



Economic Brief

**Navigating Digital Transformation in the
CAREC region: An Organizational Approach
to E-Government Implementation**

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Abbreviations

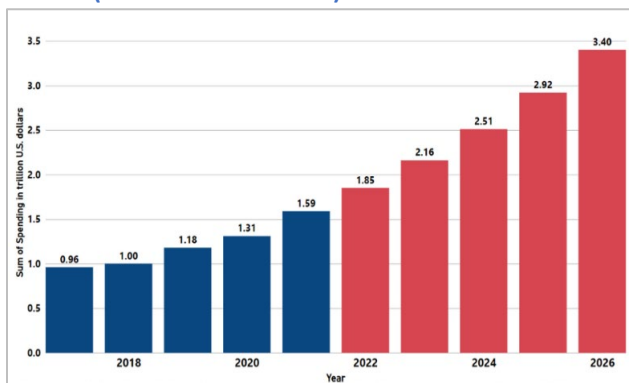
ADB	Asian Development Bank
AI	Artificial Intelligence
CAREC	Central Asia Regional Economic Cooperation
CCT	Conditional Cash Transfer
CI	CAREC Institute
COBIT	Control Objectives for Information and Related Technologies
EGDI	E-government Development Index
EGIT	Enterprise Governance of Information and technology
GDP	Gross Domestic Product
HCI	Human Capital Index
ICT	Information and Communications technology
IS	Information Systems
ITPOSMO	Information, Technology, Processes, Objectives, Skills, Management and Other Resources
MNT	Mongolian Tugriks
OECD	Organization for Economic Cooperations and Development
OSI	Online Service Index
PKR	Pakistani Rupee
PRC	People's Republic of China
R&D	Research and Development
SAI	Supreme Audit Institution
TTI	Telecommunication Infrastructure Index
UCT	Unconditional Cash Transfers
UN	United Nations

Introduction

The phenomenon of digital transformation, spread across sectors and geographies, has recently become increasingly prevalent. Organizations, from private enterprises to public entities, are heavily investing in digital initiatives aligned with their business goals. According to recent forecasts, global spending on digital transformation technologies and services is expected to witness a remarkable uptrend. Starting from 0.96 trillion U.S. dollars in 2017, the figures have been consistently rising, reaching an estimated 1.85 trillion U.S. dollars in 2022 (Figure 1). This global trend has served as a catalyst, encouraging governments to recognize the profound importance of transitioning from traditional ways of providing public services to the realm of e-government practices. Huge amounts of investments attracted in this direction demonstrate the escalating economic value attributed to digital economies. For instance, PRC's digital transformation efforts have culminated in an overall digital economy with a value-added contribution of 45.5 trillion yuan in 2021 accounting for 39.8% of the country's GDP (Figure 2).¹

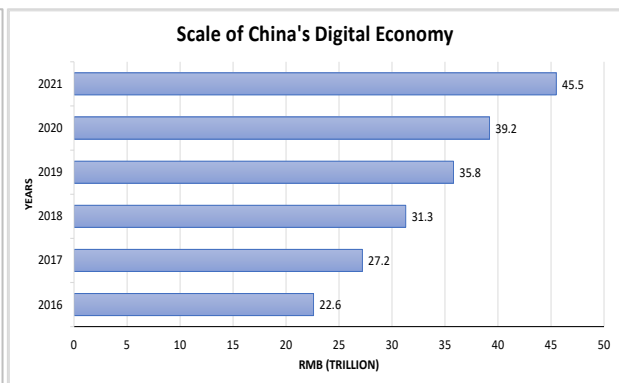
In light of the growing significance of digital transformation, governments are also increasingly assuming a central role in this trend through their e-government initiatives. E-government is a multifaceted concept, interpreted differently by various organizations. According to the UN E-Government Knowledgebase, e-government can be defined as the “use of ICTs to more effectively and efficiently deliver government services to citizens and businesses”.² In its turn, the OECD defines e-government as “the use of information and communication technologies, and particularly the internet, to achieve better government”.³ The focal point of these definitions is the digital nature of public services carried out by the governments.

Figure 1. Spending on digital transformation technologies and services worldwide from 2017 to 2026 (in trillion U.S. dollars)



Note: years indicated with red bars represent forecasted data
Source: Statista (2022).⁴

Figure 2. Value-added contribution of PRC's digital economy in 2016- 2021 (in trillion RMB)



Source: Report on the Development of China's Digital Economy (2022), CAICT.⁵

Implementation of e-government practices brings several benefits for both citizens and public administration. These benefits include various aspects, from enhanced efficiency, data-driven decision

¹ https://english.www.gov.cn/news/202307/10/content_WS64ab4922c6d0868f4e8dda1c.html

² <https://publicadministration.un.org/egovkb/en-us/Overview#whatis>

³ https://read.oecd-ilibrary.org/governance/the-e-government-imperative_9789264101197-en#page23

⁴ <https://www.statista.com/statistics/870924/worldwide-digital-transformation-market-size/>

⁵ http://www.caict.ac.cn/english/research/whitepapers/202208/t20220819_407677.html

making to public service's cost-efficiency. To give an example from Mongolia's experience, in terms of cost-efficiency of e-government, Mongolia's E-Mongolia platform created within the framework of the country's "Digital Nation" Strategy, which consolidates 994 public services from 83 organizations serving 1.64 million active customers, has completed 31.7 million online public services tasks and generated substantial cost savings. The platform has saved citizens an estimated 98 billion MNT in transportation costs, 169 billion MNT in time-related expenses, and another 1.05 billion MNT in document preparation costs, summing up to 269 billion MNT all arising from acquiring public services.⁶ In Kazakhstan, for instance, one of the regional leaders in digital transformation, the e-government platform served up to 17.4 million online public services, spanning across 664 different public services, and recorded a solid 74.4% user satisfaction rate.⁷ Leveraging e-government services is also aligned with climate action goals, offering a pathway to low-carbon development. By transitioning from in-person to online services, governments can drastically reduce carbon footprints and contribute to a more sustainable future. Promoting the adoption of these online platforms among citizens is essential for unlocking these environmental benefits.⁸

Recently, there has been an increasing interest in the research of the transition to e-government on a global scale. Within this growing body of research, the CAREC Institute (CI) has also emerged as a contributor, focusing on key factors that directly influence the readiness and successful realization of e-government initiatives in the CAREC region. Main research conducted by the CI in this field are "Digital CAREC: Analysis of the Regional Digital Gap Phase 1"⁹, "Financial inclusion and Fintech in CAREC: Constraints and Prospects"¹⁰ and "E-commerce infrastructure Development in CAREC"¹¹. Digitalization of public services is also highlighted in the "CAREC Digital Strategy 2030", which advocates a "government as a platform" approach. The Strategy aims to transform governments from traditional service providers to facilitators of cross-border digital ecosystems, involving citizens and businesses.

Given the increasing focus on this area, this policy brief aims to explore the existing landscape in CAREC countries, evaluating organization-level challenges, solutions, and opportunities related to e-government.

The e-government landscape in the CAREC region

While the impetus for global e-government transition became notably prominent during the late 20th century, different CAREC countries have chosen different trajectories with respect to both timeframes and offered services. This increases the significance of fostering regional cooperation in exchanging best practices and lessons learned, and also the need for a more coordinated, synergistic approach to e-government. In recognition of the pivotal role that the digital economy plays in the broader economic growth, CAREC countries have been thoroughly devising and implementing intricate governmental programs, along with carefully calibrated digital strategies. Currently, every CAREC member country has

⁶ Ganbat, E. (2023, August). Building Digital Nation through optimization of public services in Mongolia. Seventh CAREC Think Tank Development Forum, Urumqi, PRC

⁷

https://www.businessperspectives.org/images/pdf/applications/publishing/templates/article/assets/18328/PPM_2023_02_Or_azgaliyeva.pdf

⁸ <https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1022&context=mcis2011&httpsredir=1&referer=>

⁹ <https://www.carecinstitute.org/publications/digital-carec-analysis-of-the-regional-digital-gap/>

¹⁰ <https://www.carecinstitute.org/publications/working-paper-financial-inclusion-and-fintech-in-carec-constraints-and-prospects/>

¹¹ <https://www.carecinstitute.org/publications/policy-brief-e-commerce-infrastructure-development-in-carec/>

adopted its own national strategy for rolling out e-government initiatives, which are generally called “digital strategies” such as “Digital Kazakhstan 2018-2022”, “Digital Kyrgyzstan 2019-2023” and “Digital Uzbekistan-2030”. At the same time, Tajikistan, Turkmenistan and the People’s Republic of China (PRC) have prioritized their digital transformation programs as part of broader national development and digital economy programs: for instance, the “Concept of Digital Economy of the Republic of Tajikistan” arising from the “National Development Strategy of the Republic of Tajikistan until 2030” and digitalization of Turkmenistan based on the “Concept for the Development of Digital Economy in Turkmenistan in 2019-2015”.¹² Likewise, China’s “14th Five-Year Plan (2021-2025)” gives priority to digitalization and aims to boost the digital economy’s GDP contribution to 10% by 2025, up from 7.8% in 2020. The Plan outlines eight key tasks, such as upgrading the digital infrastructure and promoting enterprise digitization. It also focuses on R&D in emerging tech like 6G and AI while exploring regulations for cross-border data transfer and digital currencies. The ultimate goals are more inclusive digital services and improved governance.¹³ The overarching objectives of all these strategies are to enhance citizen engagement, foster more inclusive public services, and improve governance mechanisms, thereby contributing to economic growth.

Analyzing CAREC's EGDI performance: regional trends and variances

In the era of rapid digital transformation, the efficiency and effectiveness of e-government projects serve as a pivotal indicator of a country’s readiness to adapt and thrive in an increasing digitalized global environment. In the quest for digitalization, policymakers often seek to rely on robust and comprehensive metrics to assess the current state of e-government within their jurisdictions in order to appropriately navigate facing challenges and leverage the opportunities. The United Nation’s E-Government Development Index (EGDI), derived from the Global E-Government Survey, serves as an indispensable tool for this purpose. Providing a comprehensive view of e-government capabilities, the EGDI indicators enable a detailed understanding of digital maturity across countries.

The CAREC countries, each at different stages of e-government adoption, offer a compelling case for understanding the complex dynamics of integrating technology into public administration. The analysis of EGDI data from 2018 to 2022 for CAREC countries provides a detailed picture of their e-government initiatives (Figure 3). The regional EGDI average of CAREC score has shown a progressive increase from 0.54 in 2018 to 0.63 in 2022. It is important to note that this surpasses the global average, which has remained relatively stable, shifting marginally from 0.55 in 2018 to 0.61 in 2022.

Ranking as the first in the region, Kazakhstan exhibits an exemplary performance, with an EGDI score of 0.86 in 2022, significantly exceeding both the regional and global averages. Likewise, the PRC has seen a remarkable growth of its performance, moving from 0.68 in 2018 to 0.81 in 2022. Tajikistan, Pakistan, and Turkmenistan showing different levels of progress, still fall short of both regional and global EGDI averages.

Afghanistan’s EGDI was significantly higher in 2020 than 2018, but then the country experienced a dip to 0.27 in 2022 placing it well below both CAREC and global averages. Mongolia, Uzbekistan, Azerbaijan, the Kyrgyz Republic, and Georgia have each shown varying degrees of progress in their EGDI scores.

¹² <https://cabar.asia/en/national-digitalization-strategies-of-central-asian-states-challenges-and-opportunities>

¹³ <https://english.news.cn/20220112/4a0801b5429144a7b390e868ee6c23fb/c.html>

Despite these differences, it's noteworthy that all five countries have sustained scores above both regional and global averages, indicating a strong commitment to their digital transition initiatives.

In a thorough examination of the EGDI sub-indices across the CAREC region from 2018 to 2022, several key patterns come to the fore (Figure 4). The EGDI comprises three principal sub-indices: the Online Service Index (OSI), the Human Capital Index (HCI), and the Telecommunication Infrastructure Index (TII). One notable observation is the relative stability of the OSI, which has maintained around a score of 0.60 over the years.

Figure 3. EGDI performance of CAREC

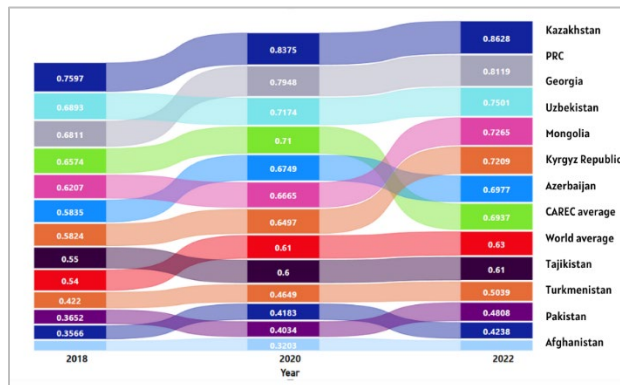
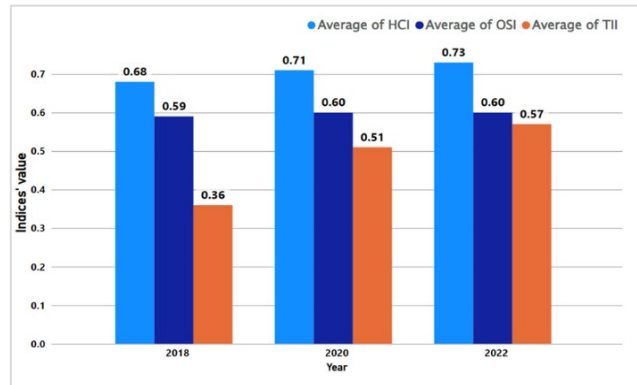


Figure 4. Region's performance by EGDI sub-indices



Source: UN E-Government Survey 2022, <https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2022>.

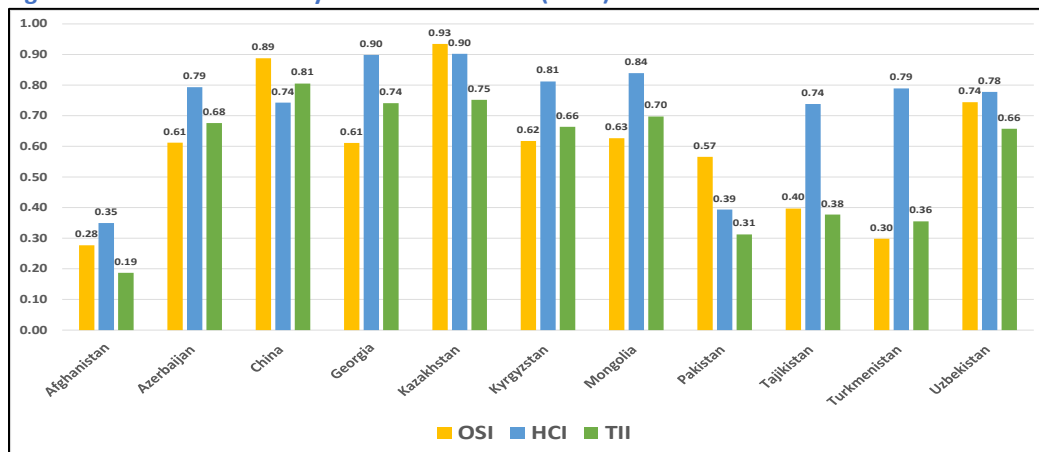
This consistency suggests a sustained effort in fortifying online service capabilities within the region. The HCI, which gauges the availability of educational and skillset resources conducive to e-governance, shows a mild yet encouraging increase—from 0.68 in 2018 to 0.73 in 2022. This points to incremental gains in human capital investments, perhaps facilitated by digital literacy programs. Contrastingly, the TII has witnessed the most dramatic improvement among the sub-indices, surging from a meager 0.36 in 2018 to 0.57 in 2022. Despite this noteworthy growth, it is imperative to highlight that the TII remains the lowest-scoring sub-index when compared to the OSI and the HCI. This underscores the ongoing challenges in telecommunications infrastructure, even as it also indicates an intensified focus on this key component of e-government effectiveness. Taken together, these evolving metrics reflect not just the region's ongoing commitment to enhancing e-government, but also put into spotlight the specific areas requiring attention. The data thus offer invaluable insights for crafting nuanced and targeted e-governance policies in CAREC countries.

Moving from the regional overview to an in-depth analysis, it is also important to turn attention to the individual sub-indices for each CAREC member country. This detailed review will illuminate the distinct areas within their e-governance frameworks that necessitate further development:

- *Afghanistan*: the OSI is notably low, reflecting a need for substantial development in online services. However, the HCI and the TII are also areas of concern, suggesting an overarching need for improvements in education, skills training, and telecommunication infrastructure to support digital transformation.

- *Azerbaijan*: with a balanced score in the OSI and the TII but a higher the HCI, Azerbaijan may focus on further developing its digital platforms and enhancing telecommunication networks to leverage its human capital effectively.
- *China*: despite high scores, continuous improvements in the TII can support the expanding digital economy, and even slight enhancements in the HCI can capitalize on the strong technological base to drive innovation.
- *Georgia*: country's HCI is notably high, indicating a well-developed human capital base. To complement this, further investments in the OSI and the TII would enhance the country's e-governance and digital service provision.
- *Kazakhstan*: the country presents strong indices across the board. To maintain its lead, it can aim for incremental improvements in the TII to support the high OSI and leverage the highly rated HCI for continued innovation in e-services.
- *Kyrgyz Republic*: while the HCI is reasonable, both the OSI and the TII require attention. Enhancing the digital infrastructure and increasing the range and quality of online services can help the Kyrgyz Republic to make the most of its human capital.
- *Mongolia*: Mongolia's HCI and TII suggest a capable base for digital initiatives. Advancements in the OSI are needed to create a more comprehensive e-government experience for its citizens.
- *Pakistan*: the HCI and the TII, particularly the latter, are areas where substantial progress is needed to support and enhance the effectiveness of online services indicated by the OSI.
- *Tajikistan*: the country has significant room for improvement in all three indices, with particular emphasis needed on upgrading its telecommunication infrastructure to support digital growth.
- *Turkmenistan*: the country needs focused development in the TII to enhance its digital connectivity and infrastructure, which in turn can support improvements in the OSI.
- *Uzbekistan*: the country shows a robust HCI, suggesting a skilled workforce. Targeted improvements in the TII could greatly support the existing human capital, and further OSI advancements will help to provide more comprehensive e-services.

Figure 5. EGD sub-indices by member countries (2022)



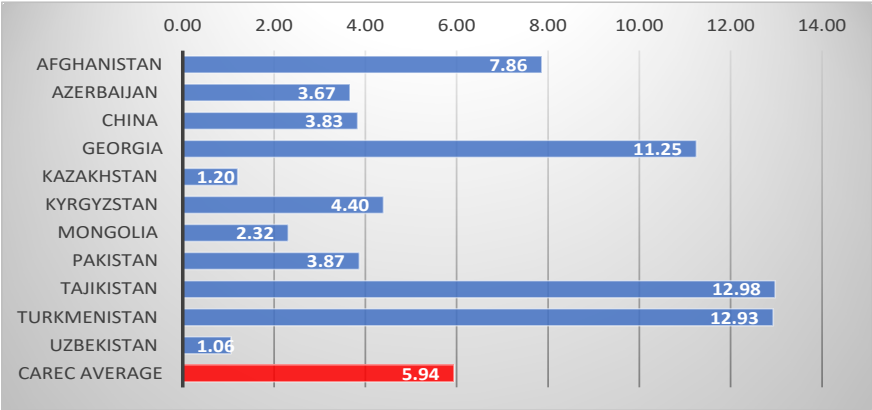
Making the internet more affordable is crucial for unlocking the full potential of digital government services

When embarking on the path of digital transformation and the implementation of e-government, it is important not to overlook the significant role that internet access plays. The high expenses associated

with internet connectivity can raise obstacles, preventing widespread digital inclusion and consequently hindering the effectiveness of digital initiatives. To assess how well CAREC countries address this issue, we can analyze a particular metric: the share of the minimum wage spent on the most economical broadband package available in each individual country.

This metric acts as a gauge for digital inclusivity, indicating the affordability of internet services for budget-sensitive citizens. Here is how each CAREC country compares to the regional average of 5.94% (Figure 6). Kazakhstan and Uzbekistan are at the forefront, with their citizens spending only 1.20% and 1.06% respectively, of their minimum wage on internet access. As close seconds come Mongolia and Azerbaijan, where approximately 2.32% and 3.67% of the minimum wage is required for internet accessibility. The PRC, Pakistan and the Kyrgyz Republic closely follow suit with percentages of 3.83%, 3.87% and 4.40%, respectively, hovering close to the CAREC average. In contrast, Georgia, Turkmenistan and Tajikistan exhibit the highest percentages with regards to broadband affordability. At 11.25%, 12.93% and 12.98% respectively, these figures are significantly higher than the average within the region. The cost of broadband in these countries may pose a substantial hindrance to achieving greater digital inclusion. This elevated cost in countries like Afghanistan and Tajikistan could also be contributing to the less-than-optimal average of 58.3% of households across selected CAREC countries having access to fixed broadband.¹⁴ To summarize, while certain countries in the region provide more affordable broadband compared to others, there are still countries where cost remains a significant barrier. It is imperative to address these disparities to promote wider participation in the digital economy and advance towards the regional goals for digital transformation.

Figure 6. Percentage of minimum wage spent on cheapest broadband packages in 2022



Source: Created by the author using ILO¹⁵ and Cable.co.uk data¹⁶.

It is important to highlight that the cost of broadband is often the primary factor determining the rate of individuals using the internet. To substantiate this claim, Figure 7 below illustrates the correlation between the percentage of minimum wage spent on cheapest broadband packages in 2022 and a share of population using the internet within selected CAREC countries, as per the available data. For instance, Kazakhstan, where the cost of broadband is relatively low, exhibits 92.30% of internet usage in 2022. This data reinforces the notion that affordable pricing often leads to broader access to the internet. Azerbaijan and Mongolia closely follow suit with rates of internet usage coming in at 86% and

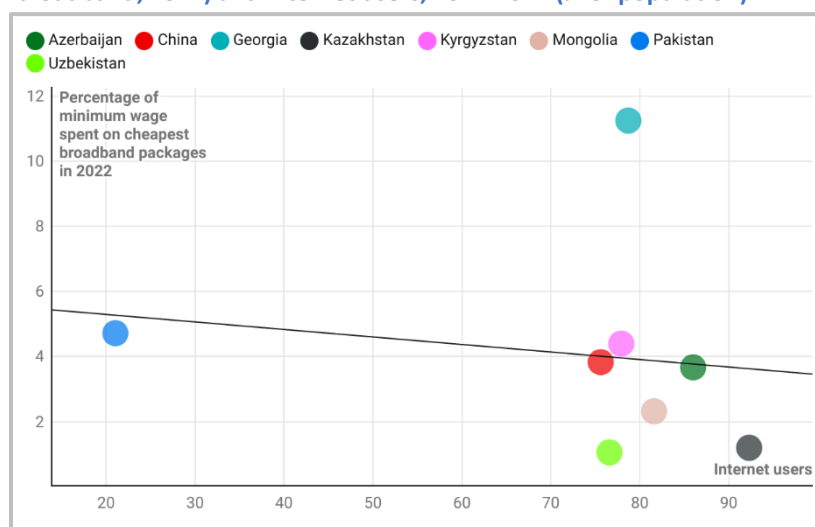
¹⁴ <https://www.carecinstitute.org/publications/digital-carec-analysis-of-the-regional-digital-gap/>

¹⁵ <https://ilostat.ilo.org/topics/wages/>

¹⁶ <https://www.cable.co.uk/broadband/pricing/worldwide-comparison/#resources>

81.61% in 2021¹⁷, respectively. Remarkably, they manage to maintain relatively low broadband costs. This is particularly noteworthy for Mongolia, as it has experienced a surge from 47.13% in 2018 to 81.61% in 2021. The Kyrgyz Republic and Uzbekistan, with reasonable affordability of broadband also demonstrate significant growth in internet usage with 77.92% and 76.44% respectively. On the other hand, Georgia and Pakistan stand out as an exception to this trend. In Georgia, despite having high costs, it boasts a robust internet usage rate of 78.71% in 2022. On the contrary, Pakistan demonstrates as low as 21.04% of internet usage although having affordable broadband. This suggests that there may be additional factors in these countries influencing this trend. While the relation between affordability and usage of the internet is not a simple comparison with a direct correlation, factors such as local policies, education levels, and infrastructure quality also play a role. However, the affordability of the internet remains the dominant factor influencing its adoption.

Figure 7. Correlation between the cost of broadband (% of min. wage spent on the cheapest broadband, 2022) and internet users, 2021-2022 (% of population)



Source: Scattergram created by author using ITU (2022) data.

Overcoming challenges in e-government transition: organizational perspective

The previous assessment has provided an overview of e-government performance in CAREC region. This included the EGDI, broadband accessibility, and the level of individual internet usage in member countries. While these quantitative indicators are imperative for evaluating overall e-government readiness and adoption, they only offer a broad perspective and may not fully capture the specific challenges faced by organizations. It is crucial to examine the complexities and barriers encountered by government entities when implementing e-government initiatives. By focusing on these organizational intricacies, we can better understand the factors contributing to the diverse progress and outcomes observed across different organizations. This exploration of the organizational level issues is a necessary step in identifying specific areas that require attention and improvement.

¹⁷ 2021 data is used for those countries where data is still not available for 2022.

Over half of e-government initiatives struggle with effective scaling and benefit realization

Research drawn from a comprehensive database of 6,003 IT projects carried out between 2001 and 2017, spanning over 66 countries primarily in Europe and North America, and representing an even distribution between public and private sectors across diverse industries has assessed success of public and private sector IT projects according to benchmarks like adherence to budget, timelines, and projected benefits.¹⁸ According to the research, 59% of IT projects are completed within budget, 47% on time, and 44% with the intended benefits. The research also underlines that while public-sector IT projects often outline expected benefits, very few actively track them, potentially leading to projects that meet budget and time criteria but underdelivering on actual benefits. According to another survey conducted across 166 government organizations in 2021, despite increased focus and investment, 55% of digital government programs are failing to scale.¹⁹ To summarize, the high rates of failure in IT projects within the public sector organizations highlight the requirement for better project management and tracking of benefits. Additionally, it underscores the significance of addressing the root causes to improve outcomes in future projects.

Overcoming key challenges in organizational digitalization

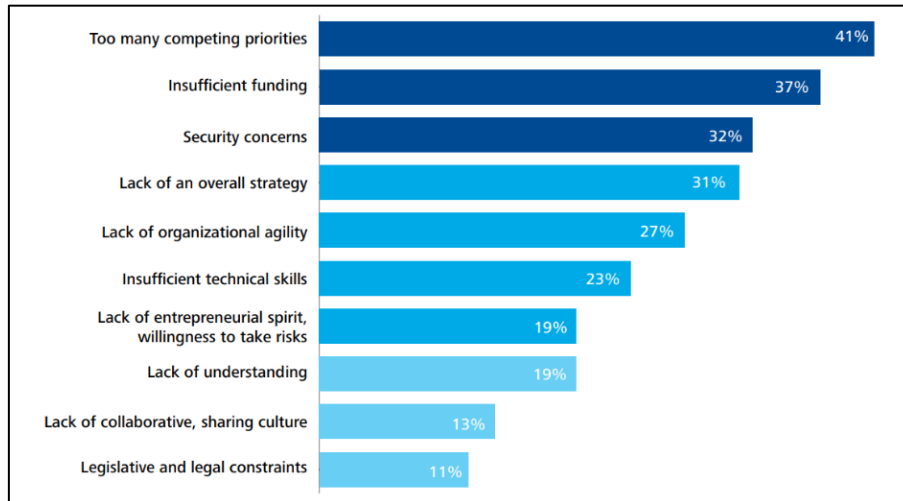
To ensure the successful execution of e-government, it is also important to understand the root causes affecting the failure of these projects. A survey based on 1 200 government officials from over 70 countries on digital transformation and another 140 government leaders and outside experts reveals that one of the main challenges are aligning e-government IT projects with organizations' business goals and lack of an overall strategy, with 41% and 31% of respondents respectively acknowledge as significant barriers (Figure 8). In an era characterized by innovation and rapid change, organizations often find themselves being pulled in various directions as they try to strike a balance between ongoing operations and transformative digital initiatives. 37% of organizations consider the issue of insufficient funding as a barrier in this direction. Investing in technology can be costly, and without adequate financial support, organizations may struggle to acquire the necessary tools and resources to keep pace with digital trends. Insufficient technical skills, willingness to take risks as well as lack understanding are also considered among the barriers to meet the planned benefits of e-government projects as 23%, 19% and another 19% of respondents, respectively, mentioned in the survey.²⁰

¹⁸ <https://www.mckinsey.com/industries/public-sector/our-insights/unlocking-the-potential-of-public-sector-it-projects>

¹⁹ <https://www.gartner.com/en/newsroom/press-releases/2021-10-26-gartner-survey-finds-more-than-half-of-digital-govern>

²⁰ <https://www2.deloitte.com/content/dam/Deloitte/ca/Documents/public-sector/ca-dup-1081-journey-to-govt-digital-future-aoda.PDF>

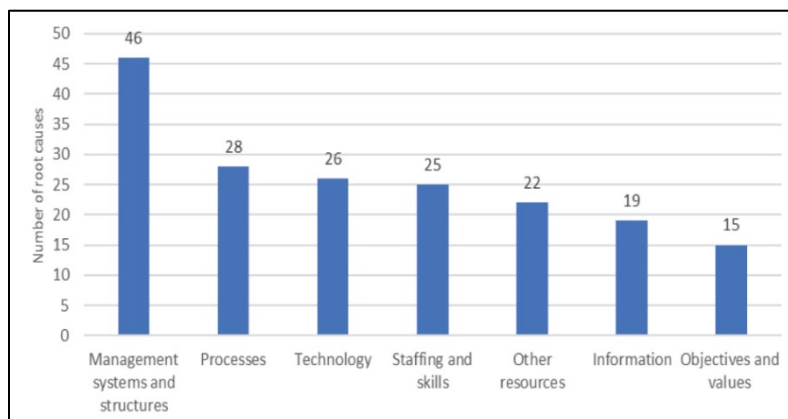
Figure 8. Top barriers that impede the organization from taking advantage of digital trends



Source: *The journey to government’s digital transformation, A Deloitte Digital Global Survey.*

Another study, based on the lessons from literature, determines 18 causal factors that impact the execution of e-government IS projects in developing countries.²¹ 181 root causes are identified subsequently after aligning all those casual factors with the ITPOSMO model, a theoretical framework employed to elucidate the multifaceted dimensions influencing Information System (IS) initiatives. The research findings suggest that the failures observed in e-government IS projects in developing countries are linked to all seven dimensions of the ITPOSMO design-reality gap framework proposed by Heeks (2003). Among these dimensions, the “management systems and structures” dimension proved to be the most problematic, accounting for a total of 46 root causes, largely under seven main casual factors like inadequate project management and lack of top management support. The dimensions of processes and technology were also found to present significant challenges, with 28 and 26 root causes respectively (Figure 9).

Figure 8. Number of root causes per ITPOSMO design-reality gap dimension

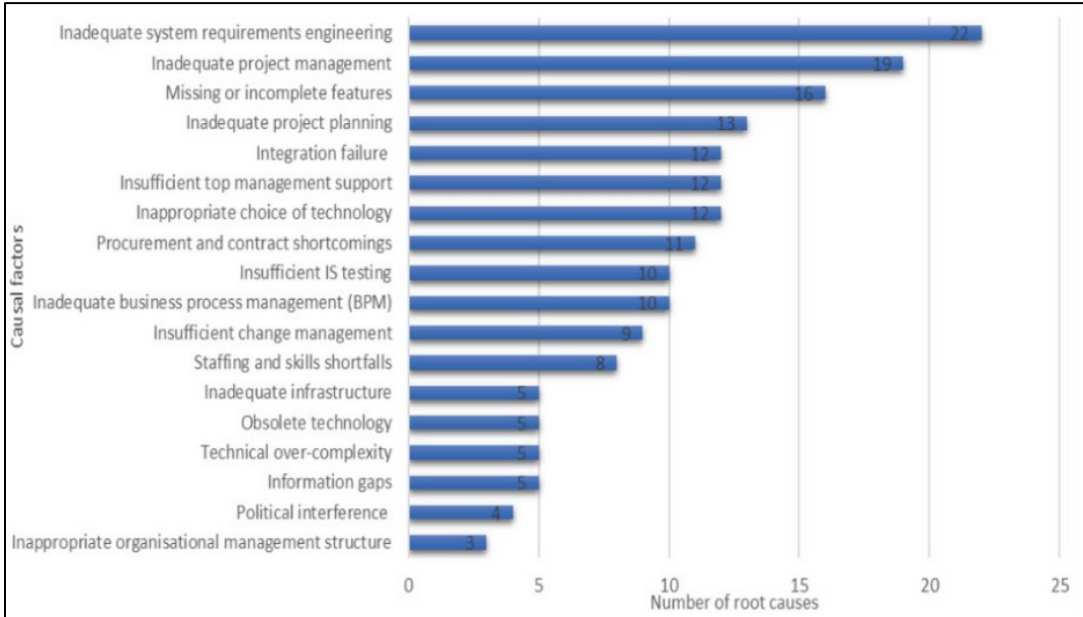


Source: Nyansiro, J.B., Mtebe, J.S., & Kissaka, M.M (2021). *E-government IS Project Failure in Developing Countries: Lessons from literature.*

²¹ [https://www.researchgate.net/publication/356819867 E-Government Information Systems IS Project Failure in Developing Countries Lessons from the Literature/link/61b20920bec354609d62c2c1/download](https://www.researchgate.net/publication/356819867_E-Government_Information_Systems_IS_Project_Failure_in_Developing_Countries_Lessons_from_the_Literature/link/61b20920bec354609d62c2c1/download)

During the assessment of 18 different casual factors, it was found that the most crucial one was the lack of proper systems requirement engineering, which accounted for 22 underlying causes. On the second place is inadequate project management, which was responsible for 19 root causes, followed closely by the presence of missing or incomplete features like accessibility, usability or transparency, which contributed to 16 root causes. Figure 10 visualizes these causal factors, highlighting their significance in terms of the number of underlying causes. It is essential to give more attention and scrutiny to these factors due to their potential to significantly contribute to the failure of e-government projects.

Figure 9. Number of root causes per casual factor



Source: Nyansiro, J.B., Mtebe, J.S., & Kissaka, M.M (2021). *E-government IS Project Failure in Developing countries: Lessons from literature.*

Regulatory and governance barriers, cultural perspectives, and expertise gap tend to be common impediments of digital transformation in most CAREC countries

Digital transformation goes beyond merely integrating new technology tools. It represents a fundamental shift in organizational culture, processes, and strategies. In CAREC countries, there is a strong drive towards digitalization, as evidenced by their national strategies and initiatives. However, these countries face unique challenges in implementing their digital transformation plans, influenced by their socio-political environments, infrastructure capabilities, and human resources. While Table 2 focuses on Mongolia, Uzbekistan, and Turkmenistan as case studies, it is important to note that many other CAREC countries also encounter similar challenges in their digital journeys. Conducting a comparative analysis helps identify differences, successes, and potential areas for collaboration. Table 2 provides a concise overview of the national digital strategies, current progress, challenges, and how these challenges align with prior research findings. This comparative evaluation not only sheds light on the distinct digital landscapes of these nations but also sets the stage for extracting actionable insights for bolstered regional collaboration in the digital sphere.

Table 1. Comparative overview of National digitalization strategies observed challenges and their alignment with literature-based obstacles.

National Strategies on Digitalization	Current Implementation Status	Challenges observed in practice	Alignment with literature-based Challenges
Mongolia			
Digital Nation Strategy	<ul style="list-style-type: none"> - E-Mongolia platform established with: <ul style="list-style-type: none"> • 1.64 million customers • 83 organizations integrated • 994 online public services • 269 billion MNT total cost savings related with transportation, time consumed and document preparation; - MDDC is established in January 2022; - “E-Mongolia Academy” has been established mainly for improving digital skills of civil servants; - ADB’s TA seeks to facilitate Mongolia’s digital transformation in accordance with the Government’s “Digital nation” vision.²² 	<ul style="list-style-type: none"> - digitalization and electronic data exchange by the agencies affected by the outdated and duplicated licensing services; - inadequate technical capacities; - varying standards and uneven levels of readiness.²³ 	<ul style="list-style-type: none"> - inadequacies in system requirements engineering during the initial phases of the project; - potential integration failures; - insufficient technical skills.
Uzbekistan			
Digital Uzbekistan 2030	<ul style="list-style-type: none"> - e-government platform, my.gov.uz was launched in 2013; - 56% of all public services provided by the platform;²⁴ - the platform has witnessed an impressive 36.6 million online inquiries across 511 diverse online public services intended for various needs, with a remarkable 98.9% originating from citizens.²⁵ 	<ul style="list-style-type: none"> - out of the 700 government information systems, only a mere 30% are currently connected to the integration platform; - governmental organizations still keep operating in silos since the prevailing practice of data sharing is primarily based on bilateral agreements between agencies; - lack of capacity and financial resources for integration of databases and digital systems; - limited understanding among mid-tier managerial staff on the advantages of digital transformation; - resistance to innovation and change.²⁶ 	<ul style="list-style-type: none"> - potential integration failure; - absence of centralized governance framework for digital transformation; - lack of collaborative sharing culture; - lack of entrepreneurial spirit and willingness to take risks; - weak change management and fear of change.
Turkmenistan			
“The Development of Digital Economy Concept in Turkmenistan for 2019-2025”	<ul style="list-style-type: none"> - an oversight state commission and the National Program (National Program on Developing Digital Economy in Turkmenistan for 2021-2025) are serving as the guiding framework for digitalization efforts; - “One window” service is operational and currently in the phase of integrating various public services for streamlined access; - capacity-building initiatives are underway. 	<ul style="list-style-type: none"> - challenges in ICT related talent acquisition and retention in public organizations due to financial burdens; - regulatory hurdles for digital governance such as weak IT project portfolio analysis which allows the IT strategy to be aligned with the business strategy²⁷ 	<ul style="list-style-type: none"> - insufficient funding; - staffing and skills shortfall; - inadequate project planning; - technical complexity; - insufficient change management.

²² <https://www.adb.org/sites/default/files/project-documents/55211/55211-001-tar-en.pdf>

²³ <https://www.unescap.org/resources/readiness-assessment-cross-border-paperless-trade-mongolia>

²⁴ <https://my.gov.uz/ru/site/statistic-graph>

²⁵ <https://e-gov.uz/en>

²⁶ https://www.usaid.gov/sites/default/files/2022-05/USAID_UzbekistanDECA.pdf

²⁷ <https://isp.page/news/digital-transformation-in-turkmenistan-the-role-of-telecommunications/>

Case Study: the Benazir Income Support Program (BISP) in Pakistan -- lessons from Auditor General of Pakistan's auditing experience

The Benazir Income Support Program (BISP), launched in 2008, stands as one of Pakistan's most ambitious social safety net initiatives. Named in honor of the former Prime Minister Benazir Bhutto, the BISP aims to alleviate poverty and empower women across Pakistan. It focuses on providing financial support to the poorest segments of the population, particularly women, to enhance their living standards and foster social upliftment. Through a combination of unconditional and conditional cash transfer schemes, the BISP seeks to address immediate financial needs and encourage long-term socio-economic improvements among its beneficiaries.

The Auditor General of Pakistan performed an audit on the accounts of the Ministry of Overseas Pakistanis and Human Resource Development and Poverty Alleviation & Social Safety Division, specifically focusing on the BISP. The audit revealed several critical findings.

The BISP, a federal initiative aimed at poverty eradication and women's empowerment, has distributed PKR 858.89 billion to over 5 million beneficiaries as of June 30, 2020. The Program, leveraging a Poverty Score Card for eligibility, encompasses various cash transfer schemes:

- Unconditional Cash Transfers (UCT) offering PKR 2,000 monthly to the poor.
- Conditional Cash Transfer (CCT) Programmes such as Waseela-e-Taleem, Waseela-e-Haq, Waseela-e-Rozgar, and Waseela-e-Sehat, focusing on education, microfinancing, vocational training, and healthcare.

Despite its wide reach since 2008, the audit identified significant challenges. In the financial year of 2019-2020, a minimal portion of the funds allocated for the graduation program was used. The majority of the disbursements were through UCT, while CCTs aimed at skill development and employment had minimal impact.

The Management Information System database, crucial for tracking beneficiaries, faced issues with data integrity and delays in updates. Furthermore, the audit uncovered instances of fraud and embezzlement, highlighting inadequate controls in the payment mechanisms. The Biometric Verification System, though it was an improvement, didn't fully mitigate these issues. The audit also pointed out flaws in the complaint/monitoring system, issues in reconciliation processes between the BISP, banks, and post offices, and irregularities in fund retention, all necessitating significant improvements.²⁸ The results shown in Table 2, which are based on the audit findings conducted by Auditor General of Pakistan, clarify the challenges persisting in the realm of digital transformation on a global scale display consistent pattern. These patterns, reflected both in academic literature and real-world scenarios, underscore the universality of certain obstacles in the digital evolution journey, emphasizing the need for holistic strategies and interventions to address them effectively.

²⁸ Audit report on the accounts of Ministry of overseas Pakistanis and Human resource development and Poverty Alleviation & Social Safety division, Audit year 2020-2021, Auditor General of Pakistan

Table 2. Comparative analysis of audit findings and corresponding challenges identified in the literature

	Audit findings	Alignment with Literature-based Challenges
1.	BISP faced challenges with delayed financial reconciliations and underused funds, indicating issues in system integration and funding	Integration failure, Insufficient funding
2.	Ineffective implementation of cash transfer programs and delays in database updates suggest poor project management and planning	Inadequate project management and planning
3.	Fraud and weak controls in payment mechanisms imply a lack of robust oversight from top management	Integration failure, Insufficient top management support
4.	Data integrity issues and delayed survey reports reflect significant gaps in information management	Information gaps
5.	Flaws in executing conditional cash transfer programs and holding undisbursed funds indicate poor planning in setting targets and timelines	Inadequate project planning

Development and use of e-payment systems can play a crucial role in advancing e-government

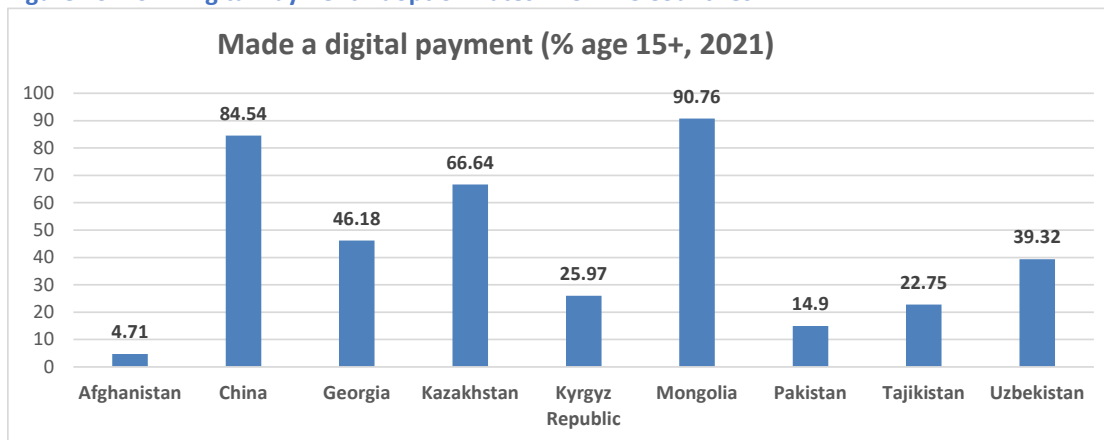
The capability to process payments electronically is essential for the effectiveness of e-government services. E-payment systems, which can include card-based transactions, electronic checks, account transfers, electronic cash, or mobile payments, enable government services to be accessed and paid for anytime, anywhere. CAREC countries are increasingly adopting various e-payment methods such as digital banking apps, credit/debit cards, e-purses, and point-of-sale systems. Initiatives like Azerbaijan's government program encourage the growth and utilization of digital payments, aiming to enhance transparency and reduce transaction costs in financial and business activities.²⁹

For instance, according to Global financial Inclusion database of World Bank, in 2021, Mongolia led the adoption of digital payments among the CAREC member countries, with 90.76% of individuals aged 15 and over participating in digital transactions. PRC also had a high percentage at 84.54%. On the lower end, Pakistan had 14.9% of its population making digital payments (Figure 11). Data for Azerbaijan and Turkmenistan were not provided. Cash payments are still preferred in these countries along with Afghanistan and Uzbekistan.³⁰ This snapshot highlights significant variations in digital payment adoption across the region, indicating diverse stages of digital economic integration.

²⁹ Study conducted on E-Commerce in CAREC Countries: Laws and Policies (Phase II). <https://www.carecinstitute.org/wp-content/uploads/2021/08/ADB-e-commerce-carec-laws-policies-Aug-2021.pdf>

³⁰ Study conducted on E-Commerce in CAREC Countries: Laws and Policies (Phase II). <https://www.carecinstitute.org/wp-content/uploads/2021/08/ADB-e-commerce-carec-laws-policies-Aug-2021.pdf>

Figure 10. 2021 Digital Payment Adoption Rates in CAREC Countries



Source: World Bank. Data Bank. Global Financial Inclusion.

<https://databank.worldbank.org/reports.aspx?source=global-financial-inclusion#> (Accessed 2 January 2024)

Conclusion and policy implications

The CAREC region has achieved substantial progress in its digital transformation. The journey has been characterized by significant investments and strategic efforts to digitize, as shown by the rising global investments in digital transformation and the ambitious digital strategies adopted by CAREC countries. However, it is evident that technology alone, while important, is not the mere catalyst for achieving success. The essence of digital transformation lies in its capacity to navigate human factors, organizational culture, and the regulatory landscape.

The implementation of e-government initiatives has demonstrated numerous benefits, such as improved efficiency, cost savings, and support for climate action through reduced carbon footprints. On the other hand, studies show that half of the digital initiatives face difficulties in scaling and achieving the intended benefits at organizational levels. This is not due to lack of technology or strategies but is mostly the result of challenges in aligning e-government projects with the organization’s business goals, insufficient funding, lack of skills and overarching resistance to change.

Addressing e-government projects’ governance challenges

In the face of the challenges presented by digital transformation, organizations might want to consider employing robust IT governance processes to navigate the complexities of integrating technology with business strategies. One such process that stands out for its relevance is the IT enterprise governance (EGIT) process. The primary benefit of the EGIT process lies in its comprehensive approach to aligning IT initiatives with an organization’s strategic objectives. By providing a structured governance model that encompasses strategic alignment, value delivery, risk and resource management, as well as performance measurement, the EGIT ensures that IT investments are not only strategically sound but also contribute to tangible business outcomes. This alignment is crucial for organizations looking to harness the full potential of digital transformation, turning technological capability into strategic advantage.

Box 1. Understanding COBIT 2019 as an EGIT framework

COBIT (Control Objectives for Information and Related Technologies) is a comprehensive framework for the governance and management of enterprise IT. It's designed to assist organizations in achieving their objectives for the governance and management of enterprise information and technology (I&T). COBIT aims to ensure that I&T is aligned with business objectives, delivers value to the enterprise, and manages risks associated with I&T.

Key Aspects of COBIT:

Value Delivery: COBIT focuses on the realization of benefits from I&T investments, emphasizing the delivery of fit-for-purpose services and solutions that meet business needs and contribute to value creation.

Governance vs. Management: The framework distinguishes between governance and management, with governance focused on evaluating stakeholder needs, setting directions, and monitoring performance; while management is concerned with planning, building, running, and monitoring I&T in alignment with the set direction.

Components of Governance System: COBIT identifies processes, organizational structures, policies, information flows, culture, behaviors, skills, and infrastructure as the building blocks of an effective governance system.

Implementation and Adaptation: COBIT is not a one-size-fits-all solution. Organizations need to adapt the framework to their context and be willing to take on more accountability for successful I&T governance.

Source: ISACA. *COBIT 2019 framework: Introduction and methodology. 2019 edition.*

<https://www.isaca.org/resources/cobit>

It is also imperative for organizations to structure their governance to extract maximum value from IT investments. A pivotal element of this organizational structuring is the alignment of organizational committees that oversee IT initiatives.³¹ The committees include:

- **IT Strategy Committee:** this committee is tasked with ensuring that investments are in line with the strategic goals of the organization. It provides high level direction and advice on IT strategies and policies, ensuring that IT activities are generating value and supporting business objectives.
- **IT Steering Committee:** operating under the guidance of the IT Strategy Committee, the IT Steering Committee is responsible for the operational oversight of IT projects. It ensures that the projects are aligned with the strategic direction set by the IT Strategy Committee and are delivered efficiently and effectively.
- **Project Steering committee:** for each IT project, the Project Steering Committee should be created consisting of stakeholders affected by the project. This committee is crucial for overseeing project delivery, monitoring timelines, managing costs, and ensuring that the projects meet their intended benefits and align with the overall IT strategy.

By realigning the organizational structure to involve these key committees, organizations have the opportunity to establish governance framework that promotes effective IT management and maximizes the value derived from IT investments.

³¹ ISACA. CISA Review Manual. 27th Edition.

Effectively navigating the change management is crucial

Resistance to change is one of the most important hinderance in digital transformation. Organizations might want to address this issue by embracing a culture of constant change, rather than striving for a fixed “end state”. The concept of transformation should be viewed as a means of fostering an organization that is more adaptable, innovative, and able to withstand challenges. By actively promoting and incorporating continuous change into their operations, organizations can position themselves to thrive in an ever-evolving landscape.

Technological change and disruption are often considered as a reason behind fear of change among employees, management, citizens and other stakeholders. Stakeholder engagement and participation of employees, citizens, and private sector in the early stages of designing public online service delivery is crucial to avoid uncertainties and anticipate what to expect from these projects.³²

Talent acquisition and retention

The acquisition and maintenance of a highly skilled workforce are pivotal to the successful execution of e-government initiatives. Consequently, organizations must implement inventive incentive structures to ensure the retention of such personnel. These incentives might include:

- Offer flexible working arrangements such as work-from-home options.
- While government jobs often offer security and benefits, competitive salaries are crucial. Innovative compensation schemes are necessary.
- Provide continuous learning opportunities, upskilling, and training initiatives to help employees keep their skills relevant.

These are only some examples of strategies for government organizations to successfully compete in the labor market.³³

Establishing accountability mechanism to ensure added value and effectiveness in e-government projects is vital

It is also crucial to establish a robust accountability mechanism for evaluating the efficiency and effectiveness of investments in e-government projects as they are mostly financed by the state budget. This requires involving external audit organizations like Supreme Audit Institutions (SAIs) to conduct thorough IT audits that cover different aspects of e-government initiatives. It is recommended that SAIs be granted legislative authority and provided with the necessary skills and resources to carry out independent audits. This mandate will enhance the accountability of public organizations as they embark on their digital transformation journey.

Reflecting on the importance of empowering SAIs for IT audits in e-government, the case of Mongolia serves as a good example. Within the framework of Mongolia’s sustainable development vision, the 'Mongolia: Strengthening the Supreme Audit Function' project, funded by the ADB and the Republic of

³² <https://www.oecd.org/gov/digital-government/recommendation-on-digital-government-strategies.htm>

³³ <https://www2.deloitte.com/us/en/insights/industry/public-sector/talent-war-government.html>

Korea, illustrates how strategic enhancements in audit capabilities can significantly impact the oversight and success of e-government initiatives.³⁴

Mongolian National Audit Office embarked on a transformative journey, having developed a digital master plan and a 5-year action plan to modernize its audit processes. This initiative included comprehensive planning for digital service improvements, capacity building through workshops in cyber security and data analytics, and the adoption of strategic documents for aligning the audit process with modern technology. Additionally, the provision of advanced IT and connectivity equipment enabled effective IT audits. This case illustrates the significant impact of equipping an SAI with the necessary authority, skills, and resources, offering valuable insights for CAREC countries in enhancing e-government project accountability and effectiveness.

³⁴ <https://www.adb.org/projects/52285-001/main>