DIGITALISATION OF PUBLIC SERVICE DELIVERY, AND INNOVATION IN GOVERNMENT OPERATIONS IN CENTRAL ASIA AND THE CAUCASUS

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ABSTRACT

This article presents the progress countries of Central Asia and the Caucasus have made in the areas of innovation and digitalisation. It utilises the findings of a needs-assessment study, recently completed, on the state of digitalisation in the countries of Central Asia and the Caucasus. Such findings explicitly reveal where these countries stand across nine dimensions, considered critical for the advancement of innovation in government operations and of digitalisation of public services and their provision through differentiated channels of delivery. The article highlights where these countries stand nowadays, as well as what they ought to do in order to advance further.

Key words: civil service, public services, digitalisation, innovation

INTRODUCTION

Digital technologies and innovation have advanced very rapidly in the past two-three decades impacting and transforming societies around the world. Thus, innovation and digitalisation nowadays are considered a critical choice for ensuring human development around the world. Digitalisation has a proven impact on the economy and society by reducing unemployment, improving quality of life, and boosting access to knowledge, information, and public services.

The countries of Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan) and the Caucasus (Armenia, Azerbaijan, and Georgia) have already taken some significant steps towards the digitalisation of public service delivery to business and citizens, and of their operational processes, however in varying degree and pace of progress. Some of them have also started incorporating the notion of digital transformation in the functioning of government and changing their strategies for development.

The steps these countries have made are clearly depicted through the various international development indices measuring the degree of utilisation in countries around the world. For instance, in the United Nations E-Government Development Index (EGDI) that measures the readiness and capacity of national institutions to use ICT to deliver public services, allowing a deeper understanding of the relative position of a country in utilising e-government for the delivery of public services; the countries under scrutiny, with the exception of Tajikistan, have made significant progress as their EGDI scores are considerably higher than the world average of 0.5988 in 2020.[3]

A similar pattern is depicted through the scores on the UN E-Participation Index indicating that these countries perform well in comparison to the world average of 0.5677 in 2020.[4] This means that their government provide information to the people, consult citizens on policy formulation and on service delivery, and who also participate in the decision-making process.

Furthermore, it seems that these seven countries have embraced digital technologies. This is demonstrated through their digital transformation strategies that include tailored policies to promote digital adoption across different user groups. Their scores on the Digital Adoption Index indicate that their digital transformation is progressing, although they still have much

ground to cover in order to match the scores of countries such as Estonia, and Korea, considered world leaders in digital transformation.[5]

Last, but not least the seven countries of Central Asia and the Caucasus are all part of Group B in the World Bank GovTech Maturity Index, indicating that their governments display a significant focus on whole of government approaches to public sector modernisation, by promoting simple, efficient, and transparent government, with the citizens at the centre of reforms.[6]

However, there is still much to be done in order to put the concept into practice in the functioning of the public sector; as well as to provide most, if not all, public services digitally. The objective of this article is to present the current state of affairs in each of the participating countries with respect to introducing innovation in government operations and policy implementation and to providing digital public services utilising differentiated channels of delivery.

CRITICAL DIMENSIONS FOR INNOVATION AND DIGITALISATION

A number of dimensions are considered critical in creating a conducive environment for the introduction of innovation in the public sector functioning and processes, as well as for the digitalisation of public service delivery through differentiated channels of delivery. These are:

1. *National development priorities*: for innovation and digitalisation to flourish, countries have to consider such issues as priorities in realising their national development path. Thus, these notions need to be part of the countries' strategic priorities, usually manifested through development strategy documents and action plans that have been development and approved by their governments.

2. *ICT governance*: the ways that innovation and digitalisation efforts and initiatives are governed and coordinated play a significant role in making considerable progress in the adoption of innovative practices and the digitalisation of government operations and the provision of public services. This is an important issue as in principle leadership focused on such issues plays a crucial role in digital transformation efforts.

3. *Existence of specialised personnel*: the availability of Chief Digital Officers (CDO) and ICT technical experts is another crucial factor in advancing innovation and digitalisation in the public sector. Without specialised personnel, who can lead and implement digitalisation initiatives there can be not much success, or such success may be considerably slower, as these specialists should be able to lead the process, overcome hurdles, and resolve critical issues during implementation of the various digitalisation initiatives and actions.

4. *ICT education and training*: for innovation and digitalisation to advance, civil servants need to be well versed with new technologies not only for adopting new programmes and systems that are introduced in public service delivery, but also to be able to provide ideas in introducing innovation and advancing digitalisation in

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[5] The Digital Adoption Index (DAI) is a worldwide index that measures countries' digital adoption across three dimensions of the economy: people, government, and business. The overall index scores are a simple average of three sub-indices comprising technologies necessary for the respective agent to promote development in the digital era, increasing productivity and accelerating broad-based growth for business, expanding opportunities, and improving welfare of people, and increasing the efficiency and accountability of service delivery for government. https://documents1.worldbank.org/curated/en/896971468194972881/pdf/102725-PUB-Replacement-PUBLIC.pdf

[6] The GovTech Maturity Index is a composite index based on 48 key indicators in four main categories: (i) Core Government Systems Index (CGSI); (ii) (ii) Public Service Delivery Index (PSDI); (iii) Citizen Engagement Index (CEI); and (iv) GovTech Enablers Index (GTEI). The latter measures the presence of several cross-cutting enablers relevant to advancing GovTech. The GovTech Maturity Index (GTMI) measures the key aspects of four GovTech focus areas—supporting core government systems, enhancing service delivery, mainstreaming citizen engagement, and fostering GovTech enablers; https://openknowledge.worldbank.org/handle/10986/36233

several areas, whether that is government operation or the provision of public services through differentiated channels of delivery.

5. *Legal framework:* Uninterrupted implementation of government programmes and activities for the digital transformation of government operations and provision of public services requires a continuous reform and updating of the regulatory and institutional framework within which the digital transformation takes place.

6. *Existence of infrastructure and technical standards:* For digitalisation to thrive, some critical infrastructure needs to be present. For instance, adequate internet connectivity across government departments and among the population. There is also a need for the development of data centres that integrate various government databases through increased interoperability of various electronic systems easing the burden on citizens for receiving public services seamlessly; while they also adhere to strict cybersecurity standards and ensure personal data protection through stringent personal information security rules.

7. *Network and cloud computing infrastructure:* The existence of digital networks and cloud computing infrastructure is critical for the development of digital government operations and public services. In this context, the existence of a modern telecommunications network ensuring ubiquitous access to internet, and of data centres and digital platforms are imperative.

8. *Digital Divide:* A necessary prerequisite for digitalisation of public services to be effective is to reduce the digital divide. In other words, users of public services need to be acquainted with and accustomed to digital technologies and services in order to take full advantage of the offered digital public services. In this context, there is a need for extensive educational and training activities to be made available to the public at large in order to acquire the necessary digital skills to use digital services.

9. *Degree of adoption of emerging technologies by the government:* In order to ensure continuous adjustment to the new digital reality governments need to keep up with emerging technologies and their applications in the provision of public services, in promoting economic activity in various areas, as well as utilising emerging technologies in improving policy making.

KEY FINDINGS IN DIGITAL GOVERNMENT DEVELOPMENT

This section summarises the findings of the study on digital government development in the countries of the region highlighting where countries stand along the dimensions, critical for innovation and digitalisation to flourish and the digital transformation to take root.

Overall, **national development policies** place an emphasis on encouraging adoption of innovation in government operations and in the provision of public services through differentiated channels of delivery. In several cases, digitalisation seems to be an integral part of the national mid- and long-term policy priorities of the countries under scrutiny. This is manifested through the existence of strategies and action plans clearly delineating the countries' goals for digitalisation. However, in some cases, although the intention is real, some of the initiatives contained in these strategic documents are still in a preparatory stage. Nevertheless, substantial efforts are still being made to gradually digitalise public services and introduce innovative practices in government operations. In some countries, digitalisation is at a nascent state, but plans for digitalisation seems to be moving forward at a fast pace.

As far as **financing of digitalisation priority areas** is concerned, funds have been secured on the medium-term in one country. The remaining countries finance digitalisation initiatives through the state budget as they become a priority, effectively not having budgetary funds specifically marked for digitalisation. In some cases, there is no funding available, where in this case digitalisation initiatives' implementation relies on funds provided by international development organisations.

As countries have different priorities and being at different stages of their digital transformation process, a wide variation exists in the projects that are currently at the stage of implementation. The primary goal for all seven countries is to digitalise as many public services as possible and provide them through a multitude of delivery channels, such as through web or mobile applications, making public services available through a common interface. This is an expected outcome, as the overwhelming majority of digitalisation projects focus on digitalisation of public services, followed by projects in numerous other areas that are either prerequisite to full digitalisation of public services provided through differentiated channels of delivery, e.g. internet connectivity, data centres, electronic ID systems, digital signature systems, information security systems, standards frameworks, mobile applications, etc or projects that focus on innovation, e.g., accelerator labs, artificial intelligence applications, etc.

With respect to **ICT governance**, several of the countries in the region have established and/or assigned government agencies that perform various functions related to digital innovation. Some of these organisations are dedicated to the purpose and others are assigned the function of coordinating and overseeing innovation and digitalisation policy implementation. This is important issue as in principle the leadership organisation and its position in the hierarchy of the government administration play a crucial role in digital transformation.

Six out of the seven countries have established dedicated organisations to coordinate digitalisation policy formulation and implementation (Table 1). In most cases these are agencies under a Ministry, in another case they are state companies created for the purpose. In some cases, they are answerable to a ministry and in other cases to the President's Executive Office or the Office of the Prime Minister as well. Most often such organisations are responsible for formulation and implementation of policies intended to modernise the telecommunications infrastructure in facilitating the expansion of digital services; as well as for developing the digital skills among the population aimed at improving digital literacy levels. However, it is not clear whether these organisations have full control and the subsequent responsibility for formulating and implementing the overall digital policy of their respective countries as other governance entities are also involved in these tasks (see Annex 1).

In general, an overall deficit of **technical expertise** exists in the public sector, as most IT specialists prefer to work in the private sector, where compensation is considerably higher. Hence, it is difficult to attract and retain experienced individuals specialising in IT matters in the public sector due to non-competitive compensation packages offered. Furthermore, there are positions designated in government organisations to lead the digital transformation process, such as Chief Digital Officers (CDO). Most often, this role is assumed by the heads of IT departments in government organisations, who assume the pertinent functions. In one country, the role of the CDO is assigned to Vice Ministers. In other cases, the relevant responsibilities are assigned to a high-official dealing with ICT issues in government organisations, and some other cases IT director positions have been introduced, who presumably assume the role of the CDO in the organisation.

As far as **training on digitalisation** is concerned, some capacity building programmes are provided to government personnel in all countries in the region, although such training is not mandatory, and it has not been institutionalised yet. The absence of a centralised mechanism for conducting and monitoring capacity building programmes causes a disparity in the level of development of civil servants. Hence, although a growth in ICT-related education and training activities is noted across these seven countries, there is still an evident lack of in-service training for government personnel on digitalisation and ICT functions and processes. This is also due to the perception held by the majority of government employees that the digital transformation process is the responsibility of ICT department solely. As a result, most IT-related training courses are primarily targeting public servants working in ICT-related functions and secondarily all others.

Nevertheless, it was found that the absolute majority of government organisations in the seven countries encourage their employees to participate in specialised IT and digitalisation trainings that lead to some type of certification and most often they cover associated expenses through their training budgets. Furthermore, numerous training programmes are implemented across the seven countries that aim at increasing the digital literacy of public servants, a crucial issue as on average 50 to 60 per cent of them do not know the basics. There are also courses that aim to acquaint public servants with relevant legislative aspects of digitalisation, as well as information security, and how to work with digital tools in improving their work efficiency, or courses that explain the goals of digitalisation and its expected outcomes, etc. Invariably, government organisations utilise training initiatives offered by international organisations that organise various training events related to digitalisation.

Training programmes are also launched aimed at raising the digital literacy levels of the population at large, as they are the primary recipients of digital public services, when such services are provided. In some cases, such programmes include the revision of curricula at all levels of education (pre-school, primary, secondary, higher, and vocational levels) in order to develop digital competencies.

All participating countries have enacted **legislation on digitalisation and electronic government** to a higher or lesser extent. According to a World Economic Forum survey of 2019, Armenia and Kazakhstan seem to have the most flexible legislation in place.[7] Most often legislation covers the following topics: interoperability, personal data protection, electronic document exchange management, certification, validation, open data, access to information, information security, cybersecurity, digital financial transactions, digital signature, etc. In general, the legislative framework on digitalisation matters is adequate in most areas that these countries are focusing on. In several cases, however, legislation is lagging current reality, either because of various issues arise during implementation or because no firm decisions are made on time on which way to go with some functions and processes related to the digitalisation transformation process. Nevertheless, the legal framework seems to be getting regularly updated, in most cases and it is thus enhanced with new requirements.

Based on the findings of the survey, it is evident that a considerable **digital divide** exists with respect to internet access, a prerequisite for the provision and subsequent use of digital [public] services. However, it was also observed that increased investment is dedicated to the development of modern telecommunications infrastructure to improve disparity in service. As a result, internet connectivity is growing, even though it is fairly expensive, but the trend is for a gradual decrease in costs, primarily because of competition among providers.[8]

It is also evident that there is a need for the development of **data centres infrastructure**, considering at the same time **cloud storage** solutions. G-cloud centres have been created in some cases, but in most cases data centres are fragmented and spread across different government organisations that manage, operate, and maintain their own data centres. However, mission critical data are stored on country-wide cloud infrastructure. Moreover, expansion of government-wide clouds is either under evaluation or under development in most of the seven countries, as it seems that government are most interested in setting up centralised government cloud services to provide for better data management and security and to reduce operational costs.

Furthermore, in most cases no **technical standards** exist *per se*, adhering to international standards, and thus they need to be developed. In most of the participating countries such standards are being developing in several critical areas, i.e. interoperability, process requirements, security requirements, technical reliability requirements, cybersecurity

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[7] https://eabr.org/upload/iblock/551/EABR_Digital_Potential_06_2019.pdf

[8] Broadband internet coverage is rather low in all countries varying from 1 to 25 per cent per 100 inhabitants. Conversely, mobile telephony subscriptions are above 100 per cent with respect to the countries' population, effectively allowing for rather wide mobile internet coverage. Internet use by the population of these countries is over 50 per cent of the population, ranging from 52 to 80 percent in five of the seven countries in 2020.

standards, mobile applications standards, etc; as well as standards for data storage and transmission, and integration with e-government information systems, and standards for electronic signatures and electronic document exchange management systems.

Last, but not least, all seven countries reported that a large number of **public services** is provided electronically. However, it is not clear whether all processes or some processes needed to complete provision of a public service are delivered electronically. It is also not clear whether public services provided electronically can be considered fully fledged digital public services. Thus, clarifying such issues will allow for a better understanding of the extent to which public services and their provision are digitalised. For instance, in some countries tax services and public procurement procedures are fully digitalised, but it is not as clear for other public services.

Electronic and/or digital public services are delivered in all cases, through a single [dedicated] e-government portal that provide public services electronically. In some cases, citizens can consent to the use of their personal data for receiving a public service requiring information from another government database. In addition, mobile applications are developed in some of the countries and in some others are still in the process of development and roll out. However, ID and verification systems need to be enhanced further to allow for public services being processed all the way digitally.

CONCLUSIONS

In terms of readiness for digitalisation most of the seven countries under scrutiny are between the medium and high levels of readiness as political will for digital transformation is strong and a multitude of thematic initiatives are included in national plans and strategic documents, without however, having secured the necessary financing in the medium-term for the implementation of envisioned initiatives in most cases. Hence, their structural status stands at the medium level. In other words, in most of the seven countries of Central Asia and the Caucasus, the digital strategy is defined, articulating ITC as a core competency, and the necessary legal framework is in place.

However, securing mid- to long-term financing is still a challenge, along with putting in place a broad organisational alignment and providing adequate capacity development of human resources to achieve the desired and viable results.

In this context, organisations leading the digital transformation should be capacitated to balance optimisation and transformation objectives. Such organisations need to be fully responsible to plan, design, deliver, and evaluate associated results in order to take corrective action whenever this may be needed. They should also acknowledge and adhere to the human-centric governance principle, while introducing new policies, technologies, or services, and protect citizens' rights and freedoms, as well as to increase the level of citizens' confidence and trust in government decisions. Furthermore, an extensive communication strategy and change management protocols to promote the digital transformation process should be put in place, to instil in people the necessity of adopting digital practices, as well as to disseminate information on the benefits that may derive from this process. Moreover, a coherent capacity building programme of public servants should be put into place, as digital capacity building is one of the most critical pillars in the digitalisation transformation process.

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ACKNOWLEDGMENT

ANNEX 1: State bodies responsible for digitalisation and other relevant entities

Country	Responsible state body	Some relevant agencies
Armenia	Office of the Prime Minister (Digitisation Council)	CJSC "E-Governance Infrastructure Implementation Agency" (Chairman assigned by PM Office)
	Ministry of High-Tech Industry of the Republic of Armenia	N/a
Azerbaijan	State Agency for Public Services and Social Innovations under the President of the Republic of Azerbaijan (SAPSSI)	E-GOV Development Centre under the SAPSSI
		"ASAN service" centres under the SAPSSI
		Innovations Center LLC under the SAPSSI
Georgia	Ministry of Justice of Georgia (MoJ)	Digital Governance Agency under the MoJ
		Public Service Development Agency under the MoJ
Kazakhstan	Ministry of Digital Development, Innovations and Aerospace Industry of the Republic of Kazakhstan (MDDIAI)	Public Services Committee under the MDDIAI (coordinates work of the NJSC "State Corporation" "Government for Citizens")
		SE "Digital Government Support Center" under the MDDIAI
		JSC "National Information Technologies"
Kyrgyzstan	Ministry of Digital Development of the Kyrgyz Republic (MDD)	SE "Infocom" under the MDD
		State service for Regulation and Supervision in the Communications Industry
Tajikistan	Ministry of Industry and New Technologies of the Republic of Tajikistan	N/a
Uzbekistan	Ministry for Development of Information Technologies and Communications of the Republic of Uzbekistan (MDITC)	SI "E-Government Projects Management Center" under the MDITC
	Ministry of Justice of the Republic of Uzbekistan (MoJ)	Public Services Agency under the MoJ