedure for attestation of heads and employees of subdivisions of state bodies and other budgetary organizations responsible for the development of information technologies and communications, 2018.05.08, https://lex.uz/docs/3725628


29. On measures for cardinal improvement of the qualification assessment system and providing the labor market with qualified personnel, 2020.12.31, https://lex.uz/docs/5203492

30. On measures for further improvement of the education system in the field of information technologies, development and integration of scientific research with IT industry, 2020.10.06, https://www.lex.uz/docs/5032131

31. On measures for further improvement of the information and communication technology sector, 2019.02.19, https://www.lex.uz/docs/3564975

32. On measures for the accelerated development of e-commerce, 2018.05.14, https://lex.uz/docs/3744601


34. On measures for the further comprehensive development of the national system for the provision of public services, 2019.02.15, https://www.lex.uz/docs/4203399

35. On measures for the transition to a qualitatively new system for the formation and implementation of the Investment program of the Republic of Uzbekistan, 2019.05.14, https://www.lex.uz/docs/4336186


37. On measures of further improvement of information technologies and communications sphere, 2019.02.19, https://www.lex.uz/docs/3564975

38. On measures to accelerate the development of electronic commerce, 2018.05.14, https://lex.uz/docs/3744601

39. On measures to create a Technological Park of software products and information technologies, 2019.01.10, https://www.lex.uz/docs/4152134

40. On measures to create conditions for accelerated implementation of Artificial Intelligence Technologies, 2021.02.17, https://lex.uz/docs/5297051

42. On measures to ensure the introduction of modern information, communication and innovative technologies in the water management system, 2018.09.10, https://www.lex.uz/docs/3901293

43. On measures to expand and improve the statistical database in the field of agriculture, 2021.02.26, https://www.lex.uz/docs/5309461

44. On measures to further develop the open data sector in the republic of Uzbekistan, 2020.12.23, https://www.lex.uz/docs/5184574

45. On measures to further improve the activities of the Tashkent University of Information Technologies, 2017.03.15, https://www.lex.uz/docs/3134390

46. On measures to further improve the civil registration system, 2018.06.12, https://www.lex.uz/docs/3779234

47. On measures to further improve the Government portal of the Republic of Uzbekistan on the internet, taking into account the provision of open data, 2015.08.07, https://www.lex.uz/docs/2718602

48. On measures to further improve the infrastructure of the digital economy and the “Electronic government” system, 2019.05.18, https://www.lex.uz/docs/4344417

49. On measures to further improve the mechanisms for attracting foreign direct investment in the economy of the republic, 2019.04.29, https://www.lex.uz/docs/4312750

50. On measures to further modernize digital infrastructure in order to develop the digital economy, 2018.11.21, https://www.lex.uz/docs/4071224

51. On measures to further support innovation, 2018.09.11, https://www.lex.uz/docs/3903207

52. On measures to implement the investment program of the republic of Uzbekistan for 2020 - 2022, 2020.01.09, https://www.lex.uz/docs/4689644


54. On measures to improve information security 2018.09.05 https://lex.uz/docs/3893082

55. On measures to improve information security in the world information network internet, 2019.09.05, https://www.lex.uz/docs/3893082

56. On measures to improve the infrastructure of providing public services and expanding public access to public services, 2021.07.27, https://lex.uz/ru/docs/5530491

57. On measures to improve the quality of development and implementation of projects in the field of information and communication technologies within the framework of the “Electronic government” system, 2019.05.21, https://www.lex.uz/docs/4346983

58. On measures to improve the system of control over the implementation of information technologies and communications, and to organize their protection, 2018.11.21, https://www.lex.uz/docs/4071399


60. On measures to introduce digital technologies in the city of Tashkent, 2020.03.17, https://lex.uz/ru/docs/4767518

61. On measures to organize the activities of crypto-exchanges in the Republic of Uzbekistan, 2018.09.02, https://www.lex.uz/docs/3891610

62. On measures to organize the activities of free economic zones, 2017.04.17, https://www.lex.uz/docs/3160012
63. On measures to radically reform the national system for the provision of public services to the population, 2017.12.12, https://www.lex.uz/docs/3454458

64. On payments and payment systems, 2019.11.01, https://www.lex.uz/docs/5527922

65. On public procurement, 2021.03.12, https://www.lex.uz/docs/5415972


67. On the activities of investment and management companies. 2019.05.17 https://lex.uz/docs/4345133

68. On the development of space activities in the Republic of Uzbekistan, 2019.08.30, https://www.lex.uz/docs/4494502

69. On the organization of the construction of buildings of Public Service Centers under the People's Receptions of the President of the Republic of Uzbekistan in districts (cities) on the terms of public-private partnership, 2018.05.08, https://www.lex.uz/docs/3783323

70. On the radical improvement of the system for raising legal awareness and legal culture in society 2019.09.01 http://lex.uz/ru/docs/4149770

71. On the State program for the implementation of the action strategy for the five priority areas of development of the Republic of Uzbekistan in 2017 - 2021 in the “Year of science, education and the digital economy,” 2020.02.03, https://www.lex.uz/docs/4751567

72. On the State Program for the implementation of the Action Strategy in five priority areas of development of the Republic of Uzbekistan in 2017-2021 in the “Year of Active Investments and Social Development,” 2019.01.17, https://www.lex.uz/docs/4168757

73. On the State Program for the implementation of the Action Strategy in five priority areas of development of the Republic of Uzbekistan in 2017-2021 in the “Year of Support for Active Entrepreneurship, Innovative Ideas and Technologies,” 2018.01.22, https://www.lex.uz/docs/3516841

74. Personal Data Act, 2019.07.02, https://www.lex.uz/docs/4831939

75. Smart City concept, 2019.01.18, https://www.lex.uz/docs/4171074

76. UzArchive, 2019.09.20, https://www.lex.uz/docs/4523388
Appendix E  —  References


“Address by the President of the Republic of Uzbekistan Shavkat Mirziyoyev to Oliy Majlis | Uzbekistan.” 2019. Iic-Aralsea.org. https://iic-aralsea.org/en/2019/10/26/%d1%80%d1%83%d1%81%d1%8f%d0%ba%d0%b8%d0%be%d0%b3%d0%b8%d1%87%d0%b5%d1%81/.


“Case Study: Facebook’s Use of Sex-Disaggregated Data to Design Targeted Programs for Women.” 2020. IRC. https://www.ifc.org/wps/wcm/connect/d16e015a-7044-43a1-a4e-0ee3c777998b/202008_D2E_Facebook.pdf?MOD=AJPERES&CID=nfxsFqk&ContentCache=NONE&CACHE=NONE.


“Great Internet Freedom Fact Sheet.” n.d. USAID. Accessed October 25, 2021. https://drive.google.com/file/d/1g8VYhzwtHqyWA0KNomKB_S1zlp0uEslV/view.


avirus.uz/ru/self-safety.


