



GOVERNANCE

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EQUITABLE GROWTH, FINANCE & INSTITUTIONS INSIGHT

Tech Savvy: Advancing GovTech Reforms in Public Administration

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1818 H Street NW,
Washington DC 20433
Telephone: 202-473-1000;
Internet: www.worldbank.org

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Joanna Watkins (Senior Public Sector Specialist) was the lead author of Chapter One, with Arsala Deane (Operations Officer) and Anne Colgan (Consultant). Donna Andrews (Global Lead, Public Institutions Reform) was the lead author of Chapter two, with Nicole Goldin (Consultant) and Ramy Zeid (Consultant). Zahid Hasnain (Global Lead, Public Institutions Reform) was the lead author of Chapter Three, with Galileu Kim (Consultant) and Wouter van Acker (Consultant). The report also benefited from useful guidance and advice from Kathrin Plangemann (Lead Governance Specialist), Shiho Nagaki (Senior Public Sector Specialist), Vikram Menon (Senior Public Sector Specialist), Jana Kunicova (Senior Public Sector Specialist), Sajitha Bashir (Adviser, Education), Astrid Jacobsen (Senior Digital Development Specialist) as well as Natalia Albanil Riano, Maria Victoria Cruz, and Lina Marcela Morales of the Directorate of Digital Government, Government of Colombia. Valuable contributions to Chapter One were received from Reinhard Haslinger, Senior Operations Officer, World Bank, and to chapters One and Two from João Ricardo Vasconcelos, Senior Governance Specialist. Richard Crabbe provided editorial services and Maria Lopez provided graphic design.

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Executive Summary

GovTech is one strategy that governments have adopted to more effectively respond to citizen needs and improve the effectiveness and efficiency of public service delivery. Yet, all too often a government's information and communications technology (ICT) projects do not deliver on their promise, and the public sector in particular has a history of projects falling short of expectations, going over time and budget and taking years to deliver on their potential. Some of the lessons learned from the GovTech projects financed by the World Bank include:

- Ensuring dedicated institutional and organizational arrangements with cross-departmental representation.
- Developing a supportive legal and regulatory enabling environment.
- Building in communications and change management support.
- Providing sufficient and specialized procurement support.
- Applying a citizen-centric approach to win public support for integrated GovTech policies, with investments in communication and engagement between the government and citizens.
- Investing in skills and capacities and cultivating a digital-friendly organizational culture.

There are a number of challenges that need to be overcome for GovTech solutions to work, and this report focuses on three key challenges that the World Development Report (WDR) 2016 called the “analog complements,” which underpin effective digital transformation in the public sector: a whole-of-government coordination, civil service digital skill development, and an innovative culture in public sector organizations.

Adopting a whole-of-government approach, linked to a wide range of structural and organizational factors, can be a significant driver for public sector organizations to realize digital transformation ambitions. Challenges such as cost inefficiencies and system duplication, may result from a lack of investment in coordination among the key agencies including Ministries of Finance, and Information Technology, and central offices such as Cabinet, Prime Ministers, and Presidential offices. A whole-of-government approach often features in country digital transformation plans and is important for successful digital transformation.

Lessons learned from GovTech projects financed by the World Bank show that there are six factors that underpin an effective whole-of-government approach for public sector organizations:

- Setting a top-down strategic whole-of-government orientation in digital transformation.
- Building a robust institutional and governance framework.
- Securing high-level political and senior civil servant leadership.
- Establishing a conducive policy and legal framework.
- Leveraging adoption mechanisms to drive change across the public sector.
- Adopting an outcomes orientation that puts users first.

Looking to the future, the public sector should be ready to encourage changes in people's behaviors and incentives, not only to use the technology but also to collaborate and coordinate, instead of solely focusing on technological advancement. To do so, greater agility and innovation will also be needed from government.

One critical foundational element of GovTech is the digital skills base in government. In an increasingly digital world, digital talents are in high demand, making it difficult for the government to attract and retain the right people. While securing digital skills is crucial for public sector organizations to achieve digital government transformations, many

countries, particularly lower-middle-income countries, lack specific strategies to attract digital talent and develop the digital skills of existing employees. There are five categories of digital skills that are necessary to effectively drive and sustain GovTech initiatives:

- Essential digital skills: to effectively use digital technology.
- Enhanced digital skills: to work in roles impacted significantly by technology initiatives to the extent that work cannot be done without such technology.
- Digital professional skills: to work in specialized technology roles to develop, maintain, or enhance digital tools.
- Digital leadership skills: to lead projects and manage employees.
- Cross-cutting category of soft skills: to possess the skills/ behaviors/personalities to navigate the team, collaborate with others, and deliver goals.

There is increasing demand for GovTech skills across sectors and strong competition from the private sector for scarce digital capacities. Using workforce planning to identify future digital staffing and skill needs is an integral part of human resource management. The workforce planning process involves six steps: strategic direction, supply analysis, demand analysis, gap analysis, strategy development, and monitoring, reporting, and evaluation. Workforce planning should be a key planning process adopted by public sector organizations to ensure that they are proactive and data-driven to identify their staffing needs.

Once the digital skills gap is identified through the gap analysis, key strategies need to be developed to help narrow or close the gap. Three approaches to strategy development are: to build the skills within the organization through upskilling and reskilling of existing employees; buy the needed skills through recruiting new staff; and borrow the skills by engaging temporary staff, contractors, or utilizing secondment or fellowship arrangements. Implementation of key strategies may also require reform or strengthening of underpinning human resource management policies and practices.

There are four key areas of reform for public sector organizations in order to develop and strengthen digital skills within organizations:

Key area	Description
1. Elevate the importance of and investment in digital skills.	Concrete and feasible planning and investment is needed for capacity building and skill development.
2. Modernize HRM policies and practices.	An effective and responsive HRM system is a key enabler to support attraction, recruitment, development, and retention of staff with digital skills.
3. Incentivize quality and sustainable learning, training and development.	Improving the quality and relevance of learning and development opportunities for staff can help public sector organizations to respond more quickly to changing skills demands.
4. Support continued research and data on the digital labor market and skills for public administration.	Quality and relevant data is important to support effective monitoring of digital skills initiatives.

Leveraging individual digital skills requires effective organizational leadership and organizational culture to drive the adoption and sustained implementation of technological innovation in government. To drive transformative changes, it is necessary to create a mutually beneficial ecosystem between GovTech and its analog complements, enabled by new approaches and opportunities of training and incentives that digital technologies can now help to provide.

There is empirical evidence from the World Bank's Bureaucracy Lab surveys on the importance of the analog complements for GovTech. Some of the key findings show:

- A correlation between the quality of management and organizational culture with employee motivation
- Civil servants' have differing levels of resistance to innovation;
- Digital talent is not attracted to the public sector and lack of training opportunities for employees are both major bottlenecks.
- Gender, age and educational levels influence the use and openness to digital technologies.

There are six key approaches to developing quality management and an innovative work environment to support digital government transformation:

Approach	Description
Leadership training	Concrete and feasible planning and investment is needed for capacity building and skill development.
Incentivizing better management	An effective and responsive HRM system is a key enabler to support attraction, recruitment, development, and retention of staff with digital skills.
Greater citizen-orientation	To motivate and improve public service delivery, public servant's work can be linked to the impacts on the lives of citizens through incorporating citizen feedback into organization's work practices via digital technologies.
Improving within-organization communication	To make staff feel safe and welcome to share their views on issues by inviting them to tackle organization challenges together by creating technology-assisted open communication forums.
Training for civil servants	To foster civil servant-led innovation by developing mechanisms and curricula which cover a variety of skills from digital, cognitive, and socioemotional, which help drive cultural transformation within an organization.
Innovation awards	To incentivize staff to innovate, while serving as a learning forum for all involved, which complements the organizational efforts in leadership and culture.



Introduction

It is clear that digital technologies are driving change across the globe and COVID-19 is accelerating this process. Digital transformation is disrupting industry structures and business models. An estimated 70 percent of new value created in the economy over the next decade will be based on digitally enabled platform business models.¹ In 2020, the value of global e-commerce was estimated at more than US\$3.5 trillion. The digital economy's contribution to global gross domestic product (GDP) is expected to grow from 15.5 percent in 2016 to about 25 percent in 2025.

While GovTech has increasingly become an effective way for governments to respond to citizen needs and improve the effectiveness and efficiency of public service delivery, digital transformation can spur economic transformation and GovTech can help accelerate the digital economy. GovTech can serve as the core foundation for the digital economy, providing the foundation for the private sector to use GovTech digital platforms and digital services and providing digital enablers for digital entrepreneurship, ecommerce, and digital financial services. A more in-depth discussion and analysis of the integration of GovTech with the digital economy is the subject of forthcoming work.

Despite this increased focus on GovTech, all too often digital technology projects fail to deliver on the promised outcomes, take longer, and cost more than expected. There are many reasons why digital technology projects do not succeed in the public sector as well as they do in the private sector. In short, insufficient attention is paid to the analogue complements for these projects to succeed—see the World Development Report (WDR) 2016 for more details. GovTech projects often struggle to overcome coordination challenges and secure the sustained political commitment to see them through—see WDR 2017. The vast sums involved in procuring GovTech solutions also lead to additional challenges, including navigating complex public procurement rules as well as fraud and corruption.

This report focuses on three key analogue complements that can get in the way of successful GovTech projects: coordination, capacity, and culture.

1. <https://www.weforum.org/platforms/shaping-the-future-of-digital-economy-and-new-value-creation>.



The main audience for this report is policymakers, public sector GovTech professionals, and senior leaders² from the World Bank’s client countries. The report also targets a broad audience of public sector and GovTech professionals within the World Bank Group, donor community and client countries. The report is organized in three chapters, each of which focuses on a key analog complement. Each chapter examines the current limitations and identifies options for improvement in:

- Organizing effectively for a GovTech approach and coordinating across government (Chapter One).
- Attracting, retaining, and developing more digital skills in public administration (Chapter Two).
- Changing the culture of the public sector to embrace the inherent risks and rewards of a more digitally driven public sector (Chapter Three).

This report has been informed by a desk-based review of literature sourced from academia and consulting firms;

secondary data analysis from reports and research of digital government transformation; and direct input from the lead authors. The report was also informed by an analysis of World Bank GovTech projects and discussions with Task Team Leaders. Finally, the report benefited from an analysis of the results of two Bureaucracy Lab GovTech surveys undertaken in Argentina and Kosovo.

While the report does touch on some of the other challenges facing public sector organizations when implementing GovTech reforms, it is not an exhaustive discussion on the analog complements necessary for digital government transformation. Other challenges, such as lack of high-level political and technical leadership; technical and regulatory barriers; insufficient budget to support integration; absence of a citizen-centric focus; or inattention to whether users will trust new digital solutions are potential topics for future work.

2. The main focus in this report is on officials within public administration rather than politicians and political appointees. It is acknowledged that in some systems of administration, the term manager is also given to a political appointee.



Defining GovTech

GovTech is a whole-of-government approach to public sector modernization and promotes simple, efficient and transparent government with the citizen at the center of reforms. The GovTech approach represents the current frontier of government digital transformation. It is distinct from previous phases as it emphasizes three aspects of public sector modernization:

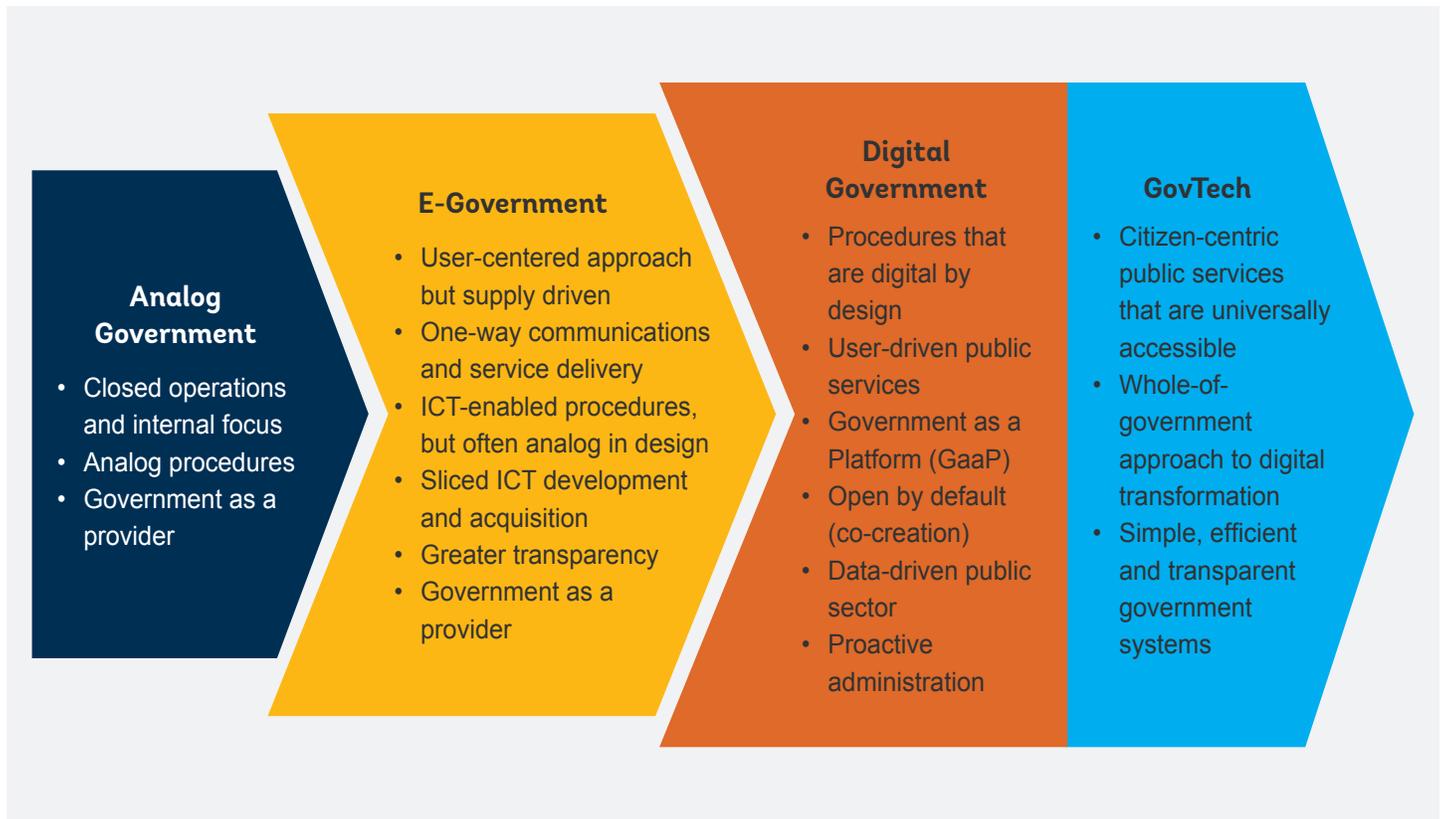
- Citizen-centric public services that are universally accessible.
- A whole-of-government approach to digital government transformation.
- Simple, efficient and transparent government systems.

The World Bank, client countries, and development partners have used the term “digital government” to describe modernization and transformation in public sector, and some still do;^{3,4} GovTech builds on that foundation.⁵ Figure 1 below shows the evolution of digital transformation in the public sector.

3. [2020 UN e-Gov Survey](#) (July 2020) Chapter 7: “Digital Government Transformation refers to a process of fundamental change requiring a holistic approach that puts people first and revolves around the needs of individuals, including those left furthest behind, and the mitigation of risks associated with the use of technologies. The central feature of a holistic approach to digital government transformation is the alignment of institutions, organizations, people, technology, data, and resources to support desired change within and outside of the public sector for the generation of public value.”

4. [Strategy for National Open Digital Ecosystems](#) (NODE), Ministry of Electronics & Information Technology, India (2020).

5. There are other complementary definitions used by other institutions that have different areas of emphasis within GovTech. The World Bank definition focuses on using digital technology for public sector modernization including the delivery of public services. This definition does not extend to the ecosystem within the private sector.

FIGURE 1 - Digital Transformation of the Public Sector

Source: World Bank, based on the OECD's presentation of digital transformation in Digital Government Studies (2019).⁶

The GovTech approach differs from past phases in the following ways:

- It emphasizes *universal accessibility* to ensure services and solutions are accessible by the widest range of beneficiaries, utilizing both online and physical means. By focusing on the ultimate user of government services, including non-citizens, *human-centric* or *citizen-centric* approaches refer to the design of solutions that consider device- and internet-access limitations, digital literacy, cultural norms, and other factors that might inhibit access.⁷ This is to ensure that government-provided services reach all intended beneficiaries and users.
- *Whole-of-government* approach promotes systems thinking and development of integrated approaches to policy making and service delivery for accessible, transparent, and efficient government. While this might be aspirational, the objective is to create a shared vision for effective use of digital platforms and data

that are interoperable and secure, fundamentally changing the way government operates and provides administrative services.

- GovTech also encompasses deepening the citizen-government relationship through *CivicTech*, that is technology-enabled advances in citizen engagement. CivicTech solutions aim to increase civic participation, improve accountability, and build public trust in government.
- *GovTech Enablers* refer to the cross-cutting drivers of digital transformation agenda, such as digital skills in the public sector, an appropriate and conducive legal and regulatory regime, strong enabling and safeguarding institutions, and an environment that fosters innovation in the public sector. Effective regulations, improved technical skills, and accountable institutions are the *analog complements* of digital investments as highlighted in [WDR 2016](#).

6. OECD Digital Government Studies, Digital Government Review of Sweden: Towards a Data-driven Public Sector (2019).

7. The word citizen is used here, but it is recognized that services need to be accessed by anyone who is intended to use them and, in some cases, this may mean residents who are not citizens.



World Bank Bureaucracy Lab GovTech Survey

Survey data provides a useful source of information about public sector organizations including management and organizational culture, use of digital technology and the climate for innovation. The World Bank's Bureaucracy Lab is a joint initiative between the Development Impact Evaluation (DIME) Research Group and the Governance Global Practice, and its objective is to generate high quality and operationally relevant data on civil service and public administration.

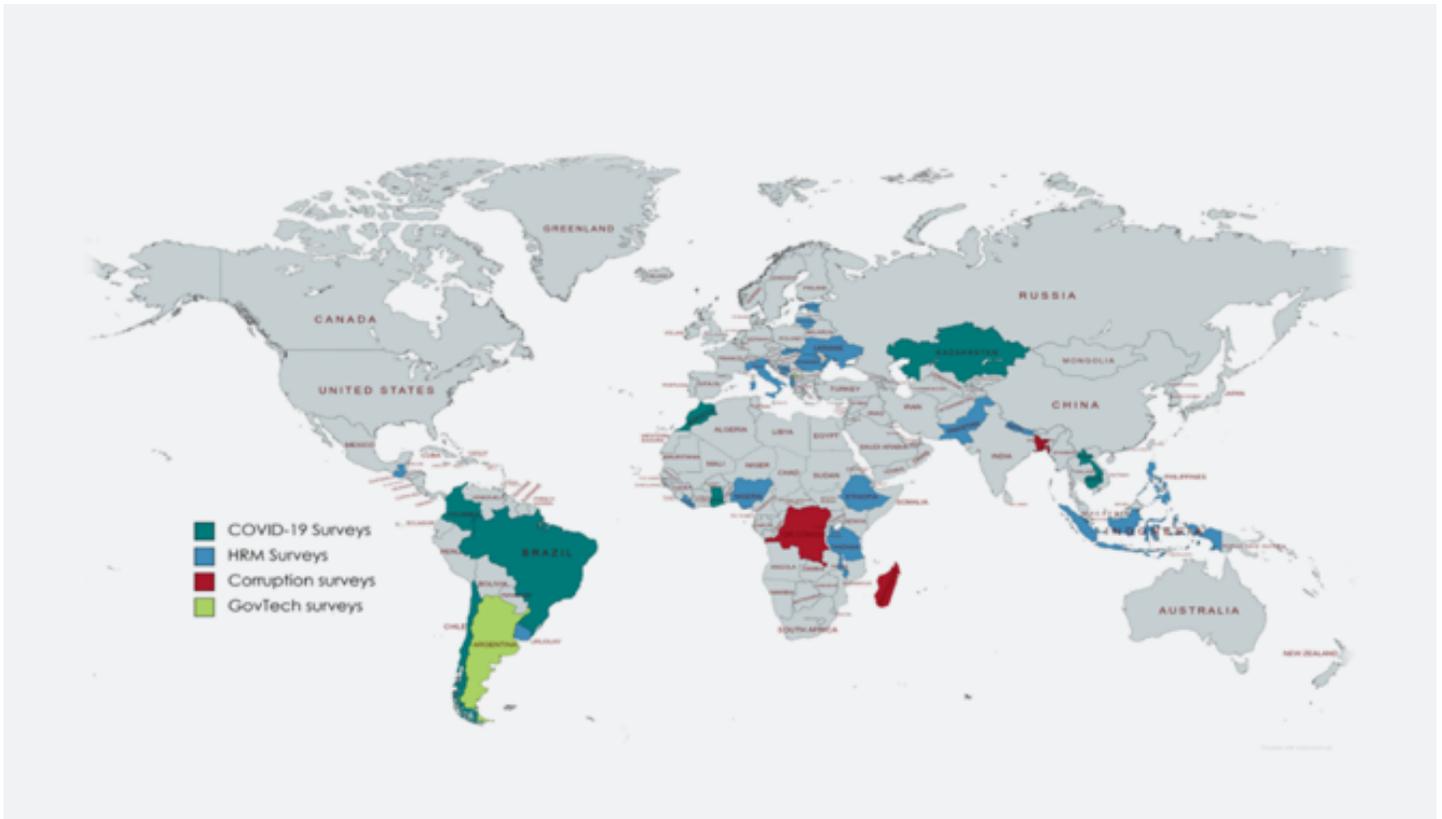
The Bureaucracy Lab has recently launched a GovTech survey module which aim to improve our understanding of public service through survey data on issues related to digital readiness, digital skills, and use of digital technology as well as the climate for innovation in public sector organizations. The GovTech survey module, *“Assessing Digital Readiness and Skills and the Organizational Climate for Innovation in Public Administration,”* has been completed in Argentina and Kosovo. The survey was deployed through an online platform in May-June 2021 in Kosovo and July-August 2021 in Argentina. The total number of respondents was 2,492 in Kosovo and 295 in Argentina.⁸ The results of these surveys are featured in this report.

The Bureaucracy Lab conducts a global survey of public servants spanning more than 35 countries that explore aspects of management and organizational culture (see Figure 2). These surveys measure a variety of management aspects, including performance evaluation as well as specialized modules focused on human resource management, GovTech, corruption, and managing the impacts of COVID-19. See Annex 3.1 for indicative questions for the main modules for whole-of-government coordination, digital skills, and leadership and culture for innovation.

8. Differences in the number of respondents reflect differences in scope. While Kosovo had a national scope, the survey in Argentina had a provincial focus on Mendoza.

> > >

FIGURE 2 - Bureaucracy Lab Global Surveys of Public Servants



Source: Bureaucracy Lab, World Bank.



Whole-of-Government Approaches to Advancing GovTech

Joanna Watkins, Anne Colgan, Arsala Deane

Introduction

Advancing GovTech reforms through a “whole-of-government” approach features prominently in the theme of many countries’ digital transformation plans. For decades the lack of coordination of investments in digitalizing government services resulted in a fragmented and siloed approach by individual agencies, leading to cost inefficiencies, duplication of systems and suboptimal user experiences.⁹ In recognition of these challenges, many countries tout the use of a whole-of-government approach in their plans for digital transformation with the aim of fostering coordination and collaboration across institutional boundaries.¹⁰ New Zealand’s Strategy for a Digital Public Service sets a “whole-of-public service direction” to improve the efficiency of the public service and provide better services by putting people and businesses at the center of government services.¹¹ Kenya’s Digital Economy Blueprint recognizes the need for a whole-of-government effort, requiring articulation, consensus, and the use of political will to drive change.¹² Oman’s Digital Strategy (e.Oman) refers to “a whole-of-government framework which aims to synchronize various government agencies in order to deliver services in an integrated and seamless way.”¹³ A whole-of-government approach is also sometimes captured under

9. Cabinet Office (2011). Government ICT Strategy. Cabinet Office, London.

10. Christensen, T. et al (2007). The Whole-of-Government Approach to Public Sector Reform. Public Administration Review 67 (6): 1059-1066.

11. “Strategy for a Digital Public Service.” Department of Internal Affairs, Government of New Zealand. May 2020. Page 8. Accessed at <https://www.digital.govt.nz/assets/Digital-government/Strategy/Strategy-for-a-Digital-Public-Service.pdf>.

12. “Digital Economy Blueprint: Powering Kenya’s Transformation.” Ministry of Information Communication and Technology, Government of Kenya. 2019. Page 32. Available from: <https://www.ict.go.ke/wp-content/uploads/2019/05/Kenya-Digital-Economy-2019.pdf> (32) DGTS, 2018-2022, page 61. <http://repository.kippra.or.ke/handle/123456789/1727>.

13. Oman’s Digital Strategy (e.Oman).

other banners such as “Joined up” government in the UK,¹⁴ Singapore’s “holistic approach” in the Smart Nation program, or in efforts to improve “coordination” and “cooperation” across government administrative jurisdictions to achieve the next level of digital transformation.

Despite its steady rise in prominence, there is a lack of consensus about what a whole-of-government approach to digital transformation entails. Many of the most digitally advanced governments have labeled their efforts as whole-of-government, but on closer inspection, the efforts actually refer to very different mechanisms to incentivize and drive collaboration and coordination across government. Some countries have narrowly defined it as the presence of inter-institutional organizational arrangements, while others have drawn on a range of policy levers – from procurement standards, capability frameworks, and budgeting techniques – to drive digital reforms across government.

Building on earlier definitions, authors define a whole-of-government approach as *when a government utilizes a range of structural and organizational incentives to improve coordination across administrative boundaries to achieve an integrated response to the uptake of GovTech solutions*. The OECD defines a whole-of-government approach as “one where a government actively uses formal and/or informal networks across the different agencies within that government to coordinate the design and implementation of the range of interventions that the government’s agencies will be making in order to increase the effectiveness of those interventions in achieving the desired objectives.”¹⁵ This definition focuses mainly on the design of whole-of-government efforts in the form of formal or informal networks. Ling (2002), by contrast, defines whole-of-government efforts as a “group of responses to the perception that services had become fragmented and that this fragmentation was preventing the achievement of important goals of public policy.”¹⁶ This definition is quite broad and refers to responses beyond those related to GovTech reforms. Others expand the definition of whole-of-government even further to “whole of nation” or “whole of society” to encompass the contribution of NGOs, the private sector, and even citizens in driving digital transformation.¹⁷

A number of studies have examined the determinants of successful (and unsuccessful) digital government reforms, reflecting various elements captured in a whole-of-government approach. In *Building a Virtual State*, Jane Fountain explored the ways in which actors in institutionalized settings enacted new information technologies to reproduce existing performance programs, control systems and institutions. Her “technology enactment theory” illuminated the role played by the “socio-structural mechanisms within organizational and institutional arrangements as public managers struggled to integrate the capabilities of a new information technology with such arrangements.”¹⁸ This spurred a spate of research on e-government helping to rebalance the technological determinism of the field.¹⁹ Drawing on this body of knowledge, the UN, OECD and others have developed various typologies for digital government transformation. The UN 2020 E-government survey defines nine pillars for digital government transformation that cover organizational, institutional and governance factors based on an assessment of top performers on the global index. These are: (i) vision, leadership, mindsets; (ii) institutional and regulatory framework; (iii) organizational setup and culture; (iv) system thinking and integration; (v) data governance; (vi) ICT Infrastructure, affordability and accessibility to technology; (vii) resources; (viii) capacity of training institutions; and (ix) societal capacities.

COMMON ROADBLOCKS

The challenges faced by countries embarking on digital government reforms are well documented and many countries have witnessed stops and starts in their reform trajectories. Early investments in ICT upgrades in the late 1990s and early 2000s often reflected a siloed approach by individual agencies leading to fragmentation, cost inefficiencies, and duplication, leading to suboptimal user experiences if not complete failure.²⁰ As countries have embarked on a whole-of-government approach to digitalizing government services, they have had to contend with what can be a particularly difficult and multi-dimensional challenge, involving individual, technological, organizational, and environmental factors. Many of the challenges countries face emerge within the key aspects of the overall digital government ecosystem:

14. The term “whole of government” can be traced to its antecedents ‘Joined-up government’ in the late 1990s during Tony Blair’s administration in the UK. Joined up government was the aspiration to achieve horizontally and vertically coordinated thinking and action. It was based on four aspirations: (i) eliminate contradictions and tensions between different policies; (ii) make better use of scarce resources (reduce duplication); (iii) improve the flow of good ideas and cooperation between different Ministries, and (iv) offer more seamless/integrated services. Pollitt (2003).

15. OECD. 2006. “Whole of Government Approaches to Fragile States.”

16. Ling, Tom. 2002. Delivering Joined-Up Government in the UK: Dimensions, Issues and Problems. *Public Administration* 80 (4): 616

17. Omar 2021; UN E-government survey 2020.

18. Jane Fountain. *Building a Virtual State*, Chapter 6.

19. Wirtz, Daiser. 2018. “A meta-analysis of empirical e-government research and its future research implications.” *International Review of Administrative Sciences*.

20. Gagnon et al (2010).

- Weak institutional/organizational coordination structures.
- Lack of political and senior leadership.
- Technical and regulatory barriers.
- Ineffective or insufficient financing.
- Adequate ICT infrastructure.
- Critical gaps in skills and training.

Weak Institutional/Organizational Coordination Structures

The legacy and dominance of vertically defined governmental structures are embedded in both the organizational systems and culture of most public administrations. Budgets and policy mandates tend to be constructed by various agencies, with limited incentive to collaborate across different sectors and levels of government. Performance management, rewards, efficiency and effective management systems are all embedded in these vertical structures. In her research on the use of ICT in the US federal government, Fountain notes that federal interagency networks are difficult to build and maintain because the institutional context within which federal agencies managers operate assumes and envisages agency-centric activities, discouraging cross-agency activities. This institutional “discouragement” is signaled through the lack of instruments for cross-agency activities, lack of expertise and lack of processes (active channels, templates, models, rule regimes) and encouragement for advancing cross-agency efforts.²¹ A key challenge for whole-of-government approaches to digital government is the challenge for political leaders to design organizational structures that reflect and drive the whole-of-government approach, embed and make horizontal, shared governance visible, and support this with legislation and regulation.

Lack of Political and Senior Commitment

In the absence of strong leadership from senior management – at both the political and senior civil servant levels - resistance to digital government reforms from line managers are likely to flourish. This lack of leadership allows for the vast heterogeneity in the level of digitization of some administrations. Strong political and senior commitment is essential to develop GovTech policy on a whole-of-government basis, which demands buy-in to a shared vision. Chapter Three explores in greater detail the evidence on the role of organizational leadership and organizational culture in driving the adoption and sustained implementation of technological innovation in government.

Technical and Regulatory Barriers

Digital government efforts require a complex, cross-government architecture involving common ICT standards, interoperability frameworks, common data management systems, and an infrastructure built for compatibility across departments and agencies and supported by legal or regulatory frameworks. Where these technical and/or regularity frameworks are absent, countries will struggle to deliver seamless services to users.

Ineffective or Insufficient Financing

Digital systems to support government transformation require substantial financial investments. Building an effective GovTech system on a whole-of-government basis will be challenged where line departments and ministers compete for ICT budgets or where ICT budgets compete with general service funding. A whole-of-government approach, through which ICT investment across government is centrally coordinated with cross-departmental support, can meet this challenge, allowing for an integrated approach to whole-of-government digital priority setting, project assessment, risk management, and a strong outcomes focus rather than a narrow technical focus.

Adequate ICT Infrastructure

A feature of the whole-of-government GovTech reforms is the speed of change whereby new developments in technology require continuous improvement and investments in upgrading ICT infrastructures, such as computers and data centers. A challenge for governments then is to build into their digital systems and structures the right balance between stability and change, recognizing the expensive costs involved in upgrading infrastructure.

Stagnation and Absence of Innovation

A feature of the whole of government GovTech reforms is the speed of change whereby new developments in technology require continuous improvement and investment. A challenge then for governments is to avoid stagnation and build into their digital systems and structures the right balance between stability and change.

21. Jane Fountain, Building a Virtual State, Chapter 6.

Skills and Training Gaps

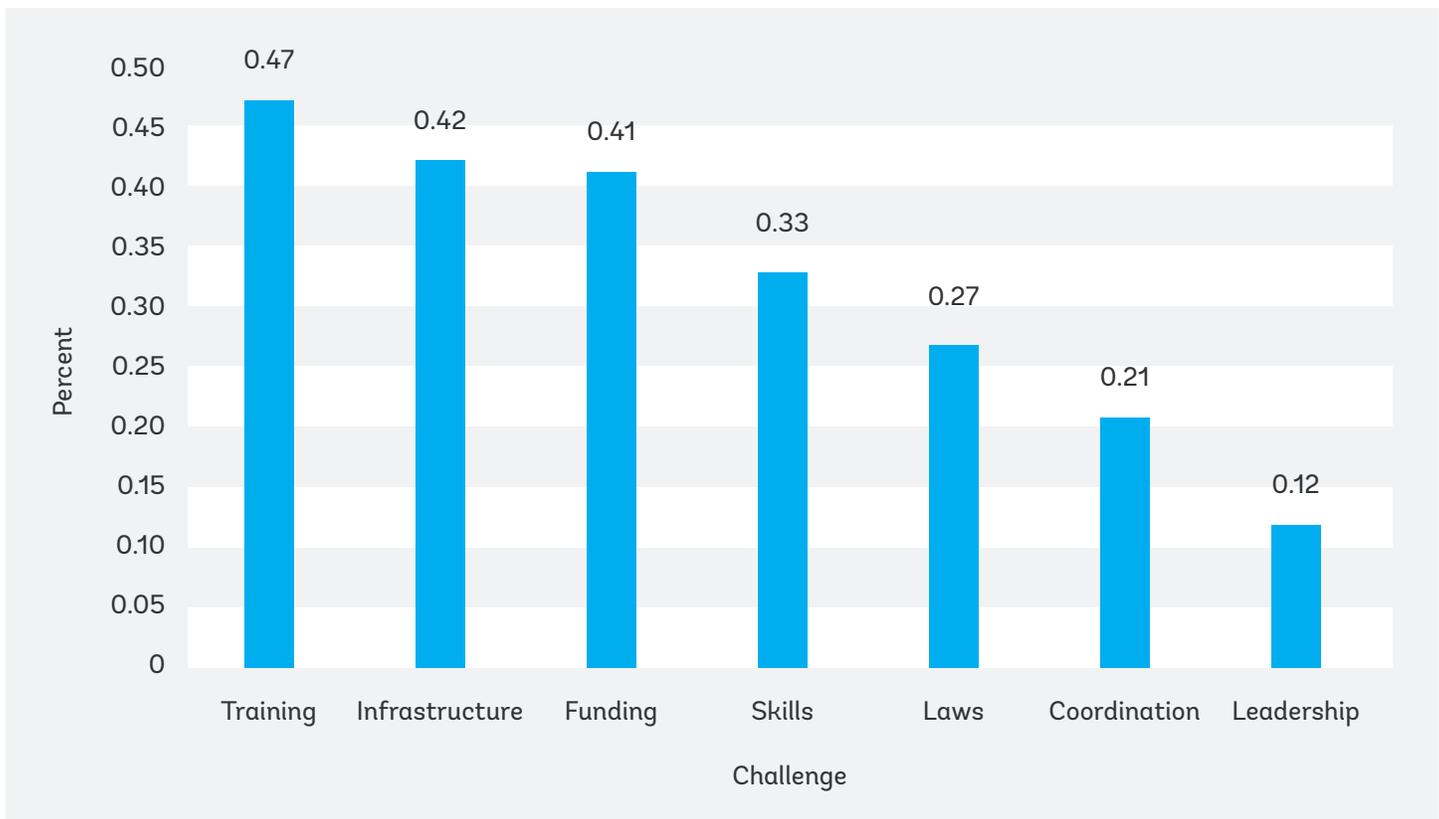
A key stumbling block for the public sector is the need to invest in the human resource capacities needed to build, maintain, manage, and improve the overall work of GovTech. Within the broad envelope of skill development, one challenge for states lies in the need for a 'whole-systems' based profile of the critical skills, from leadership and digital policy development skills, through the technical/professional skill domains and onwards to the broader applied skills at departmental/service delivery level essential for whole-of-government digital transformation. Skills in boundary-spanning behaviors among key people at every level are essential but often overlooked. Capacities for

joined-up working are also crucial at middle management and operational levels within departments where key decisions impacting on collaborative approaches are often made. Chapter Two addresses these gaps in detail and provides a framework for GovTech skills development.

A number of the aforementioned challenges are corroborated by the findings from the Kosovo GovTech Survey. The survey asked managers and staff a question on the main challenges to improving digital governance and digital service delivery in their institution. The top three challenges cited were training, infrastructure, and funding, as shown below in Figure 3.

> > >

FIGURE 3 - Challenges to Improving Digital Service Delivery



Source: World Bank Bureaucracy Lab Kosovo GovTech survey.

THE APPROACH UNDERPINNING THIS CHAPTER

This chapter has attempted to unpack the whole-of-government label, clarify the underlying concepts, and present country cases of the successful application of a whole-of-government approach to digital transformation of the public sector. As noted already, a whole-of-government approach requires putting in place several building blocks to secure the mobilization and coordination of efforts across government. Such an approach can help to avoid the pitfalls typically associated with siloed and individual agency approaches towards digitalization. Drawing on the academic and practitioner literature of digital government reforms, six dimensions that underpin a whole-of-government approach are identified:

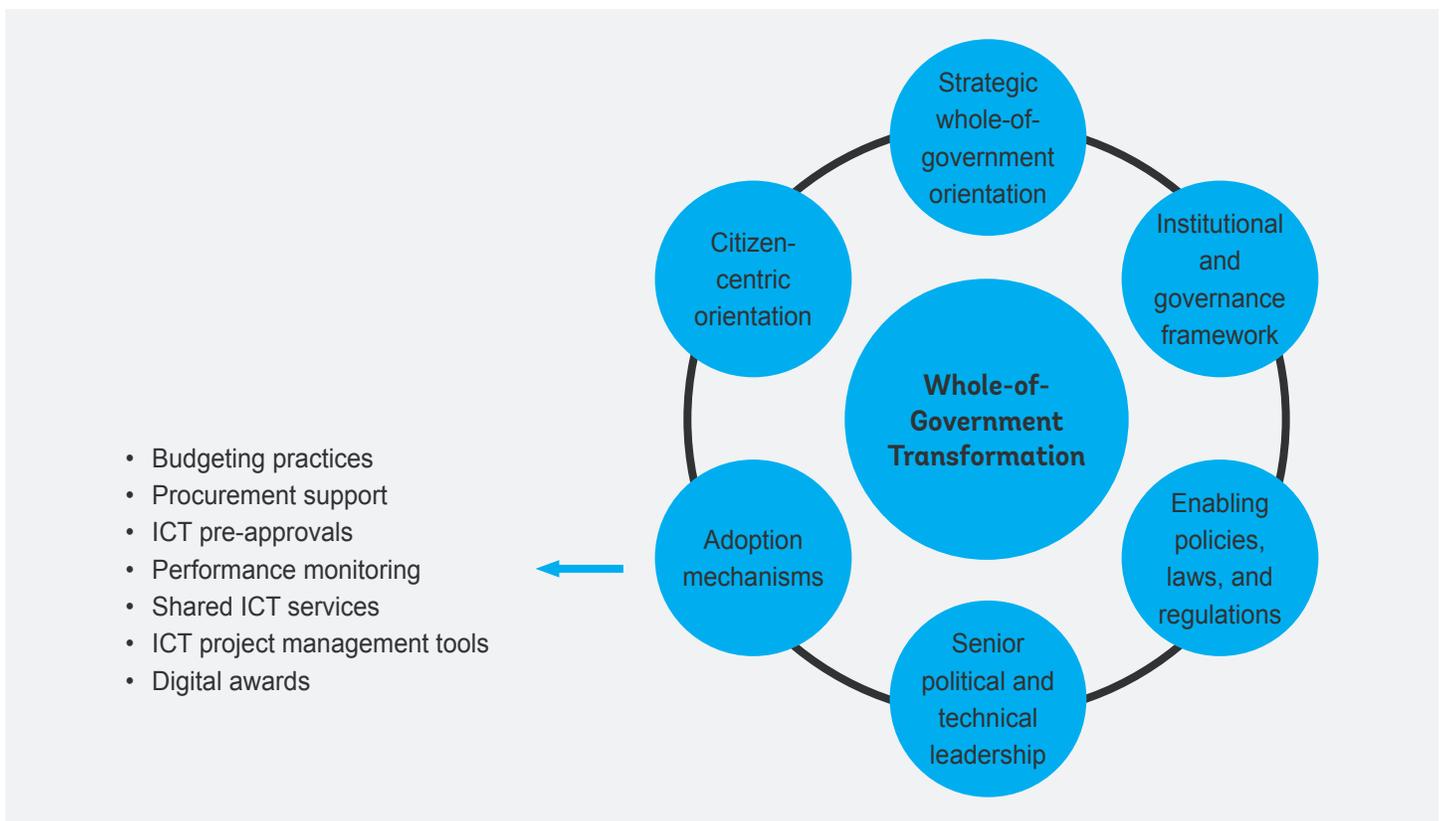
- Embedding a whole-of-government orientation in digital strategies;
- Building a robust institutional and governance framework;
- Establishing a conducive policy and legal framework;
- Securing senior political and senior public servant leadership;
- Leveraging adoption mechanisms to drive change across the public sector; and
- Adopting a user-centric orientation to service delivery.

Figure 4 presents a schematic whole-of-government approach to digital transformation. This whole-of-government framework

is applied to selected cases from the top performers on the 2020 UN E-Government Survey and to successful World Bank digital government projects to examine the presence of these factors. The country cases from the UN E-Government Survey were selected by computing an average of the E-Participation Index and the Online Services Index and selecting the top 35 of the newly computed average. The top three countries from Sub-Saharan Africa –Mauritius, Kenya, and South Africa – were also included. The selected countries feature many of the well-known top performers in digital government, such as Estonia, Finland, Denmark, Australia, and Singapore.

> > >

FIGURE 4 - Whole-of-Government Approach to GovTech



Source: Authors.

The country cases selected represent a range of countries in terms of income, level of development, political regime, administrative tradition, population, and geography. The selected cases are listed in Annex 1.1 In addition, authors analyzed a database of closed World Bank projects with major investments in digital government and selected 14 projects with successful outcomes for further analysis. These projects were selected based on the following criteria: (1) projects that implemented citizen-to-government or government-to-business services; (2) projects with multiple ICT investments for digital transformation across a range of functions; (3) investment in capacity building for government institutions; and (4) projects that received satisfactory ratings upon project closure (rated moderately to highly satisfactory). The list of World Bank projects analyzed can be found in Annex 2.

Embedding a Whole-of-Government Orientation in Digital Strategies

In the absence of an overarching strategy to guide GovTech efforts, individual ministry and agency sectoral plans are likely to dominate the focus of policy and investment decisions, undermining the system-wide coherence necessary for the design of user-centric e-services. In the case of Kosovo, where a digital strategy has yet to be formally adopted, the Public Administration Reform Strategy is the de facto guiding framework, providing some level of coherence across ministries, departments, and agencies.

The OECD describes the significance of national digital government strategies as the source of the vision for the digitalization of government and the future of service delivery and policymaking, setting common objectives and serving as a unique means of aligning political, administrative and technical efforts in favor of the goals stated in the strategy.²² In its Latin American Economic Outlook for 2020, the OECD also underlines the need for a comprehensive approach to digital strategy development, with national development plans (NDPs) aligned with digital agendas.²³ The UN E-Government Survey 2020 documents the global growth of digital strategies and the evolving complexity of these strategies.²⁴

All of the case study countries have or are in the process of developing dedicated digital government strategies. These vary widely in expressed purpose, focus, and content. Many are located within their National Development Plan, with broadly based citizen/societal outcomes, of which GovTech is a part, while others have a narrower technical or operational focus. Most specifically reference a whole-of-government/joined-up/coordinated approach to digital transformation. The 2020 UN e-government Survey references the extent to which governments adopt whole-of-government approaches to their digital strategy development as well as whole-of-society engagement and integration.

Sri Lanka embarked on one of the most forward looking digital transformation initiatives in South Asia at the end of 2002. The E-Sri Lanka Roadmap was innovative as digital government is seen not an end in itself, “but instead a piece of an intricate puzzle, which when put together, will aim to significantly impact all sectors of the economy and society.”²⁵ South Africa’s overarching National Development Plan 2030 has for one of its key outcomes the development of a coordinated ICT strategy that cuts across government departments and sectors. Tunisia’s Digital Tunisia 2020 and SmartGov2020 are linked to national and sectoral strategies to support broader public sector modernization and digitization and include a pillar on e-government with the aim to “transform the public administration through the adoption of digital technologies and to ensure greater efficiency and transparency, and a stronger orientation towards citizens and businesses.”²⁶ High level support has also come from the Prime Minister, who prioritized digitization of the public administration and economy as a top priority in Tunisia’s Development Roadmap 2019.²⁷ The content and focus of whole-of-government digital strategies reflect the level of digital maturity and advancement within the country.²⁸ Digitally advanced countries such as France, New Zealand, and the United Kingdom, while well-established over many years in terms of GovTech, continue to innovate, resulting in new and advanced digital strategies being put in place on a regular basis.

The Scottish Government’s approach to its new Digital Strategy²⁹ adopts a holistic, whole-of-government approach. The overall approach is based on a set of overarching guiding principles, including collaborative and user-focused programs and approaches. The strategy entails collaborating at a community, local, regional and national level, and across the public, private, voluntary and academic sectors. The underpinning audit report,³⁰ on which the strategy is based, emphasizes the fact that enabling change through digital technology is the responsibility of the whole of government and that this requires the support of every part of government, including support at a senior level. Two elements of the

22. OECD: Digital Government in Chile - A Strategy to enable digital transformation. <https://www.oecd-ilibrary.org/sites/65e2cbbf-en/index.html?itemId=/content/component/65e2cbbf-en>

23. OECD (2020). Latin American Economic Outlook. <https://www.oecd-ilibrary.org/docserver/e6e864fb-en.pdf?expires=1628174737&id=id&accname=guest&checksum=78239B-B3AC23FEA56E2EC990358C55AD>.

24. UN Department of Economic and Social Affairs. E-Government Survey 2020 Digital Government in the Decade of Action for Sustainable Development. [https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20\(Full%20Report\).pdf](https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20(Full%20Report).pdf)

25. Rainford, Shoban, E-Sri Lanka: An Integrated Approach to e-Government Case Study, p. 3. <https://www.unapcict.org/resources/ictd-infobank/e-sri-lanka-integrated-approach-e-government-case-study>.

26. Digital Transformation for User-Centric Public Services (P168425). Project Appraisal Document. World Bank. May 24, 2019. Report No: PAD3349, page 16. Accessed at: <https://documents1.worldbank.org/curated/fr/831811560823331664/pdf/Tunisia-GovTech-Digital-Transformation-for-User-Centric-Public-Services-Project.pdf>.

27. “Tunisie: La feuille de route 2019 de Youssef Chahed.” December 9, 2018. Leaders.com.tn. Accessed at: <https://www.leaders.com.tn/article/26078-la-feuille-de-route-2019-de-youssef-chahed>.

28. World Bank. GovTech: Putting People First. <https://www.worldbank.org/en/topic/governance/brief/govtech-putting-people-first>.

29. Scottish Government (2021). A changing nation: how Scotland will thrive in a digital world. <https://www.gov.scot/publications/a-changing-nation-how-scotland-will-thrive-in-a-digital-world/>

30. Auditor General (2019) Enabling Digital Government. <https://www.audit-scotland.gov.uk/report/enabling-digital-government>.

Scottish strategy, *Digital Government and Transforming Government*, sit within a wider national performance framework across three aspects: Government, People and Place, and Economy. *Transforming Government* sets out a comprehensive set of actions for GovTech linked to outcomes in the overarching National Performance Framework.³¹ The Framework sets out the values and national outcomes that underpin the Digital Strategy, along with a set of economic, social, and environmental indicators that together constitute a vision for national wellbeing. Beyond referencing a whole-of-government orientation in the strategies themselves, some governments have gone further to build-in this orientation from the development through the monitoring of strategies.

End-User Engagement in Strategy Design

While much of the data on digital strategies deals with the content of strategies, there is also a strand of analysis that underlines the importance of a change management approach to strategy development, with the aim of maximizing the prospects for good outcomes and effective implementation. In-depth consultation with end users is one such approach. Switzerland, with its strong consensus-based approach to decision-making, and Chile are among the countries that have invested in whole-of-government engagement of stakeholders within and outside government and across national and local levels in preparing their digital strategy. Countries that engage the ecosystem of stakeholders in strategy design help to secure alignment with stakeholders' expectations, and also create a sense of ownership and responsibility for its implementation.

Oversight and Monitoring

Embedding expectations of accountability at an ecosystem level and promoting a joined-up vision of that accountability are key features of whole-of-government digital transformation.³² Oversight and monitoring are critical to ensure good governance and effective implementation.³³ Australia's Digital Transformation Strategy (2018) includes important milestones for projects and a dynamic dashboard to track progress. In Denmark, the Danish Council for IT projects is responsible for reporting twice a year on the status of the Danish government's digital programs with reference to progress against timescales, budget, and benefit realization. If necessary, the Council may recommend that projects with a high level of risk or planned projects likely to be delayed or to become more costly are subject to independent external review.

In sum, for a whole-of-government approach to digital strategies to be effective, it needs to be an intrinsic part of a wider overarching vision for economic and social wellbeing, guided by clear objectives, supported by robust indicators, and accompanied by monitoring and oversight mechanisms. A key challenge to achieving this holistic, systemic approach is to invest in collaboration across the widest possible range of users, including citizens and businesses to build an ecosystem of stakeholders supportive of the strategy. Sustainable digital strategies also depend on a culture of continuous improvement and an investment in change management processes that reflect a clear grasp of the dynamism present in the ICT sector.

Institutional and Governance Frameworks

In the context of the vertically defined structures embedded in the organizational systems and culture of most public administrations, it is unsurprising that cross-departmental coordination is extremely challenging. With budgets, policy mandates, and performance appraisal aligned to individual agencies, there is limited incentive to collaborate across institutions. This institutional "discouragement" is well documented and signaled through the absence of instruments for cross-agency activities and lack of expertise and processes. A key challenge for whole-of-government approaches to digital government is for political leaders to design organizational structures that reflect and drive the whole-of-government approach, accompanied by procedures, protocols, and even legislation and regulations, depending on the administration tradition.

To address this challenge, successful countries have purposefully designed cross-governmental institutional structures and governance arrangements to drive the mandate of digital transformation. These arrangements bring to the fore and institutionalize collaboration between departments and agencies and bring together key stakeholders across the system to build holistic, coordinated, whole-of-government policy frameworks. These governance arrangements vary greatly from country to country, and there is no one-size-fits-all. The OECD Latin America Economic Outlook 2020 sets out two models for digital strategy implementation. The first is centralized responsibility for strategic coordination above the

31. Scottish Government. National Performance Framework <https://nationalperformance.gov.scot/>.

32. Bennet Institute for Public Policy, Cambridge: Thinking about GovTech: A Brief Guide for policy-makers.(2019). https://www.bennettinstitute.cam.ac.uk/media/uploads/files/Thinking_about_Govtech_Jan_2019_online-1.pdf.

33. OECD: Digital Government in Chile - A Strategy to enable digital transformation. <https://www.oecd-ilibrary.org/sites/65e2cbbf-en/index.html?itemId=/content/component/65e2cbbf-en>.

ministerial level (that is, with the head of government). The second model is a lead minister or specialized agency under the control of the Prime Minister or President.³⁴

In practice, the diverse choices made reflect a diversity of factors including size and complexity of government, whether it is a federal or unitary state, the stage of evolution of GovTech in the country, the relative strength of vertical and horizontal structures, and significantly, how the digital agenda

is perceived in terms of its relationship to other policy priorities and platforms. Table 1 below captures the presence of the different institutional and organizational mechanisms used by the top 15 performers in our sample, as well as the examples from the Africa region. In addition to the appointment of a Chief Information Officer (CIO)/reform champion and assignment of a dedicated agency or Ministry, the Table also points to the presence of cross-governmental structures, use of advisory groups, and platforms for engaging the private sector.

> > >

TABLE 1 - Presence of Institutional and Organizational Mechanisms among the Top e-Gov Performers

	Dedicated agency	Dedicated ministry	Finance ministry has key mandate	Appointed champion	Cross-governmental structures	Advisory groups	Private sector coordination mechanism
Australia							
Austria							
Cyprus							
Denmark							
Estonia							
Finland							
Japan							
Kenya							
Korea							
Mauritius							
Netherlands							
New Zealand							
Poland							
Singapore							
South Africa							
United Arab Emirates							
United Kingdom							
United States of America							

Source: Authors own elaboration based on assessment of country cases.

Note: Color intensity signifies the presence of the factor.

34. OECD (2020). Latin American Economic Outlook. <https://www.oecd-ilibrary.org/docserver/e6e864fb-en.pdf?expires=1628174737&id=id&accname=guest&checksum=78239BB3AC23FEA56E2EC990358C55AD>.



Creation of a Dedicated Agency

A dedicated agency with key cross-government responsibilities in relation to GovTech is a feature of most of the case study countries. These agencies vary in the span of their responsibilities but mainly deliver on a range of critical whole-of-government functions including strategic coordination and planning, the promotion and monitoring of GovTech and digital support functions. Well-known examples include the UK Government Digital Service (GDS), the United States Digital Service (USDS), Australia's Digital Transformation Agency and South Africa's State Information Technology Agency (SITA). As an example of the breadth of responsibilities held by some dedicated agencies, the roles of the Norwegian Digitalisation Agency include defining the premises for digitalization and comprehensive information management in the public sector; coordinating digitalization measures across organizational boundaries; facilitating the development of digital services for the general public, local authorities and business; managing and further developing national components and solutions; and responsibility for the strategic planning of the further development of a comprehensive digital infrastructure for the public sector. Dedicated agencies are usually headed up by a CIO or appointed reform champion.

Allocation of Ministerial Responsibility

Allocation of ministerial responsibility is a central element of the approach to whole-of-government governance arrangements and can give a pointer to the place of digitalization in the

overarching national policy framework. Several countries, including Canada and Poland, appoint a dedicated Digital Minister. Other countries link the digital portfolio with one or more areas of policy responsibility. Norway, for example, links digital transformation with a wider public sector reform agenda, having a Minister for Regional Development and Digitalization, which itself sits within the Ministry of Local Government and Modernization. In Slovenia, the Ministry of Public Administration is responsible for digital government. The linking of the digitization role with public sector reform potentially underscores the essential synergies between them.

Several countries including Singapore, Finland, Denmark, and Cyprus, link the Digital Ministry with the Finance Ministry, an approach that may help to strengthen budgetary provision for digital transformation. Countries that link the digital transformation agenda with an economic portfolio either explicitly or within the remit of that portfolio, adding a strong economic emphasis to the role, include Brazil, Estonia, Austria and Spain.

Cross-Governmental Coordination Structures

While the digital portfolio is likely to have a cross-governmental remit, some countries have also established formal or informal cross-governmental coordination structures to ensure the whole-of-government aspect, bringing key stakeholders together through committees with a coordination or collaboration remit. In federal states or states whose regional or local government structures have high levels of policy and/

or independence in digital policy matters, these committees may also serve the purpose of ensuring coordination and collaboration across jurisdictions.

In Australia, the Cabinet's Digital Transformation and Public Sector Modernization Committee includes a ministerial representative from each state and territory with responsibility for data and/or digital matters and is chaired by the Commonwealth Minister for Government Services. In New Zealand, the Digital Government Leadership Group is responsible for embedding integrated services, while the Digital Government Partnership, which is made up of 55 leaders from 20 agencies, ensures the public service is aligned with the Digital Strategy. Moldova, in 2010, invested in a governance framework for digital transformation anchored in the highest levels of government. New institutions were created for digital transformation, with the formation of the e-Government Center and Government CIO Office as part of the Prime Minister's Office, in the State Chancellery. It was important that the eGovernment Center was not in a line ministry, which would have made it difficult to ensure national coordination across government and sectors.³⁵

The most digitally advanced countries have put in place councils or advisory groups to facilitate inter-agency collaboration and planning. For example, Denmark's "Digitization Pact" has committed the national and local governments and Danish regions to cooperate on and prioritize digitalization initiatives. The Australian Digital Council is made up of one ministerial representative from each state and territory and provides a space for its members to collaborate on data and digital matters. The Dutch intergovernmental consultative body,

"Overheidsbreed Beleidsoverleg Digitale Overheid" (OBDO), advises the Minister of Interior on the country's digital governance infrastructure. OBDO supports the minister on the multiannual investment framework for development and renewal of the digital governance and infrastructure and an annual cycle for prioritizing and allocating resources.

An increasing focus of whole-of-government approaches to GovTech is the recognition that effective whole-of-government implementation of GovTech requires partnerships with the business community and citizens.³⁶ Some countries have recognized this by adopting a whole-of-society approach to Digital Governance and involving these groups in the Digital Governance infrastructure. Sweden's National Digitalization Council, for example, promotes the implementation of the government's digitalization strategy and is made up of leading experts from universities, the private and public sector and works under the leadership of the Minister for Digital Development. Spain has established the Consultative Council for Digital Transformation to facilitate dialogue and participation of different economic and social agents in the digital transformation project. Box 1 provides additional details on the Spanish case. In Kenya, a Government Digital Payments (GDP) Taskforce was created to implement a centralized electronic government service and payment gateway known as eCitizen. eCitizen is both an online portal and mobile app that citizens and businesses can use to access, apply and pay for more than 300 government services. This taskforce reported directly to the President, and its membership includes representatives of the private sector, academia and the development community, who advise on best practice from Kenya and around the world.

> > >

BOX 1 - A Complex, Multi-Faceted National, Regional and Local Whole-of-Government Governance Model

Spain's Ministry of Economic Affairs and Digital Transformation is responsible for proposing and executing Government policy for digital transformation. Within the Ministry, the Secretary of State for Digitalisation and Artificial Intelligence is tasked with promoting the digital transformation of Spanish society and digital transformation of the public administration.

An inter-ministerial body (known as the Central Administration Coordination Commission for ICT Strategy) comprised of senior officials representing all Ministries, is tasked with the design and development of eGovernment and ICT policy. In addition, Ministerial Committees for Digital Government are responsible for promoting digital governance in public administration and implementing the action plan for digital transformation in their own Ministry. To coordinate across administrative jurisdictions, a Sectorial Commission of eGovernment serves as the technical cooperation body for the state, regional and local entities in matters of electronic administration.

35. World Bank Group, Moldova Governance E-Transformation Project. Implementation Completion Report and Results Report. No: ICR00004161. June 26, 2017.

36. Ozols, Gatis and Meyerhoff Nielsen, Morten. 2018. Connected Government Approach for Customer-centric Public Service Delivery: Comparing strategic, governance and technological aspects in Latvia, Denmark and the United Kingdom. UN University.

Vertical administrative silos are, culturally and operationally, the norm in government service structures. The diverse range of institutional and governance approaches, linked to the political and institutional culture of the country, described above have been effective in creating and embedding cross-departmental coordination for whole-of-government digital strategies. However, a key challenge is that even the most sophisticated cross-departmental or agency structures may be undermined by the routine, day-to-day processes that are powerfully embedded in the DNA of hierarchical models and structures of most public services. These include, in particular, budgetary systems, performance management systems, rewards and incentives. To overcome this challenge, key operating processes need to be examined systematically in order to find and strengthen coordination incentives, such as whole-of-government performance orientation in budgetary allocation, a focus on clear tracking of whole-of-government investments through a performance and M&E system, joint priority setting across government and alignment of individual performance management with national digital priorities.

Senior Political and Administrative Leadership

Without strong commitment from the top, resistance from line ministries is likely to undermine progress on an agenda which requires relinquishing a certain degree of administrative control. Strong collaborative leadership from the top creates the foundational conditions for effective digital government. By setting the overarching national vision, driving the legislative agenda forward, and emphasizing the priority attached to digital reforms, politicians and senior administrators set the pace of reforms.³⁷ Results from a 2015 Gartner CIO Agenda Survey revealed that the success of implementation of digital transformation agenda depends mainly on the degree of leadership or executive endorsement associated with the digital government and the urgency ascribed to achieving digital government. These findings are reinforced by the findings on the importance of leadership from the Kosovo and Argentina GovTech surveys described in greater detail in Chapter Three.

Political Dividends from Working across Government

Successful cases have revealed that digital government is embedded in the political platforms of Heads of State and Heads of Government pursuing these reforms. Most have taken a personal interest in advancing these reforms, often framed around the idea of improved services or in terms of potential budgetary savings. Canada's Prime Minister, Justin Trudeau, wrote to the incoming Minister of Digital Government, emphasizing the need to work across government to transition to digital government in order to improve citizen service and deliver on his electoral mandate.³⁸ In Albania, Prime Minister Edi Rama, in office since 2013, spearheaded reforms in digital government with the creation of the Agency for the Delivery of Integrated Services (ADISA) and made it a central part of his governing platform. Similarly, the President of South Africa, Matamela Cyril Ramaphosa, has emphasized the need for "Batho Pele," which translates as "People First," a South African political initiative. In his first State of the Nation Address, he stated, "we know the challenges that our people face when they interact with the state. In too many cases, they often get poor service or no service at all. We want our public servants to adhere to the principle of Batho Pele, of putting our people first."³⁹

Appointment of a CIO and Digital Leaders across Government

The presence of a Government Chief Information Officer (CIO) and/or appointed reform champion(s) with clear accountability for translating the vision of digital transformation into practice is present in nearly all of the country cases. In responses to the 2020 UN E-Government Member Survey Questionnaires (MSQs), 145 of the 193 Member States stated that they have a CIO or the equivalent. These positions carry with them the functional (and political) mandate to work across government to embed digital reforms, drive the strategic planning of digital government, establish common standards and frameworks, and report on progress directly to the Head of State. CIOs are often directly appointed by the Head of State or, in some cases, by senior government officials. Malaysia's CIO is appointed by the Chief Secretary to the Government of Malaysia with the mandate of driving the information exchanges that promote cross-agency services (see Box 2).

37. E-Government Survey 2020 Digital Government in the Decade of Action for Sustainable Development. [https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20\(Full%20Report\).pdf](https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20(Full%20Report).pdf).

38. Mandate Letter from Prime Minister Trudeau: <https://pm.gc.ca/en/mandate-letters/2019/12/13/minister-digital-government-mandate-letter>.

39. President Ramaphosa referenced it in his first State of the Nation address, Feb. 16, 2018.

BOX 2 - Functions of Malaysia's Chief Information Officer

- Drive Strategic Planning of ICT in the public sector.
- Strengthen the governance of ICT in the public sector.
- Drive the adoption of the Enterprise Architecture (EA) in the public sector.
- Manage the suitability of regulations, policies, standards, and best practices in the implementation of the Digital Government.
- Drive the implementation of the ICT shared services in the public sector.
- Identify relevant and emerging new generation services.
- Drive the information exchanges that promote cross-agency services.

To accelerate the implementation of digital government reforms across levels of government, several countries have also established a network of CIO positions in line ministries. In India, a Chief Information Officers Programme has been set up to create e-governance champions within line ministries and line departments. In the case of Austria, every Ministry has a dedicated CIO and Chief Digital Officer (CDO). In Malaysia, in addition to the CIO, there are Chief Information Officers at the agency level (see Box 2). In response to the COVID-19 crisis, the UK set up a Senior Digital Leaders Network, comprised of the Chief Technology Officers (CTOs) and CIOs in every department, which could convene and make important strategic decisions in relation to the rapid acceleration of digital services. Several countries have also created civil service posts with a direct line of function and reporting to the CIO. See Chapter Three for additional details. Given the central role senior political and administrative managers play in driving digital reforms, careful attention should be given to building a network of stakeholders for reforms. In a meta-analysis of the factors influencing the adoption of ICT in the healthcare profession, a number of studies found evidence that the presence and use of champions (or superusers) were factors that contributed to successful ICT implementation. Organizational support and management were also identified as factors to consider in the success of ICT implementation.⁴⁰ These issues are further explored in Chapter Three.

Legal, Regulatory, and Policy Framework

Digital government efforts require complex cross-government architecture involving common ICT standards, interoperability

frameworks, common data management systems, and an infrastructure built for compatibility across departments and agencies and supported by legal or regulatory frameworks. Where these technical and/or regulatory frameworks are absent, countries will struggle to deliver seamless services to users, the ultimate objective of GovTech. Today's digital transformation, and its progressive acceleration, demands additional efforts of governments to keep their legal and regulatory frameworks updated to seize opportunities and tackle challenges posed by digital reforms. Pushed by progressive digitalization, countries around the world have significantly advanced in the last decades establishing legal and regulatory frameworks that facilitate inter-government coordination and data sharing (UN, 2020; OECD, 2020, WB, 2020).

Laws and regulations for digital government have proliferated today, recognizing digital documents and signatures, securing privacy and data protection, framing cybersecurity policies, and supporting data governance with application across government institutions. In line with their institutional culture, some countries follow a more legalistic approach that details processes and procedures and their application to different policy streams. For instance, countries with Latin public administration cultures whether in Southern Europe or Latin America tend to follow this more legalistic approach, extensively legislating and regulating the digital transformation of their public sectors. Other countries with more consensus-based institutional cultures tend to rely more on guidelines and standards. Anglo-Saxon countries, for instance, rely on institutional coordination mechanisms that are not necessarily reflected in the legal and regulatory framework. Whether the country is situated in a more legalistic or consensus-based institutional spectrum, the agility and responsiveness of the legal and regulatory framework is critical in a world where

40. Gagnon et al (2010).

digitalization is constantly evolving and generating new technological trends. In the case of Korea, many of the key aspects are covered in a comprehensive E-Government Act, which was first promulgated in 2001, and subsequently revised several times, with the latest iteration in 2017. See Box 3 for additional details.

> > >

BOX 3 - Key Features of Korea's E-Government Act (2017)

The case of Korea provides an example of a dynamic and comprehensive legal framework for digital government. Korea has been proactive in its enhancements to keep up with technological change. Key features of the Act include:

- Establishment and use of electronic documents.
- Administrative electronic signatures and common data utilization infrastructure systems.
- Joint use of administrative information.
- Introduction and use of ICT architecture to strengthen the operational foundations of e-Government.
- Creation of a management base for information resources.
- Designation of electronic government project promotion.
- Assessment and international cooperation agencies to implement eGovernment Projects.

In the last two decades, since the launch of the Lisbon Strategy in March 2000, the European Union (EU) has strongly pushed its member states towards adopting a cohesive set of legal and regulatory acts to facilitate the digital transition. Numerous strategies, action plans, conferences, initiatives, and projects have been supporting the joint effort of EU countries to digitally transform their economies, societies, and governments. The proliferation of European legislation and regulations in these areas is a fundamental mechanism used in the last years to secure European cohesion and joint efforts between its members. The following examples can be highlighted:

- General Data Protection Regulation (European Parliament and Council, 2016).
- eIDAS Regulation - Electronic Identification, Authentication and Trust Services (European Parliament and Council, 2014).
- Directive on open data and re-use of public sector information (European Parliament and Council, 2019).
- Directive concerning measures for a high common level of security of network and information systems across the Union (European Parliament and Council, 2016).
- Directives on Public Procurement (European Parliament and Council, 2014[18]) (European Parliament, 2014).

These directives and regulations frame the digital experience of all European member states and simultaneously influence the digital context beyond the European borders given the economic weight of EU's economy.

Some of the foundational policies, which embeds a whole-of-government approach to digital government across agencies, include the following:

- Interoperability frameworks.
- Enterprise Architecture.
- Data governance, data protection and privacy, use of open-source software, cloud policy.
- Common technological standards for digital platforms, management of ICT, web services, and common digital service delivery standards, which need to be adhered to across government.

A key enabler of a whole-of-government approach is the use of interoperability frameworks that reduce system boundaries between government agencies by setting standards across government systems to allow for seamless exchange of information and communication between systems. An interoperability framework sets common standards and guidelines which government institutions have agreed, or should agree, to interact with each other. Many countries including Croatia, Denmark, and Slovenia have adopted the European Interoperability Framework (EIF). Australia, Ghana, Rwanda, and New Zealand have their own frameworks.

Another important tool is the use of Enterprise Architecture (EA), which provides a holistic blueprint for infrastructure, data integration, and application. EA is a discipline that

the United Kingdom.⁴⁵ In some countries, where citizens are risk averse and fear the use of digital services, governments need to quickly adopt strong data protection, cybersecurity, anti-fraud and other policy frameworks to address concerns of citizens and the private sector to use digital channels. A strengthened legal framework that addresses citizen and

private sector concerns that is well communicated would support further uptake of digital services. Building citizen awareness in these contexts becomes critical, so that citizens understand how they are protected and what benefits could accrue to them through the use of digital services.

> > >

FIGURE 5 - Legal and Regulatory Aspects of a Digital Ecosystem



Source: OECD (2019[43]), *Digital Government Review of Panama*.

45. OECD Digital Government Studies: OECD Digital Government Studies Digital Government Review of Slovenia. Leading the Digital Transformation of the Public Sector. September, 25, 2021. [OECD Digital Government Studies | OECD iLibrary \(oecd-ilibrary.org\)](https://www.oecd-ilibrary.org/digital-government-studies), p. 71.

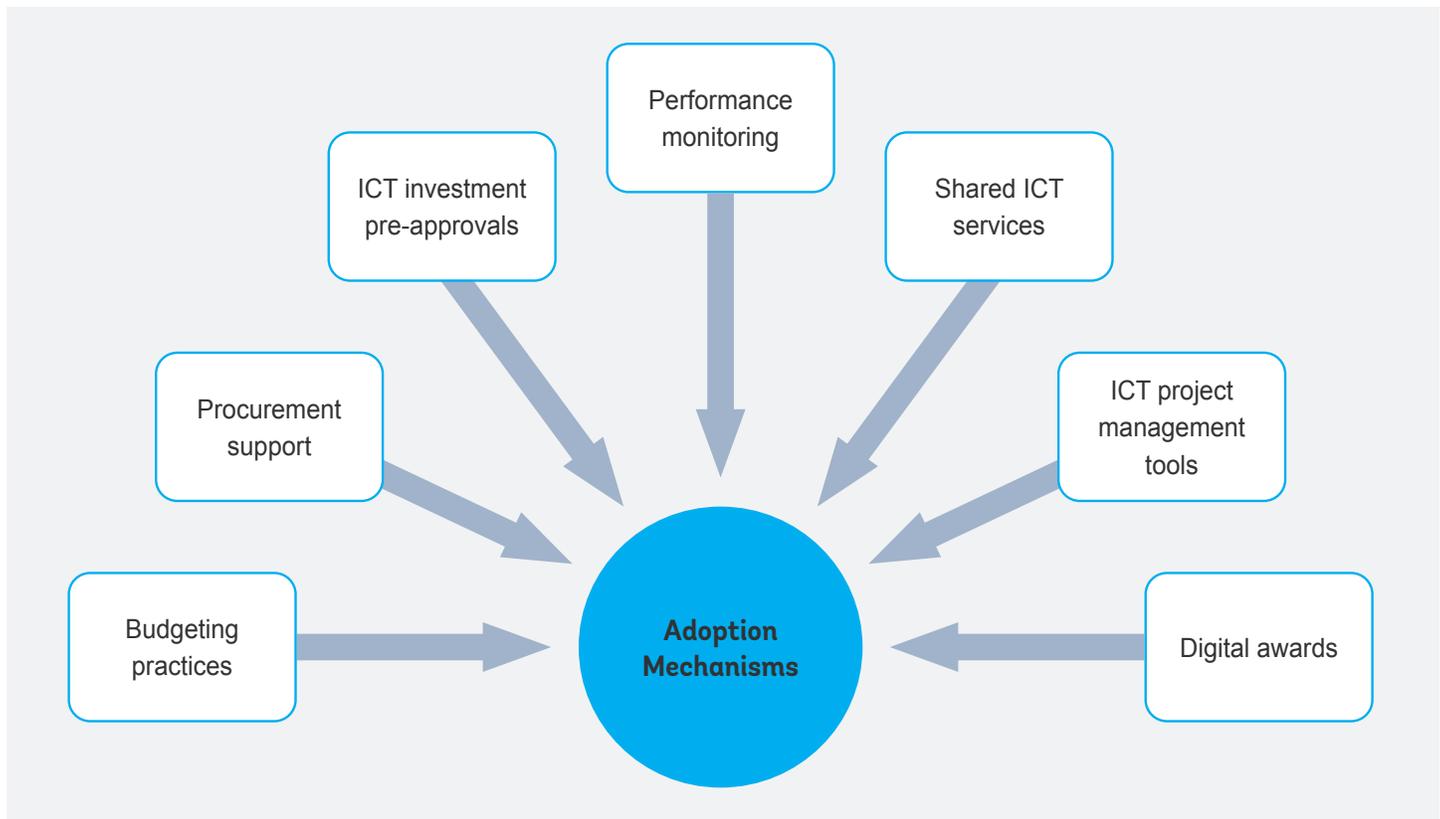
Adoption Mechanisms

To effectively ensure the implementation of the policy and legal framework described above requires countries to use what this paper terms “adoption mechanisms,” also referred to in the literature as incentives or policy levers, to ensure compliance with common ICT standards and motivate the uptake of digital reforms across government. Drawing on work done by the OECD⁴⁶ and others, authors define seven adoption mechanisms for sound implementation: (i) budgeting practices; (ii) procurement support; (iii) pre-approval for ICT investments; (iv) performance monitoring; (v) shared ICT services; (vi) ICT project management tools; and (vii) awards. These adoption mechanisms range from “hard,” compliance-

oriented mechanisms like pre-approvals for ICT projects above a certain budget threshold and mandatory adherence to common acquisition standards for ICT, to “soft” mechanisms like awards and the provision of project management tools to teams. Figure 6 illustrates the various adoption mechanisms utilized by the cases in the sample of countries studied. All of the country cases were reviewed to validate the presence of these adoption mechanisms. Some countries have opted for a softer approach, using these tools as guidelines and recommendations; others have opted for an enforcement approach, through legislation or rules that are mandated across government.

> > >

FIGURE 6 - GovTech Adoption Mechanisms



Source: Authors own elaboration drawn on work by OECD and others.

BUDGETING PRACTICES

A number of governments have used the budget process to drive digital transformation. Planning ICT investments through the national budget encourages agencies to work together and prioritize investments that are cross-cutting. At a more general level, countries with performance-based budgeting practices in place can set clear outcomes on digital service uptake by institution to help drive this agenda, in some cases, even allowing savings identified to be retained by the respective institution. A number

46. OECD (2019), *Digital Government Review of Panama: Enhancing the Digital Transformation of the Public Sector*, OECD Digital Government Studies. Paris: OECD Publishing. <https://doi.org/10.1787/615a4180-en>.

of countries have also established dedicated ICT funds to finance cross-ministerial systems and services, earmarking allocations for digital transformation funds within the national budget and putting in place budget thresholds to provide oversight on ICT spending.

Dedicated ICT Funds

Dedicated ICT investments funds have been used by Australia, Canada, Finland, Korea, Scotland, and the United States. Early on in its digital transformation history, Korea established an ICT promotion fund from 1993 to 2004 to finance high speed information networks. From 2005 onward, these practices have evolved further, and the government now sets aside part of the government budget on an annual basis for digital government funding. The Australia Public Service Modernization Fund was created as part of an efficiency initiative. Australia's 2016–17 Budget committed AUD \$500 million from public sector savings for automation and re-engineering of public services. The 2017-18 budget outlined that the Public Service Modernization Fund would finance projects that deliver government services at a lower cost using ICT and promote collaborative approaches. Emphasis was placed on investments that promoted better use of data, streamlining citizen services, strengthening workforce skills, and agency sustainability.⁴⁷ Canada's 2021 budget set aside Can\$2.5 billion in digital transformation for services that are high in demand. Over Can\$1 billion has also been set aside to finance teams working on government-wide transformation, including funding to enhance the capacity of the Canadian Digital Service.⁴⁸

Earmarked Allocations into the National Budget

Specific national allocations for cross-cutting digitalization initiatives are quite common and have been used by Denmark, Finland, Kenya, Mauritius, South Africa, and Uruguay. Kenya's dedicated Budget Program on E-Government Services aims to provide universal access to e-government services to promote a knowledge-based society. The program is monitored by the government through performance indicators. Mauritius earmarks funds annually in its national budget to support innovation, research, and development in the country. These funds are also used to support digital government projects

and innovations. In South Africa, the Budget Department allocates funds for the National e-Government Programme through Plan and Non-plan budgetary provisions. The South African National Treasury supports an e-Government budget vote to secure dedicated funding for e-Government activities. In Denmark, annual budget agreements are negotiated with national, local and regional governments for joint collaboration on digitization. Joint projects are financed through an investment fund.⁴⁹

Project Budget Thresholds

Countries such as Australia, Denmark, Norway, Portugal, Slovenia, and the United Kingdom use project budget thresholds to ensure consistency and uniformity of government ICT investments, which helps drive common approaches across government. Budget threshold ceilings vary across countries. The United Kingdom's central oversight on ICT has been a model that has been studied and replicated by other countries. Spending controls on ICT spending were delegated from the National Treasury to the GDS and, as a result, every department has to get approval from the UK Controls Board in GDS for any new/renewal of ICT spending. This enabled GDS to enforce a change in the approach agencies were taking. The UK's spending control scheme also prohibited government from issuing contracts valued over £100 million. A 2016 UK National Audit Office reported that the spending controls have resulted in savings of £1.3 billion since introduction.⁵⁰ Another kind of budget threshold, adopted by the Australian government, sought to cap government ICT contracts to a ceiling of AUD \$100 million or three years' timeline. The cap is designed to help open the marketplace up to more competition, reduce fraud and corruption, and incentivize small and medium sized enterprises to participate.⁵¹

An important role for Croatia's Council for National Information Infrastructures is monitoring budgets for ICT infrastructure investments. All investments for ICT exceeding the value of HRK 2.5 million need to be approved by the Council. France's Inter-ministerial Directorate for Digital Technology and the State Information and Communication System (DINSIC) oversees ministerial departments' major technology projects. France's Central Government CIO reviews ICT projects that are considered strategic or high risk. DINIC approval is sought

47. Hamilton, Philip. Public sector digital transformation: a quick guide. Produced by the Australian Parliamentary Library's Cyber and Digital Research Group, Politics and Public Administration Section. RESEARCH PAPER SERIES, 2018–19 2 APRIL 2019.

48. Government of Canada, "Responsible Government" in *Our Shared Economic and Social Foundations – Challenges and Opportunities Ahead, Part 4. Chapter 10* (Canada, ca., 2019). <https://www.budget.gc.ca/2021/report-rapport/p4-en.html#chap10>.

49. Gov.uk, "Spend control: check if you need approval to spend money on a service," in *Standards and Assurance Community*, (Gov.uk, 2021). Accessed at: <https://www.gov.uk/service-manual/agile-delivery/spend-controls-check-if-you-need-approval-to-spend-money-on-a-service>.

50. Mike Bracken and Andrew Greenway, "How to achieve and Sustain Government Digital Transformation," (IDB, 2018). <https://publications.iadb.org/publications/english/document/How-to-Achieve-and-Sustain-Government-Digital-Transformation.pdf>.

51. Hamilton, Philip. Public sector digital transformation: a quick guide. Produced by the Australian Parliamentary Library's Cyber and Digital Research Group, Politics and Public Administration Section. Research Paper Series, 2018–19 2 APRIL 2019.

by for ICT projects worth more than € 9 million. Among OECD member countries, there is a great diversity in the budget threshold. In Portugal, the budget threshold is EUR 10,000; in Denmark it is around EUR 1,300,000, and in Norway around EUR 1,033,000.⁵²

COMMON ACQUISITION STANDARDS & PROCUREMENT SUPPORT

Governments have witnessed large increases in ICT spending over the years, and these investments have required a better managed approach to ICT investment. Public sector procurement is big business. In 2018, ICT spending in the Dutch public sector was around € 3.5 billion.⁵³ Finland's government spends EUR 537 million for ICT procurement per year.⁵⁴ Most of the UN E-Government Survey top performers have put in place coordinated planning for digital technology acquisitions and procurement. The OECD Government Index shows results show that 67 percent of the 33 countries surveyed have formal ICT procurement guidelines. Most of the 33 countries in the OECD survey embedded ICT procurement into national procurement strategies.⁵⁵ To streamline procurement and save costs, countries have issued specific templates and guidelines, put in place framework agreements, set-up online marketplaces and attempted to create transparency around procurement investments.

ICT Procurement Guidelines

The issuance of templates and guidelines are a common tool in ICT procurement used by many countries. Many governments, such as India and Argentina, issue model "Request for Proposal" (RFP) Templates and Guidance Notes, including Standardized Technical Requirements. Embedded procurement guidelines in the national digital government framework are used by Oman. Its eGovernment Architecture Framework (OeGAF) serves as a guide for developing and deploying information systems and spells out the rules and procedures for Government ICT projects and systems. Oman's Government Chief Digital Officer (GCDO) publishes formal government assurance frameworks, providing assurance oversight on high-risk digital investments and how agencies manage risk.

Framework Agreements

Framework Agreements have become a popular tool, and are used, for example, by the United States and Finland, to centralize and aggregate purchasing, reduce repetitive purchasing processes, and decrease transaction costs for government.⁵⁶ Framework Agreements allow public bodies to contract suppliers to optimize costs through a large volume of purchases or through recurrent purchasing over a designated timeframe. The use of a framework agreement enables centralized procurement, as one organization is responsible for implementing a framework agreement on behalf of other agencies. In the United States for example, framework agreements has accounted for more than 30 percent of federal contracting per year. The Finnish government uses electronic ordering system, "Merkaattori," which facilitates the purchasing of goods and services under framework agreements. Procurement of ICT products through framework agreements is led by the Finnish Ministry of Technology, Communication and Innovation (MTCI).

Online Marketplace

Pooling government procurement through a one-stop shop is a popular and successful model, adopted by a number of governments. India's Government e-Marketplace (GeM) is a one-stop shop for online procurement of common use goods and services required for Indian government entities. The marketplace allows e-bidding, reverse e-auction, and demand aggregation to obtain the best value for the money.⁵⁷ Many countries have adopted an online marketplace that facilitates a whole-of-government approach for procurement. These include Australia, Denmark, the Netherlands, and the United Kingdom.

Procurement Transparency

Procurement transparency initiatives are also seen as good practice and the OECD recommends the publication of a searchable database for ICT procurement. Finland's Tutki Hankintoja platform is a service which offers citizens and companies information on government procurement spending. Users can search information on how public funds are spent,

52. OECD (2019), Digital Government Review of Panama: Enhancing the Digital Transformation of the Public Sector, OECD Digital Government Studies, OECD Publishing, Paris: 71 – 83. <https://doi.org/10.1787/615a4180-en>.

53. NL Times, "Dutch Government's IT projects €1 billion over budget" NL Times, July 2nd 2018. <https://nltimes.nl/2018/07/02/dutch-governments-projects-eu1-billion-budget-report>.

54. Tutki Hankintoja, "Investigate Procurement", <https://tutkihankintoja.fi/>.

55. Ibid.

56. Guidance on Framework Agreements [Online]. Available from: <http://etenders.gov.ie/Media/Default/SiteContent/LegislationGuides/4.%20Guidance%20on%20Framework%20Agreements.pdf> [Accessed 26 February 2018].

57. Government of India, "Government e Marketplace" <https://gem.gov.in>.

including information on ICT procurement per year for both state and municipal level spending.

PRE-APPROVALS FOR ICT INVESTMENTS

The OECD Recommendation of the Council on Digital Government Strategies advises that governments demonstrate the value proposition of digital projects. A little over half of the 33 governments surveyed for the OECD Digital Government Index publish standardized guides for business cases prior to ICT investment to measure the benefits and costs of ICT projects, but only 39 percent of these governments make it compulsory for projects to meet specific criteria, and only 15 percent of the governments have made these requirements mandatory.⁵⁸

Assessments conducted by a central body have also been employed by many governments. Scotland's Digital First Service Standard (Digital First) assessments require that new digital public services projects in central government are assessed against 22 standards to make sure services are designed around the user and review the business and technical capacity of the agency to deliver the project. In Australia, proposals must go through a Two Pass Review process and must seek approval from the Cabinet. Agencies must submit business cases that have passed the Two Pass Review process to the Australian Government Information Management Office (AGIMO) within the Department of Finance, before going to Cabinet. The ICT Two Pass Review Process reviews the department's ability to procure, manage, and reap benefits from proposed investments.⁵⁹

Business cases are a recognized tool to help government decision-makers to understand and justify the value of investments in ICT at the pre-investment phase. They help government provide evidence on the strategic alignment of an investment, its cost-effectiveness and whether it is achievable; (OECD 2015). In Argentina, all central government entities must submit a business case for their project for review by the National Office of Information Technologies (ONTI, Oficina Nacional de Tecnologías de Información). ONTI analyses the information and issues a certification for the project as a guidance.

ICT PROJECT MANAGEMENT TOOLS AND RESOURCES

Project management tools for cross-government ICT projects help governments achieve more coherence and value for money for their investments. Project management tools allow government agencies to share knowledge about project implementation and help with better oversight and measurement of progress. Standardized project management tools also help promote efficiency and support evidence-based approaches to make project decisions.⁶⁰ Many governments have introduced project management tools; and evidence shows that when these are consistently applied and enforced, they generate the benefits mentioned above. According to a survey conducted by the OECD in 33 countries, 67 percent of countries introduced standardized models for ICT project management, but only half of them have made them mandatory.⁶¹ In Malaysia, Secretaries-General of Ministries and Heads of Service mandate the use of ICT project management guidelines, called *Pengurusan Projek ICT Sektor Awam*. These guidelines provide tools for planning, implementing, monitoring, and regulating ICT projects in public sector agencies – in house or outsourced – to enable consistency across government. In Brazil, public sector organizations are encouraged to use a project management methodology. The SISP Project Management Methodology (Metodologia de Gerenciamento de Projetos do SISP, MGP-SISP) is a set of good practices and steps for the project management of ICT projects in public sector organizations

Once a project is approved, the public sector often finds that it suffers from a dearth of contract management expertise and skills in the digital space. A high turnover of digital specialists in the public sector of developed countries due to competition with the private sector for qualified personnel, and lack of such skills in developing countries, mean that digital government projects teams can struggle to manage ICT projects. In recognition of this challenge, the US Digital Service developed a Digital Services Playbook that provides good practices drawn from the public and private sectors, including a guide on good budget principles and contract design and management.⁶²

58. OECD, Digital Government Index: 2019 results. OECD Public Governance Policy Papers No. 03. Page 38. Accessed at OECD Digital Government Index 2020. [4de9f5bb-en.pdf \(oecd-ilibrary.org\)](#).

59. OECD digital governance performance survey [Digital Government Performance \(oecd.org\)](#).

60. DIGITAL GOVERNMENT REVIEW OF PANAMA © OECD 2019, p. 77.

61. OECD, Digital Government Index: 2019 results. OECD Public Governance Policy Paper No. 03, page 39. Accessed at OECD Digital Government Index 2020. [4de9f5bb-en.pdf \(oecd-ilibrary.org\)](#).

62. U.S. Digital Service. "Digital Service Playbook." Accessed on October 12, 2021. <https://playbook.cio.gov/>.

Some countries have produced catalogues that provide information about systems, databases, and related key contact points, data fields, data sharing services and enabling legal frameworks, and other digital assets. This type of resource is an indispensable tool for developers and administrators involved in the planning, design, and management of State digital services and systems. The United Kingdom translated principles and recommendations from its digital transformation strategy into a Technology Code of Practice (TCoP), which establishes criteria to help the government design, build, and

buy technology. All government departments are required to comply with the mandatory points of the TCoP in the implementation of their technology projects or programs and are advised to comply with as many of the optional points as possible in order to achieve maximum benefit. Australia's Digital Service Standards set out similar goals. It provides Australian government best practice principles for designing and delivery of digital government services and sets out 13 criteria that government agencies need to meet,⁶³ as presented in Box 4.

> > >

BOX 4 - Australia's Digital Service Standard

The Digital Service Standard helps digital teams build government services that are simple, clear and fast.

- 01 Understand user needs. Research to develop a deep knowledge of the users and their context for using the service.
- 02 Establish a sustainable multidisciplinary team to design, build, operate and iterate the service, led by an experienced product manager with decision-making responsibility.
- 03 Design and build the product using the service design and delivery process, taking an agile and user-centered approach.
- 04 Understand the tools and systems required to build, host, operate and measure the service and how to adopt, adapt or procure them.
- 05 Identify the data and information the service will use or create. Put appropriate legal, privacy and security measures in place.
- 06 Build the service with responsive design methods using common design patterns and the style guide.
- 07 Build using open standards and common government platforms where appropriate.
- 08 Make all new source code open by default.
- 09 Ensure the service is accessible to all users regardless of their ability and environment.
- 10 Test the service from end to end, in an environment that replicates the live version.
- 11 Measure performance against KPIs set out in the guides. Report on public dashboard.
- 12 Ensure that people who use the digital service can also use the other available channels if needed, without repetition or confusion.
- 13 Encourage users to choose digital service and consolidate or phase out existing alternative channels where appropriate.

Source: dta.gov.au/standard

63. Digital Service Standard criteria. Digital Transformation Agency. Government of Australia. Accessed at <https://www.dta.gov.au/help-and-advice/digital-service-standard/digital-service-standard-criteria>.

SHARED SERVICES APPROACHES TO ICT

Many governments, such as Brazil, New Zealand, the United Kingdom, and the United States, employ a shared services model, whereby one group/unit provides services to government agencies on a range of ICT project management, acquisition, platforms, and services. The creation of such a group can generate incentives for agencies to comply with standard practices and ensure a coherence in ICT projects across government. Comprising over 600 staff, the UK's Government Digital Service (GDS) helps build and support common platforms, services, components, and tools, and provide digital experts to support transformation efforts across government. Among the common platforms the GDS maintains are platforms designed to notify, verify, and pay that agencies can use in building their online services – creating incentives for agencies to adopt similar interfaces for users. Another example is the United States Digital Service (USDS), which is composed of private sector recruited digital experts conducting short term stints in the civil service. The USDS supports federal agencies in acquisition strategy, supporting market intelligence, expertise on evaluation methods, and creating technical contracts. The Netherlands' [Logius](#) is another technical resource group, housed within the Ministry of the Interior and Kingdom Relations. Logius manages government-wide ICT solutions and common standards and supports the government in data exchange, standardization and information security. Logius also houses the Secretariat of the Standardisation Forum.⁶⁴

Brazil's ICT procurement strategy for the whole federal government, adopted by regulation, is implemented with the help of two state owned companies, Serpro and Dataprev, that support ICT operations of the ministries, and offer a wide variety of services, including software development, data hosting, operation and support, consultancy, and business intelligence.⁶⁵ The New Zealand Government (2018) uses an IT managed services (ITMS) model. By using framework agreements, service providers are contracted for IT support services, such as IT Service desk, user device support, server support, storage and archiving, database management, application support, and network management services. Outsourcing these services can help bridge the digital skills gap in the public sector and bring in cutting

edge service delivery approaches, enable skills transfer and introduce innovation.

DIGITAL AWARDS PROGRAMS

Several governments have used national awards to recognize teams that have implemented successful digital government initiatives and incentivize other departments to follow their footsteps. These types of awards offer incentives for teams across institutions to collaborate. Awards can include high level recognition and national visibility and, in some cases, promotion and financial remuneration. In Oman, the Sultan Qaboos Awards for Excellence in e-Government have been given to Omani civil servants since 2010 to recognize how they use ICT to enhance their performance and to improve the quality of public service delivery.⁶⁶ Russia hosts an annual competition to identify the best regional practices implemented by the centers of public services (MFC) in the Russian Federation. The Regional School of Public Administration (ReSPA) for the Western Balkans hosts Public Administration Awards with the OECD and the European Union and has initiated awards for good practices in the public sector, with digital government as one of the award criteria. The biennial The Digital India Awards (DIA), hosted by National Portal of India, recognizes innovative initiatives of various government digital governance initiatives. The last European Conference in 2017 on Digital Government hosted 40 country representatives and awarded organizations with Digital Government Excellence Awards.⁶⁷ Digital Skills has also been promoted through the annual European Digital Skills Awards that have been hosted since 2016. Prioritizing initiatives that can be scaled-up and replicated,⁶⁸ the awards go to public and private sector actors to improve digital skills of citizens, the labor force, ICT specialists, schools, and girls and women.

In conclusion, the adoption mechanisms described in this section help government policy makers to put into practice their strategy for digital transformation. Without adoption mechanisms, governments typically fail to achieve digital transformation as there are no incentives or tools for civil servants to implement digital reform. The adoption mechanisms include “hard,” compliance-oriented mechanisms that are enforced using decision-making tools or budget discipline. Other adoption mechanisms are “soft,” and are actively used

64. Netherlands. Europa Digital Government Factsheet. 2019. https://data.europa.eu/euodp/data/storage/fi/2019-09-27T130131/SC64_D05.03_Digital_Government_Factsheets_Netherlands_2019_vFINAL.html.

65. OECD Digital Government Review of Brazil: <https://www.oecd.org/governance/digital-government-review-of-brazil-9789264307636-en.htm>. Website of the Secretariat of Digital Government - <https://www.gov.br/governodigital/pt-br>

66. [Sultan Qaboos Award for Excellence in e-Government 2016 - Operating Unit on Policy-Driven Electronic Governance \(unu.edu\)](#).

67. European Commission Interoperability solutions for public administrations, businesses and citizens. 17th European Conference on Digital Government. Accessed at [17th European Conference on Digital Government | ISA² \(europa.eu\)](#).

68. European Commission. “European Digital Skills Awards: meet 24 outstanding finalists.” European Commission's website on Shaping Europe's Digital Future. 20 November 2018. Accessed at <https://digital-strategy.ec.europa.eu/en/news/european-digital-skills-awards-meet-24-outstanding-finalists>.

to encourage government departments through awards, the provision of project management support, and the introduction of common standards. Countries that have successfully used soft mechanisms and a principles-based approach to support digital transformation include Australia, Estonia, and Norway. Many countries with legalistic traditions depend on the use of hard adoption mechanisms. Governments need to be aware and prepared that compliance-oriented mechanisms have sometimes been met with resistance by civil servants. Enhancing civil service skills and awareness facilitates a smoother transition. Many governments have also given a time frame to allow for transitional arrangements for government agencies to digitize their processes and educate their teams to adopt new ways of doing work. Digital transformation of government remains a strategic and organizational task more than a technological task. Therefore, introducing the right mix of adoption mechanisms plays a critical role in facilitating reforms.

User-Centered Orientation

Not enlisting the participation of end-users in the design of e-services or in the implementation of a digital government strategy (as described earlier) can result in ill-conceived “solutions” and low user uptake. The concept of “departmentalism” captures well the phenomenon of government departments as fiefdoms that create a particular path of dependency in the way they perceive things should be done that reflects the siloed organization of government, but also the ways in which the policymaking and execution processes have traditionally been organized.

Taking this into consideration, a key outcome of almost all digital transformation efforts is to provide more efficient and transparent public services with the user at the center of the reform effort.⁶⁹ A user-centered digital service requires to be led from the top, as reflected in most national digital government strategies. It necessitates a whole system user-centric service design culture and approach to be integrated across all the structures of service provision including the policy making, architecture and infrastructure of service. Thus, the user-focused approach to GovTech infuses the strategic policy, design, and implementation processes.

The shift to a user-centric focus through a whole-of-government approach is noted as a marked change in government and public service delivery transformation strategies.⁷⁰ The

organizational impact of this change implies a move from intra-government focused improvements to the relationships between government, business and citizens. Interventions involve strategy development mobilizing civil society partnerships at the policy design and delivery stages, enabling users to feed into dataset selection, and strengthening the capacities of public servants to adopt a user-centric focus in the design of the tools of the digital strategy. A 2018 study by the UN University tracks the differing pathways to user-centric government in Denmark, Latvia, and UK, all of whom have progressed from silos-based, disjointed government towards a user-centric, whole-of-government approach to e-services.⁷¹

Pioneered first in Estonia, a number of countries have adopted the once-only principle to foster user-centered service design. To reduce the administrative burdens on citizens and businesses, the idea is that the state collects data only once, respecting existing privacy regulations. Government agencies would not collect data that is already collected by another institution and would internally reuse the data in accordance with data protection rules.

THE BASICS: ACCESS TO DIGITAL SERVICES

A basic component of user-centered design is access to public services from a wide range of government agencies in one place, organized and designed in a user-friendly way. All the case study countries provide online portals as gateways to a range of government digital services. These countries offer a mix of approaches which include a single national one-stop shop, separate portals for citizen services and businesses and, in some cases, locally or regionally based portals as well as national portals. The OECD Government at a Glance Report 2021 provides an overview of the range of front office models across single government-wide portals, several government portals, institution-specific or other types of portals, and the number of countries with no portal.⁷² Switzerland’s portal is the national gateway to services providing subject-based access via a single interface to all information and services offered by all levels of government. India’s National Service Delivery Gateway supports services for national, state, and mobile service delivery

The OECD notes that Government ideas of policy and service design and delivery have evolved in tandem with advances in digital technologies, which now enable governments to

69. World Bank. (2020). GovTech: The New Frontier in Digital Government Transformation. <https://thedocs.worldbank.org/en/doc/805211612215188198-0090022021/original/GovTechGuidanceNote1TheFrontier.pdf>.

70. UN University (2018) Connected Government Approach for Customer-centric Public Service Delivery: Comparing strategic, governance and technological aspects in Latvia, Denmark and the United Kingdom.

71. Ibid.

72. OECD (2021) Government at a Glance 2021.

enter into two-way communication flows that permit citizens or businesses to customize and design services that meet their own needs.⁷³ Thus, governments have generally first shifted from government-centered approaches, focused on increasing cost reduction, efficiency and productivity, to more user-centered ones, focused on interpreting user needs to improve administrative and personal services. Next, governments finally transition to user-driven approaches, focused on placing the needs of the users at the core of digital transformation processes in order to improve quality of services. In a user-driven approach to GovTech, the user is present during the entire service lifecycle through service design, development, implementation, delivery, monitoring, and redesign to enable co-creation between the user and government.

THE TOOLS AND COMPONENTS OF A BOTTOM-UP USER-CENTERED DESIGN

The OECD highlights the manner in which user-driven design is interwoven across the entire whole-of-government digital ecosystem, and the tools and components that make up that ecosystem.⁷⁴ Examples of cross-governmental networks for delivering services that avoid silos of delivery are the Service Communities in the United Kingdom, the approach to Interoperability of data in Estonia, and transparency of access to personal data and effective models of citizen consent for their reuse in Spain and Denmark. Thus, the user-centric approach to service design is seen to be a whole-system, cross-cutting principle, led from the top, underpinned by strategy, rules, processes, and privacy laws, and supported by whole-system skill development; in essence, all of the strands that go to make up effective whole-of-government approaches to advancing GovTech.

Tunisia transformed its piecemeal approach to support bottom-up citizen participation, into a more integrated multi service delivery channel approach with the installation of 50 citizen service centers (CSCs) in 2009 to support citizen access to e-government services in the country. These services were prioritized as a result of a nation-wide survey conducted by the Presidency of Government in 2016. The CSC structure revealed lessons for Tunisia as it develops a wider whole-of-government approach. These include: (1) the need for a legal and institutional framework underpinning service provision within the government and among government service providers; (2i) high staff attrition and low capacity; (3)

sustainability problems of the CSCs; (4) limited interoperable back-office systems leading to delays, and high costs; and (5) limited adaptation to the Government's digital transformation plan. A new World Bank project is supporting Tunisia's new 2019 action plan and approach will introduce a multi-channel, digitized and integrated public service delivery model aimed at reaching two million citizens.⁷⁵

Advancing GovTech reforms in Public Administration is not an end in itself. In most countries, the purpose is intrinsically linked with political and strategic goals for social and economic objectives based on a vision for enhancing citizen wellbeing. A key shift in approach to GovTech in many countries has been the move away from an internally focused effort to a user-focused approach to digital strategy development and implementation. This shift signals a recognition of the essential systemic nature of successful digital strategy, which acknowledges, understands, and draws on knowledge of the needs, insights, and wishes of the user. The policy maker, designer, manager, and user are understood as parts of an interdependent ecosystem. Effective implementation is seen to link the user with all stages of the development and delivery cycle from service design, through implementation, delivery, feedback loops and evaluation. There are multiple challenges to this systemic, holistic approach to GovTech at every stage, including the knowledge, skills, insights, attitudes of politicians and public servants, and the perceived costs in terms of time and money. These have been successfully overcome through interventions such as training, support for public servants, and new forms of partnerships that bridge the divide between service provider and service user.

Conclusion

This chapter proposed a framework for understanding what a "whole-of-government" approach to digital transformation entails, touching on a broad range of structural and organizational factors. That governments need to work across departmental boundaries to achieve transformational impacts in the way services are delivered to citizens and businesses is not particularly new. But illuminating the types of practices that successful reformers have employed to drive this change is a helpful guide for countries embarking on new reforms or

73. OECD (2020): The OECD Digital Government Policy Framework Six dimensions of a Digital Government file:///C:/Users/AnneColgan/OneDrive%20-%20Councillors%20DLR%20CoCo/Documents/world%20bank/Resources/OECD%206%20strands.pdf.

74. OECD (2020).

75. World Bank Group. "Tunisia - Information and Communication Technologies Sector Development Project (English)." Washington, DC: World Bank, page 12. Available at: <http://documents.worldbank.org/curated/en/569361468778498043/Tunisia-Information-and-Communication-Technologies-Sector-Development-Project>.

in need of kickstarting existing digital reforms. To recap, the six factors identified as underpinning a whole-of-government approach are:

- Setting a top-down strategic whole-of-government orientation to digital transformation.
- Building a robust institutional and governance framework.
- Securing high-level political and senior civil servant leadership.
- Establishing a conducive policy and legal framework.
- Leveraging adoption mechanisms to drive change across the public sector.
- Adopting an outcomes orientation that puts users first.

Working across administrative boundaries to achieve an integrated response to the uptake of GovTech solutions is a daunting challenge given the headwinds of predominantly vertically defined governmental structures that define the way that budgets, policy mandates, and even incentive systems are constructed. Despite tremendous efforts and good intentions, many GovTech reforms have failed to deliver on their promised results precisely because of inter-departmental competition and the limited incentives that exist to collaborate across agencies.

To directly address this challenge, all of the cases reviewed have put in place dedicated institutional structures and governance arrangements for driving the mandate of digital transformation across departments. Many have allocated direct ministerial responsibility to the digital agenda, ensuring a seat at Cabinet level, or have created specific agencies directly reporting to the center of government. Several countries have also established cross-governmental governance structures to ensure the whole-of-government aspect, bringing key stakeholders together through committees with a coordination or collaborative remit.

Countries have also utilized adoption mechanisms to ensure compliance with common ICT standards and motivate – and sometimes mandate – the uptake of digital reforms across government. These adoption mechanisms range from “hard,” compliance-oriented mechanisms like pre-approvals for ICT projects above a certain budget threshold and mandatory adherence to common acquisition standards for ICT, to “soft” mechanisms like awards and the provision of IT services to ministries by a shared services provider. To streamline procurement and save costs in ICT procurement, countries have also issued specific templates and guidelines, put in place framework agreements, and set up online marketplaces.

As this chapter illustrates, the next generation of GovTech reforms requires focusing not just on how technological advances have promised to revolutionize the delivery of public services – such as cloud computing, Artificial Intelligence, or Blockchain – but also on the intricate ways in which these technologies interact with the public sector and require changes in behaviors and incentives for uptake. This will demand greater agility and innovation on the part of Government to employ a wide variety of practices to advancing the agenda. This work also has direct implications for how the World Bank approaches the design of GovTech projects to ensure success. Many of the whole-of-government elements discussed in this paper have been tested by previous World Bank financed GovTech projects, and the following are some specific lessons that emerge from World Bank Implementation Completion Reports:

- Ensure that dedicated institutional and organizational arrangements with cross-departmental representation exist.
- Examine the potential collective action pitfalls emerging from digital technologies and incorporate practices to facilitate adoption by various institutions.
- Engage the private sector and the broader ecosystem of stakeholders in specific ways, such as the development of an online marketplace of providers or the creation of multistakeholder advisory councils to support GovTech policy implementation.
- Develop a supportive legal and regulatory enabling environment.
- Build-in communications and change management support.
- Provide sufficient and specialized procurement support.
- Avoid a piecemeal approach to the roll-out of systems.
- Create space for the sharing of lessons and good practices.
- Apply a user-centric approach to win public support for integrated GovTech policies with investments in communication and engagement between the government and citizens.
- Invest in skills and capacities and cultivate a digital-friendly culture.

In an effort to codify these lessons and tangibly support countries in their trajectory, the World Bank’s Knowledge Repository offers toolkits and frameworks that support practitioners in their journey towards digital transformation. The GovTech Maturity Index,⁷⁶ for example, helps policy makers review their trajectory over a period of time and learn

from good practices. The World Bank's Digital Government Readiness Assessment also broadly captures a number of dimensions included in our whole-of-government framework, namely leadership and governance; user-centered design; public administration reforms and change management; capabilities, culture, and skills; technology infrastructure; data infrastructure, strategies and governance; and legislation and regulation. Toolkits for crosscutting systems, regulatory frameworks and building digital skills, to support governments in their path towards adopting GovTech are also available to World Bank client countries and the broader community of stakeholders.

Going forward, the World Bank and others can serve as platforms for international and regional cooperation for exchanging lessons on what practices have facilitated a whole-of-government approach to digital transformation. Existing groups like Digital Nations, a collaborative network of the world's leading digital governments,⁷⁷ share digital practices, collaborate to solve common problems, and identify improvements to digital services. In 2019, the World Bank Group launched the GovTech Global Partnership, specifically recognizing the importance of a whole-of-government approach to public sector modernization to achieve the aims of simple, accessible, and efficient government.

76. [GovTech Maturity Index: The State of Digital Transformation in the Public Sector \(worldbank.org\)](https://www.worldbank.org/govtech).

77. The Digital Nations, previously the Digital 9 comprises Canada, Denmark, Estonia, Israel, Mexico, New Zealand, Portugal, the Republic of Korea, the United Kingdom, and Uruguay.

Annex 1.1: Selected Country Cases from the UN E-Government Survey (2020)

Country name	Region	Average
Republic of Korea	East Asia & Pacific	1
Estonia	Europe & Central Asia	0.99705
United States of America	North America	0.97355
Singapore	East Asia & Pacific	0.97045
United Kingdom	Europe & Central Asia	0.9675
Denmark	Europe & Central Asia	0.96745
Austria	Europe & Central Asia	0.96165
Finland	Europe & Central Asia	0.9615
New Zealand	East Asia & Pacific	0.95875
Australia	East Asia & Pacific	0.9557
Japan	East Asia & Pacific	0.947
China	East Asia & Pacific	0.9351
Netherlands	Europe & Central Asia	0.9351
United Arab Emirates	Middle East & North Africa	0.92025
Poland	Europe & Central Asia	0.91155
Cyprus	Europe & Central Asia	0.9115
Kazakhstan	Europe & Central Asia	0.90225
France	Europe & Central Asia	0.8936
Canada	North America	0.89085
Norway	Europe & Central Asia	0.89065
Brazil	Latin America & Caribbean	0.8877
Turkey	Europe & Central Asia	0.87585
Kuwait	Middle East & North Africa	0.873
Switzerland	Europe & Central Asia	0.8671
Spain	Europe & Central Asia	0.8667
Sweden	Europe & Central Asia	0.8607
Malaysia	East Asia & Pacific	0.855
Slovenia	Europe & Central Asia	0.855
Chile	Latin America & Caribbean	0.855
India	South Asia	0.855

Country name	Region	Average
Argentina	Latin America & Caribbean	0.8521
Uruguay	Latin America & Caribbean	0.84915
Russian Federation	Europe & Central Asia	0.8433
Albania	Europe & Central Asia	0.8432
Oman	Middle East & North Africa	0.8431
South Africa	Sub-Saharan Africa	0.74855
Mauritius	Sub-Saharan Africa	0.67145
Kenya	Sub-Saharan Africa	0.63585

Annex 1.2: Selected World Bank Digital Government Projects

Country	Project	Project ID
Argentina	Social & Fiscal National ID System II	P101171
Armenia	Public Sector Modernization Project II	P117384
Bangladesh	BD: Leveraging ICT Growth, Employment and Governance Project	P122201
Ghana	eGhana	P093610
India	Karnataka Panchayats Strengthening Project	P078832
Mexico	MX IT Industry Development Project	P106589
Moldova	Governance e-Transformation Project	P121231
Pakistan	Pakistan: Punjab Public Management Reform Program	P132234
Rwanda	eRwanda Project	P098926
Serbia	PforR on Modernization and Optimization of Public Administration	P155172
Sri Lanka	E-Sri Lanka Development	P081771
Tajikistan	Private Sector Competitiveness	P130091
Tanzania	Performance Results and Accountability Project	P092898
Tunisia	TN-ICT Sector Development Project	P088929

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GovTech Skills in Public Administration

Donna Andrews, Nicole Goldin, Ramy Zeid

Introduction

There has been significant progress on improving access to technology which can increase the efficiency and effectiveness of government services. But digital government transformation also requires the right capacities to adapt and drive public sector service delivery to meet citizen needs in an increasingly digital era. Sound government digital policy requires that several building blocks and policy levers be in place to enable the mobilization and co-ordination of efforts across the different sectors of government. Among them, effective design and implementation of a holistic approach to digital government transformation, relies on capacity at the institutional, organizational and individual levels. Technology is reshaping the skills needed for work, with the demand for advanced cognitive skills, socio-behavioral skills, and skill combinations associated with greater adaptability rising (World Bank, 2019). These changes can be seen not just through new jobs replacing old jobs, but also through the changing skills profiles of existing jobs in the public sector.

Importance of Skills in Digital Government Transformation

Human capital is a fundamental puzzle piece affecting the success of digital government transformation. The public sector workforce must have the right skills to be able to take full advantage of the opportunities of efficiency, connectivity, openness, and intelligence offered by digital technologies. A lack of skills and capacity is significant hindrance to digital government transformation, and many governments do not have specific strategies in place to attract, develop, or retain ICT-skilled public servants.¹ While this report is oriented toward Public Administration at the national level, subnational and local capacities can also be a catalyst or roadblock to digital government transformation. Many of the challenges and solutions in this chapter will apply equally to any level of public sector organization. The COVID-19 pandemic has spotlighted the increasing need for a tech-savvy, digitally literate public sector workforce to respond to the growing citizen demand for online, and reduced preferences and options for in-person, services. In response, governments are increasing their efforts to raise and enhance the digital literacy of their staff.²

At the same time, available data suggests that digital skills in the public sector are not at the level they need to be to optimize increasing demand for digital government services

and GovTech; and lower-middle income countries are lagging behind. The newly released World Bank GovTech Maturity Index shows that 47 percent of countries do not have a strategy to improve digital skills and that further investments in digital skill development in the public sector are crucial to building strong technical skills.

The 2019 OECD Digital Government Index³ observed that talent gaps remain, and that the absence of digital savvy civil servants can hamper the effective and coherent implementation of digital government policies which is blocking progress. The World Economic Forum also reported that skills gaps in the local labor market and an inability to attract the right talent are the biggest barriers to the adoption of new technologies (WEF, Future of Jobs 2020 Report).

There are numerous reasons behind the public sector digital skills gap, ranging from the availability of skills to compensation and under-developed human resource management systems, among others. We are still learning how to address these challenges and increase the skill levels in Public Administration for GovTech. This is particularly true in low- and middle-income countries which tend to be lower resource- and generally lower capacity-environments. It is useful to understand and learn from countries further advanced on their GovTech transition as well as to consider practices that may be adaptable from the private sector.

“More than anything else, digital transformation requires talent. Indeed, assembling the right team of technology, data and process people who can work together – with a strong leader who can bring about change – may be the single most important step that a company contemplating digital transformation can take. Of course, even the best talent does not guarantee success. But a lack of it almost guarantees failure.”

Source: Davenport, T., Redman, T., Digital Transformation Comes Down to Talent in 4 Key Areas. Harvard Business Review, May 21, 2020.

1. ITU 2021, OECD 2020, OECD 2014.

2. <https://www2.deloitte.com/xs/en/insights/industry/public-sector/government-trends/2021/digital-government-transformation-trends-covid-19.html>.

3. OECD. 2020. “Digital Government Index: 2019 results,” *OECD Public Governance Policy Papers*, No. 03, Paris: OECD Publishing. <https://doi.org/10.1787/4de9f5bb-en>.

Importance of Human Resource Management Environment

Human Resource Management (HRM) is concerned with all aspects of managing people at work and this includes a range of functional areas from recruitment to retirement and includes issues related to how people contribute to organizational performance and strategy (see Figure 7 below). The type and complexity of HRM functions that are practiced in individual countries will differ depending on the maturity of HRM systems and frameworks.

In order to discuss how to identify and build the digital and complementary skills that are necessary to support GovTech transformations, it is critical to understand how this discussion relates to the broader HRM environment and context. The

importance of the HRM environment is relevant for any country engaging in digital government transformation, regardless of income level and GovTech maturity.

In broad terms, the goals of HRM are to:

- Support the organization to achieve its objectives by developing and implementing HR strategies that are integrated with organizational strategies.
- Contribute to the development of a high-performance culture.
- Ensure that the organization has the talented, skilled, and engaged people it needs.
- Create a positive employment relationships between management and employees and climate of mutual trust.
- Encourage the application of an ethical approach to people management.⁴

> > >

FIGURE 7 - Common Human Resource Management Functions



Source: Authors.

4. Armstrong, M and Taylor, S. 2015. *Armstrong's Handbook of Human Resource Management Practice*. London: Kogan Page.

Globally, most countries have adopted either of two different civil service employment systems⁵— a career-based system or a position-based system – and some countries have adopted a hybrid system. Brazil, France, and Cambodia provide examples of career-based systems; Australia, Sweden and the UK utilize a position-based system, and countries such as Belgium, Korea, and Mexico have adopted a hybrid system. The choice of system requires some differentiation in relation to the performance of HRM functions.

The career-based system is characterized by competitive selection early in the careers of public servants, with higher-level roles open only to existing public servants. Career-based systems may cultivate a dedicated and experienced group of civil servants; however, it may be more challenging to quickly adapt to changing skill and educational needs as these new skills will either need to be recruited through early career applicants or developed through in-service training programs. By contrast, in a position-based system, candidates apply directly to a specific role and most roles are open to both internal and external applicants. Recruitment systems that are open to external candidates at any point in their careers can provide managers with the possibility to adjust their workforce more quickly in response to a changed environment. Regardless of the civil service system that is used within a country, there are several common barriers that impede public sector organizations from recruiting and building the necessary digital skills and competencies in civil servants. These will be discussed in more detail later in this chapter.

Government HR systems are often bound by complex legislation and rules about how personnel management practices must be performed. For example, many recruitment processes will require applicants to pass a civil service examination, which tests their knowledge of civil service laws and regulations. These examinations take place in-person and on an established schedule. Until an applicant has passed this examination, they are not eligible to be appointed to a civil service role. Brazil, China, India, and the Philippines are countries that use such exams.

The complexity and maturity of HRM systems, and the extent to which country systems are able to meet the broad goals of HRM, will differ greatly across countries of different income levels. For lower-middle-income countries (LMICs) and middle-income countries (MICs), with greater capacity, there is likely to be a more complex range of HR functions that are performed, with practices and systems that are more

consistently applied. In low-income countries (LICs), the focus is more likely to be on a smaller subset of these core HR functions which are essential to ensure that civil servants can be recruited, trained and paid.

Ensuring that government HR systems can effectively support the workforce needs of public sector organizations also requires good institutional cooperation and coordination. There are multiple public sector organizations that are involved in attracting, recruiting, developing, and retaining digitally skilled civil servants. This generally includes a civil service or public administration agency/ministry, finance agency/ministry, digital agency/ministry, HR departments in other line ministries, regulatory institutions and professional bodies; these organizations require strong coordination among them. Additionally, commitment and strategic guidance from senior leadership help to address broader fundamental issues such as modernization of HR policies and regulations, development of policies for fostering and retaining highly skilled digital professionals (both within and outside the country), and the development of the education sector and labor market to support the long-term digital skill needs.

The maturity of country HRM systems will significantly influence how effectively digital skills and competencies can be identified, recruited, developed, and retained. It is important to ensure that the ambitions of any skills development plan are aligned with the maturity and complexity of the existing public sector HRM systems; failure to do so creates a significant risk of failure.

Conducting a HRM maturity assessment as a preliminary step could help to identify areas of HRM policy and practice which would benefit from streamlining and strengthening, prior to embarking on the process to develop the digital skills that are necessary for GovTech. This type of diagnostic assessment can help to identify to what extent existing HRM policies and practices comply with existing laws and regulations, are utilizing consistent and transparent processes, are integrated within other organizational strategies and are able to meet organizational service delivery needs. By better understanding the strengths and weaknesses of existing HRM systems, public sector leaders can make informed decisions about changes that may be needed to HRM policy and practice in order to support successful digital government transformations. Box 5 below provides an example of a HRM maturity framework from the Philippines Civil Service Commission.

5. Generally, this chapter is focused on circumstances where there is a direct labor relationship between civil servants and public sector organizations. We note that, in addition to these direct relationships, there are often individuals who are providing services to public sector organizations under different arrangements.

BOX 5 - PRIME HRM in the Philippines Civil Service Commission

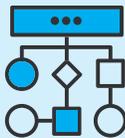
PRIME-HRM (Program to Institutionalize Meritocracy and Excellence in Human Resource Management) assesses an agency’s human resource management competencies, systems and practices towards HR excellence in four areas: recruitment, learning and development, performance management, and rewards and recognition. PRIME-HRM was developed through the Philippines Australia Human Resource and Organisational Development Facility and the Civil Service Commission.

PRIME-HRM aims to support the development of agency HR systems, practices, and competencies so they can progressively meet maturity levels and indicators across four structured levels: transactional level (level 1), process defined (level 2), integrated (level 3) and strategic (level 4).



Maturity Level 1: Transactional HRM

- a. Processes are compliant with CSC and other relevant authorities regulations and guidelines
- b. Some processes are characterized by projects and are often reactive
- c. Often produces services and outputs that work but frequently exceed prescribed timelines
- d. Success depends on competence of people, and not by using proven processes



Maturity Level 2: Process-Defined HRM

- a. Processes are attuned to the Agency’s requirements
- b. Programs are performed and managed according to documented processes
- c. Some processes are proactively managed through the use of automated systems, but the integration of data is not fully in place



Maturity Level 3: Integrated HRM

- a. Quantitative objectives are used to measure the quality and performance of process for continuous improvement
- b. HR partners with the Agency leadership to drive HR systems in order to support the agency’s business needs
- c. Quality and process performance measures are used to support data-driven decision-making
- d. Has developed an HR Management Toolkit



Maturity Level 4: Strategic HRM

- a. Focuses on continually improving process performance through both incremental and innovative improvements
- b. Has quantitative process improvement objectives which are regularly updated to reflect changes in Agency objectives; used to manage process improvements
- c. HR helps to drive agency business decision on people, data, and insight
- d. HR strategy is part of Agency strategy

Source: PRIME-HRM Guidebook, Philippines Civil Service Commission.

Defining Digital Skills and Digital Work in GovTech

Defining Digital Skills

While definitions and typologies may differ, ‘digital skills’ generally refers to people having and applying skills, abilities, competencies, knowledge, and attitudes to learn, earn and thrive in digital societies. Digital skills most commonly comprise a continuum of basic, intermediate, or advanced skills. Other terminologies increasingly utilized in analyzing the digital workforce are competencies and talent; both of which are grounded in skills. “Digital competencies” is generally used to refer to a range of different abilities, many of which are not only skills per se, but a combination of behaviors, expertise, know-how, work habits, character traits, dispositions, and critical understandings. Digital talent is emerging as the principal term to collectively describe computer, data, and ICT professionals

and experts with advanced skills, capable of the most digitally intensive work, and often associated with transformation, automation, and the Fourth Industrial Revolution.

The European Digital Competence Framework (DigComp)⁶ describes the skills needed for the larger share of the global labor market. DigComp 2.1 has five competence areas – information and data literacy, communication and collaboration, digital content creation, safety and problem solving – and 21 specific competences (see Table 2 below). The framework also sets out four proficiency levels – foundation, intermediate, advanced, and highly specialized. These proficiency levels relate to the complexity of tasks, autonomy required and cognitive domain. This breakdown of different proficiency levels can be helpful to identify different approaches to skills training as well as being able to chart learning progress. For example, in Spain, digital courses for civil servants at the National Institute of Public Administration were designed using DigComp’s competences (Kluzer et al 2018).

> > >

TABLE 2 - DigComp 2.1 Competence Areas and Competences

1 Information and data processing	2 Communication	3 Content creation	4 Safety	5 Problem solving
Identify, locate, retrieve, store, organize and analyse digital information, judging its relevance and purpose.	Communicate in digital environments, share resources through online tools, link with others and collaborate through digital tools, interact with and participate in communities and networks, cross-cultural awareness.	Create and edit new content (from word processing to images and video); integrate and re-elaborate previous knowledge and content; produce creative expressions, media outputs and programming; deal with and apply intellectual property rights and licenses.	Personal protection, data protection, digital identity protection, security measures, safe and sustainable use.	Identify digital needs and resources, make informed decisions on most appropriate digital tools according to the purpose or need, solve conceptual problems through digital means, creatively use technologies, solve technical problems, update own and other’s competence.
1.1 Browsing, searching and filtering information 1.2 Evaluating information and data	2.1 Interacting through digital technologies 2.2 Sharing information and content through digital	3.1 Developing content 3.2 Integrating and re-elaborating 3.3 Copyright and licenses 3.4 Programming	4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being	5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively

6. [https://publications.jrc.ec.europa.eu/repository/bitstream/JRC106281/web-digcomp2.1pdf_\(online\).pdf](https://publications.jrc.ec.europa.eu/repository/bitstream/JRC106281/web-digcomp2.1pdf_(online).pdf)

Table 2 continued

<p>1.3 Storing and retrieving information and data</p>	<p>technologies 2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 2.5 Netiquette 2.6 Managing digital identity</p>		<p>4.4 Protecting the environment</p>	<p>using digital technologies 5.4 Identifying digital competence gaps</p>
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Source: European Digital Competence Framework (DigComp 2.1).

There are also frameworks for ICT professions that describe the highly technical content and composition of skills that are necessary for these specialized roles. See Box 6 for examples of Digital Capability Frameworks that have been developed by the United Kingdom and Australia. Frameworks such as the Skills Framework for the Information Age (SFIA)⁷ describes

the skills needed in areas such as systems development, data and analytics, content management, computational science, technology and service management and security and privacy across seven levels of increasing responsibility, accountability, and impact.

> > >

BOX 6 - Digital Capability Frameworks and Professional Streams

Countries that are leading in digital transformation practices have commonly developed specific competency frameworks for digital roles to support attraction, recruitment, performance and career and skill development.

The United Kingdom has a **Digital, Data, and Technology Profession Capability Framework**, which describes specific jobs and the skills that are needed to do that job. The framework also describes the career pathways available in each role, from entry level to management or executive level and the corresponding skill level (awareness, working, practitioner, expert). This framework supports the **Digital, Data and Technology Profession** that works across government to help attract, develop and retain the people and skills needed in digital, data and technology.

Australia has developed a **Digital Professional Stream** to lift the digital expertise of the Australian Public Service workforce and meet long-term capability needs. A Building Digital Capability program has developed a career pathways framework with skill definitions for 150 digital roles. The pathways also show how individuals can transition to different or more advanced digital roles, providing a clear pathway for learning and development.

Sources: <https://www.gov.uk/government/collections/digital-data-and-technology-profession-capability-framework>; <https://digitalprofession.gov.au/>.

There is a clear distinction between digital talent (ICT specialists) who develop and put in place the ICT tools for others, and basic or intermediate users who use these tools in their work. This distinction informs the way we think about jobs, for example, as further discussed below.⁸

7. www.sfia-online.org/en

8. OECD 2005. New Perspectives on ICT Skills and Employment. Accessed 07/20/2021. <https://www.oecd-ilibrary.org/docserver/232342747761.pdf?expires=1626791312&id=id&accname=quest&checksum=74E0C9A02308FC63C01309D62E2507FA>.

Defining Digital Work

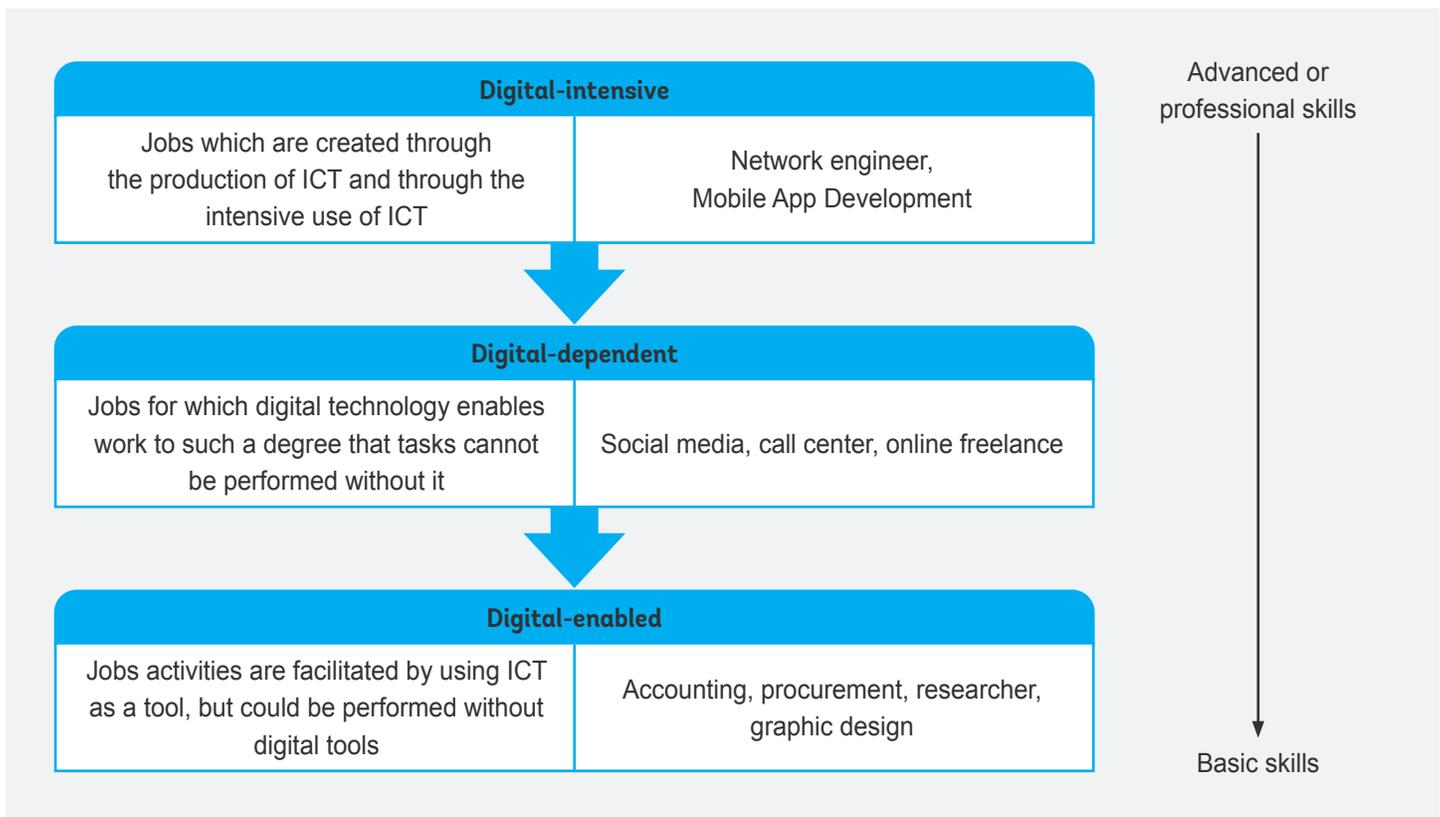
If skills are the supply side of digital labor markets; jobs are the demand side. ICT jobs⁹ have been described as two specific intersections within the broad range of ICT-enabled employment. The first focuses on how ICT has created jobs as a sector. These ICT jobs are the result of the growth of the ICT sector, which today directly employs millions of people worldwide. The second focuses on ICT as a tool: they have been helping more people find work and, as work has become digitized, so does the work. Put more simply, it is the intersection between jobs that “produce” ICT products or “consume” ICT tools in their execution.

As technology has diffused and expanded, and the nature and structure of employment has shifted, digital work can now be conceived more broadly across several spectrums. These spectrums are informed by the extent to which digital tools are required and used in work tasks and provides a guide to the extent of specialized skills that are needed for workers.

The spectrum of digital work moves from digital-enabled to digital-dependent and, finally, to digital-intensive (see figure 8 below). Digital-enabled work tasks are enhanced or improved by using digital tools but could still be performed without these digital tools. For example, work in accounting, finance, procurement, or graphic design. Digital-dependent work tasks use digital tools to the extent that the tasks can't be performed without these tools. Technology is fundamental to the work. This could include jobs that involve social media, call center and online freelance work. Digital-intensive work involves the creation, production, or maintenance of digital or technology tools. These work tasks require the intensive use of digital tools. Examples include network engineers, mobile application development or machine learning. The need for advanced or professional level skills increases across these spectrums, with basic skills required for digital-enabled work tasks and more specialist professional and advanced skills required for digital-intensive work.

> > >

FIGURE 8 - Spectrums of Digital Work



Source: Authors, adapted from World Bank 2013, OECD 2005.

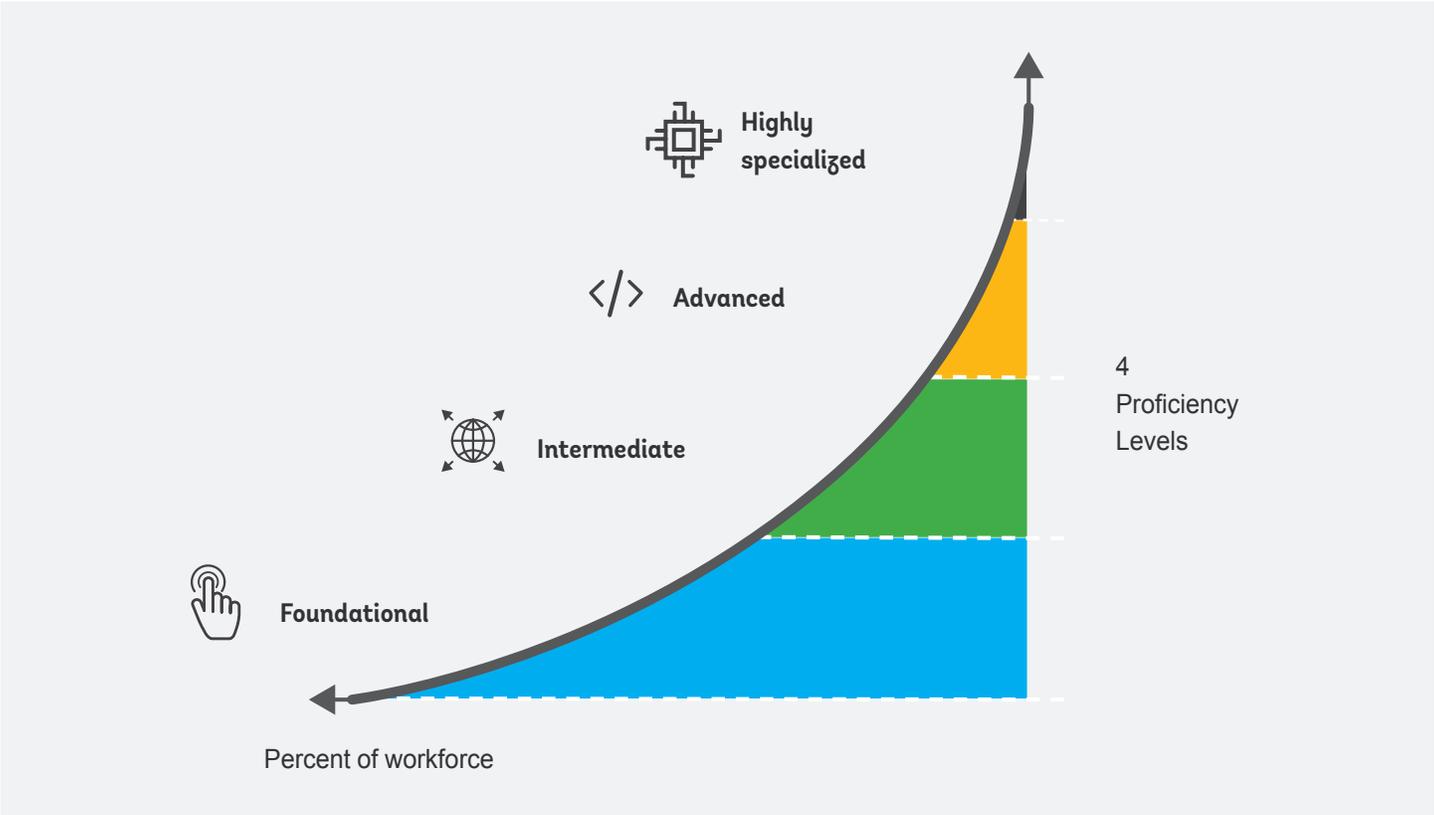
9. World Bank 2013. Connecting to Work: ICT and Work. Accessed 07/20/2021. <https://documents1.worldbank.org/curated/en/290301468340843514/pdf/809770WP0Conne00Box379814B00PUBLIC0.pdf>.



While nearly all occupations will require some level of foundational digital skills, it is important to acknowledge that as the level of proficiency of digital skills needed increases, the percentage of the workforce that requires these skills will decrease (see Figure 9 below). In this regard, the public sector is increasingly likely to mirror the private sector where the percentage of staff that will require highly specialized digital

skills will be significantly smaller than the proportion of staff that will require an intermediate level of digital skills in order to effectively perform their role. This distribution of required digital skills should also influence the availability and focus of training courses, with a greater number of foundational digital skills training options needed when compared to advanced or highly specialized digital skill training options.

> > >
FIGURE 9 - Digital Skills for All Occupations



Source: Digital Economy for Africa Country Diagnostic Tool and Guidelines for Task Teams, Version 2.0, June 24, 2020.

Digital Skills and Jobs in the Context of Public Administration

Before being able to identify and mitigate any GovTech skill gaps, we first need to understand what kinds of positions require digital skills, what type of skills and at which level; and how digital skills are utilized and deployed in civil service and public administration jobs.

In terms of being citizen (user) centric, the most relevant skills are likely to be those that reflect DigComp and focus on data literacy, capability to retrieve and share information, collaboration, communication, and the creation of simple content (World Bank, A Global Study on Digital Capabilities). We would propose a framework which comprises five types of digital skills that should be considered by the public sector in order to effectively drive and sustain GovTech initiatives (see Figure 10 below):

- Essential digital skills: to ensure civil servants can effectively use digital technology including making

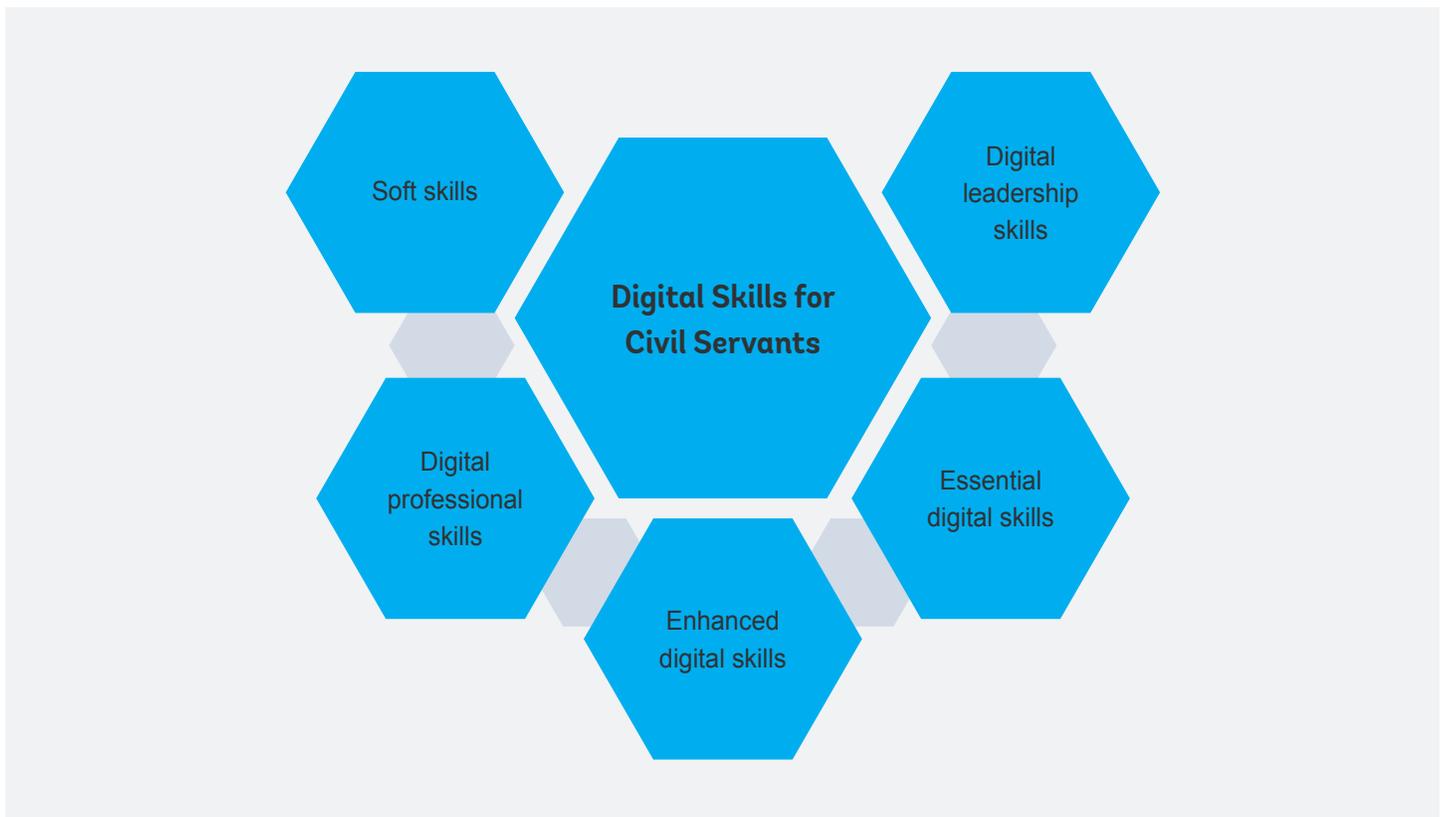
good use of productivity tools such as email, internet, spreadsheets and databases.

- Enhanced digital skills: for civil servants who work in roles which are impacted significantly by technology initiatives to the extent that work cannot be done without such technology.
- Digital professional skills: for civil servants who work in specialized technology roles to develop, maintain or enhance digital tools.
- Digital leadership skills: for civil servants who are responsible for leading and managing people.
- Cross-cutting category of soft skills¹⁰ for all civil servants to ensure they have the skills, behaviors and personal qualities to effectively navigate the workplace, relate well to others, perform well and achieve their goals.

These digital skills should be viewed across the four levels of proficiency of DigComp – foundation, intermediate, advanced, highly specialized.

> > >

FIGURE 10 - Digital Skills for Civil Servants



Source: Authors based on OECD.

10. Soft skills can also be referred to as social and emotional skills, generally when referring to basic education. Soft skills is a term more often used in the context of workforce and higher education.

GovTech Skills in Demand

The type and volume of GovTech skills that are needed within the public sector will be guided by the maturity and focus of the GovTech transformation as well as the existing and available digital skills within each country. For civil services that are early in their GovTech transformation, the type of digital skills that will be needed can differ significantly from civil services that have already made considerable transformation progress. For example, in Sub-Saharan Africa, the demand for foundational digital skills is expected to account for 70 percent of the total demand for digital skills by 2030, with non-ICT intermediate

skills accounting for most of the remaining demand (WBG, Demand for Digital Skills in Sub-Saharan Africa, 2021). There will be a much smaller demand for advanced and highly specialized skills.

For countries with an existing digital transformation, often a good source of information about in-demand skills comes from the private sector. According to the World Economic Forum, the top 10 job roles in increasing demand across industries (public and private sectors) are almost all technology-related jobs (see Table 3 below).

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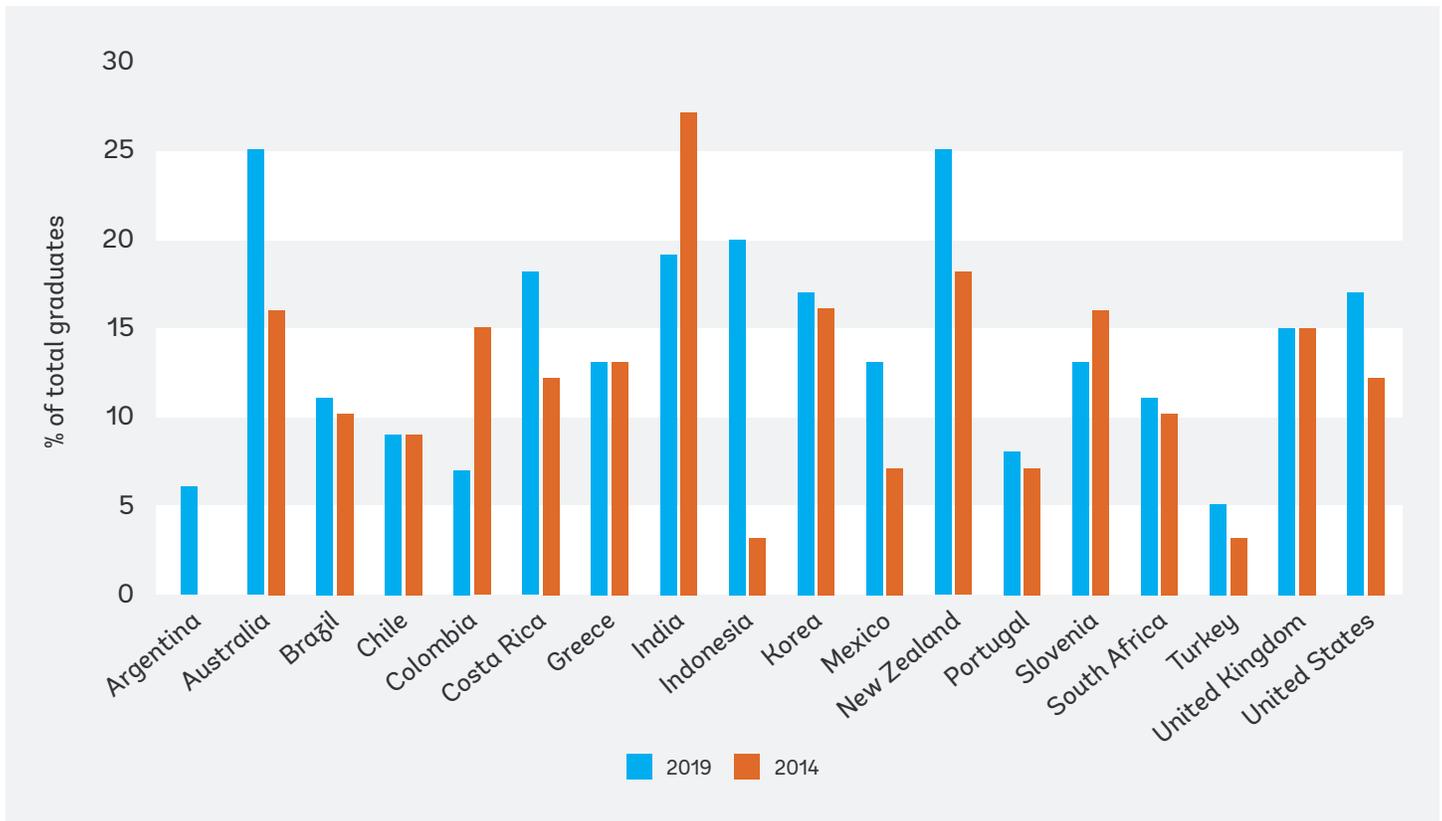
TABLE 3 - Top 10 Jobs in Increasing Demand

1	Data Analysts and Scientists
2	AI and Machine Learning Specialists
3	Big Data Specialists
4	Digital Marketing and Strategy Specialists
5	Process Automation Specialists
6	Business Development Professionals
7	Digital Transformation Specialists
8	Information Security Analysts
9	Software and Applications Developers
10	Internet of Things Specialists

Source: World Economic Forum, The Future of Jobs Report, October 2020.

The supply of digital skills, particularly for advanced and highly specialized skills, relies on a pipeline of qualified graduates. For many countries, even high and upper-middle-income countries, the number of graduates with information technology qualifications has been relatively small, however, the number of graduates continues to grow (see Figure 11 below). This reflects the growing demand for digital skills from both the public and private sectors.

FIGURE 11 - Information Technology Graduates as Percentage of Total Tertiary Graduates



Source: Authors based on OECD.Stat data, Distribution of graduates by field, <https://stats.oecd.org>.

Note: Data includes graduates at bachelor, masters, and doctoral levels. 2014 data for Argentina and Indonesia is partial and incomplete.

When it comes to digital skills, some of the most frequently listed in-demand skills from technology industry sources include a range of technical, non-technical, and soft skills, as shown in Table 4.

TABLE 4 - In-Demand Govtech Skills from Technology Industry

Cybersecurity	Cloud Computing	AI and Machine Learning
Data analytics	Big Data	Blockchain
Enterprise/technical architecture	Networking And Wireless	Project Management
Soft skills	Leadership And Management	Data Policy and Governance

Source: Authors based on data and surveys from Harvey Nash/KPMG, Global Knowledge, Coursera, Forbes.¹¹

When looking at what type of digital skills individuals are seeking training and qualifications for, there appears to be a core group of skills for which there is consistent demand, irrespective of region. Data from Coursera (in Table 5) shows

that there are trending skills in the technology and data science domains which feature in all six regions (Asia Pacific, Europe, Middle East and North Africa, North America, Latin America and the Caribbean, and Sub-Saharan Africa).

11. Top 5 most scarce skills: Harvey Nash/ KPMG, CIO Survey 2020; Top 10 scarce skills: Global Knowledge, 2020 IT Skills and Salary Report; Coursera – 7 In-Demand IT Skills to Boost Your Resume in 2021; Forbes – 15 in-demand skills tech professional should focus on.

> > >

TABLE 5 - Trending Skills in Technology and Data Science Domains

Theoretical Computer Science	Programming principles	C Programming
Python Programming	JavaScript	SQL
Machine Learning	Statistical Machine Learning	Machine Learning Algorithms
Applied Machine Learning	Probability & Statistics	Design and Product
Data Management		

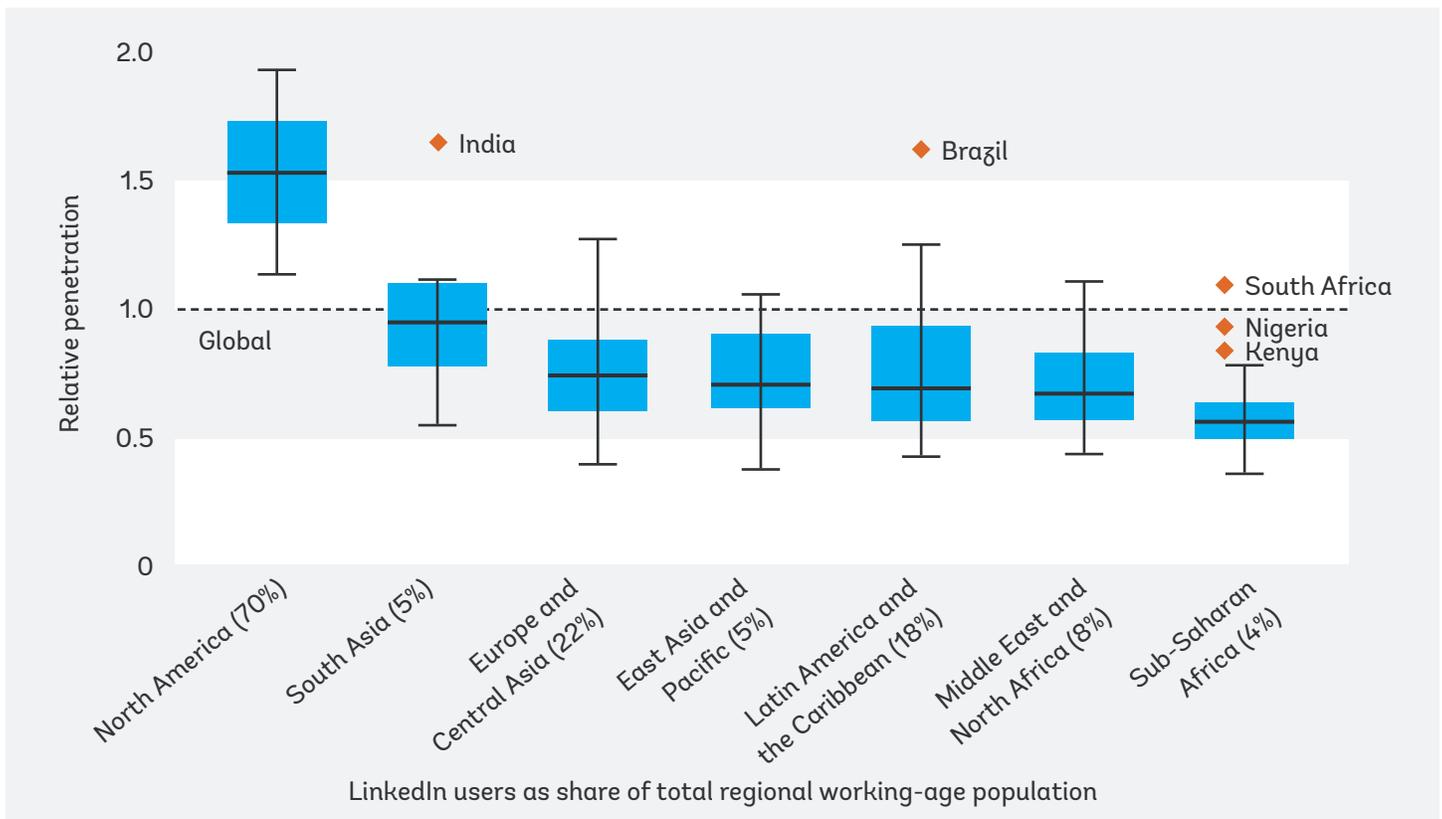
Source: Global Skills report 2021, Coursera.

There is a significant variation in the availability of digital skills across the globe. Self-identified digital skills data from LinkedIn¹² does suggest that workers in Sub-Saharan Africa have a lower level of digital skills than workers in other regions^{13,14} (see Figure 12 below). There are also significant variances across Sub-Saharan African countries when looking

at a detailed list of digital skills. Figure 13 below shows that for one-third of the specific skills, fewer than one-half of the Sub-Saharan African countries have a penetration rate greater than zero. The countries with higher overall digital skill penetration are also the ones with the most diversified digital skills.

> > >

FIGURE 12 - Digital Skills in Sub-Saharan Africa Relative to Other Regions

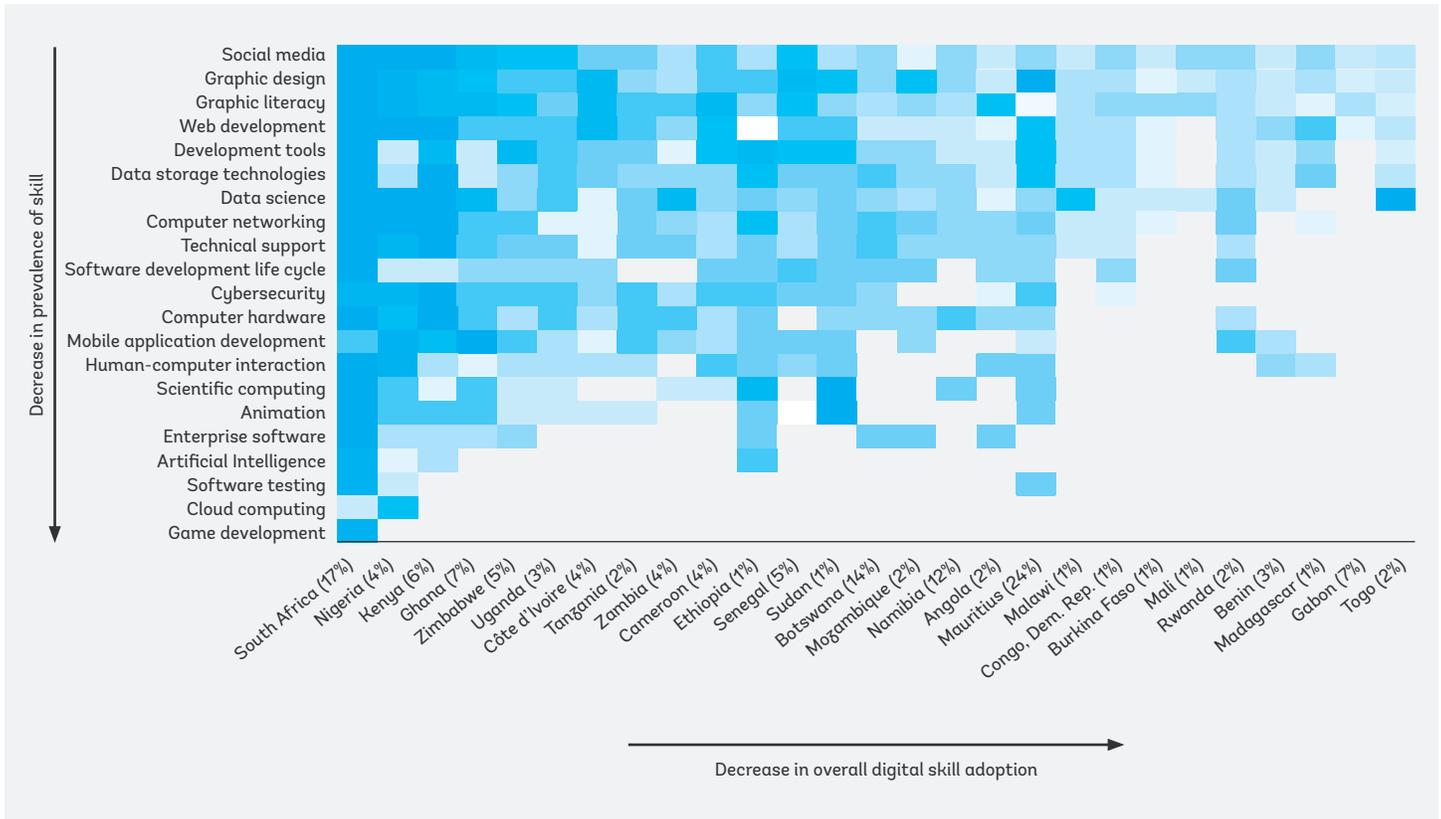


Source: The Future of Work in Africa: Harnessing the Potential of Digital Technologies for All, World Bank.

Note: Parentheses show the share of LinkedIn users in the total working-age population of each World Bank region

12. As defined by LinkedIn, the digital skills considered are animation, artificial intelligence, cloud computing, computer hardware, computer networking, cybersecurity, data science, data storage technologies, development tools, digital literacy, enterprise software, game development, graphic design, human-computer interface, mobile application development, scientific computing, social media, software development life cycle, software testing, technical support and web development.
 13. Jieun Choi, Mark A. Dutz, and Zainab Usman (eds). The Future of Work in Africa: Harnessing the Potential of Digital Technologies for All (2020); World Bank.
 14. It should be noted that a smaller portion of labor force in Sub-Saharan Africa are LinkedIn members, compared to, for example, North America (4 percent compared to 70 percent).

FIGURE 13 - Relative Penetration of Various Digital Skills in Sub-Saharan African Countries



Source: The Future of Work in Africa: Harnessing the Potential of Digital Technologies for All; World Bank.

Note: Parentheses show the share of LinkedIn users in the total working-age population of each country. Relative penetration scaled by row for comparison across countries. The different shades of green and the white correspond to the degree of relative penetration. The darker the color, the higher the relative penetration of that specific skill in that country compared with others. Gray boxes indicate a relative skill penetration of zero.

Workforce Planning for a Digitally Competent Workforce

Rapid changes in technology mean that changes in the public sector workplace and staff profiles are inevitable. These changes mean that public sector organizations will need to adapt to performing work in different ways and that new skills, knowledge and experiences will be needed from public servants. Workforce planning is a core HRM function which helps to identify future staffing and skill needs. The Chartered Institute of Personnel and Development in the UK, defines workforce planning as:

“...the process of balancing labor supply (skills) against the demand. It includes analyzing the current workforce, determining future workforce needs, identifying the gap between the present and the future, and implementing

solutions so that an organization can accomplish its mission, goals and strategic plan.”¹⁵

Workforce planning will help to understand the current workforce environment and identify where there are gaps with existing skills and capacity that is needed to ensure the implementation and achievement of an organization’s goals. It can allow organizations to be proactive and data-driven when identifying staffing needs, rather than being reactive, particularly for skills which may be hard to find or will take time and investment to develop. In LMICs, workforce planning can also be a helpful exercise to inform cooperation with donors and partners priorities for funding, projects, and associated policy or strategy reforms.

Workforce planning is a process (see Figure 14 below) which begins with understanding the strategic direction of the organization; that is, answering the question: what are the broader goals and aims that we are working towards?

15. CIPD. Workforce Planning Factsheet. <https://www.cipd.co.uk/knowledge/strategy/organisational-development/workforce-planning-factsheet#8035>.

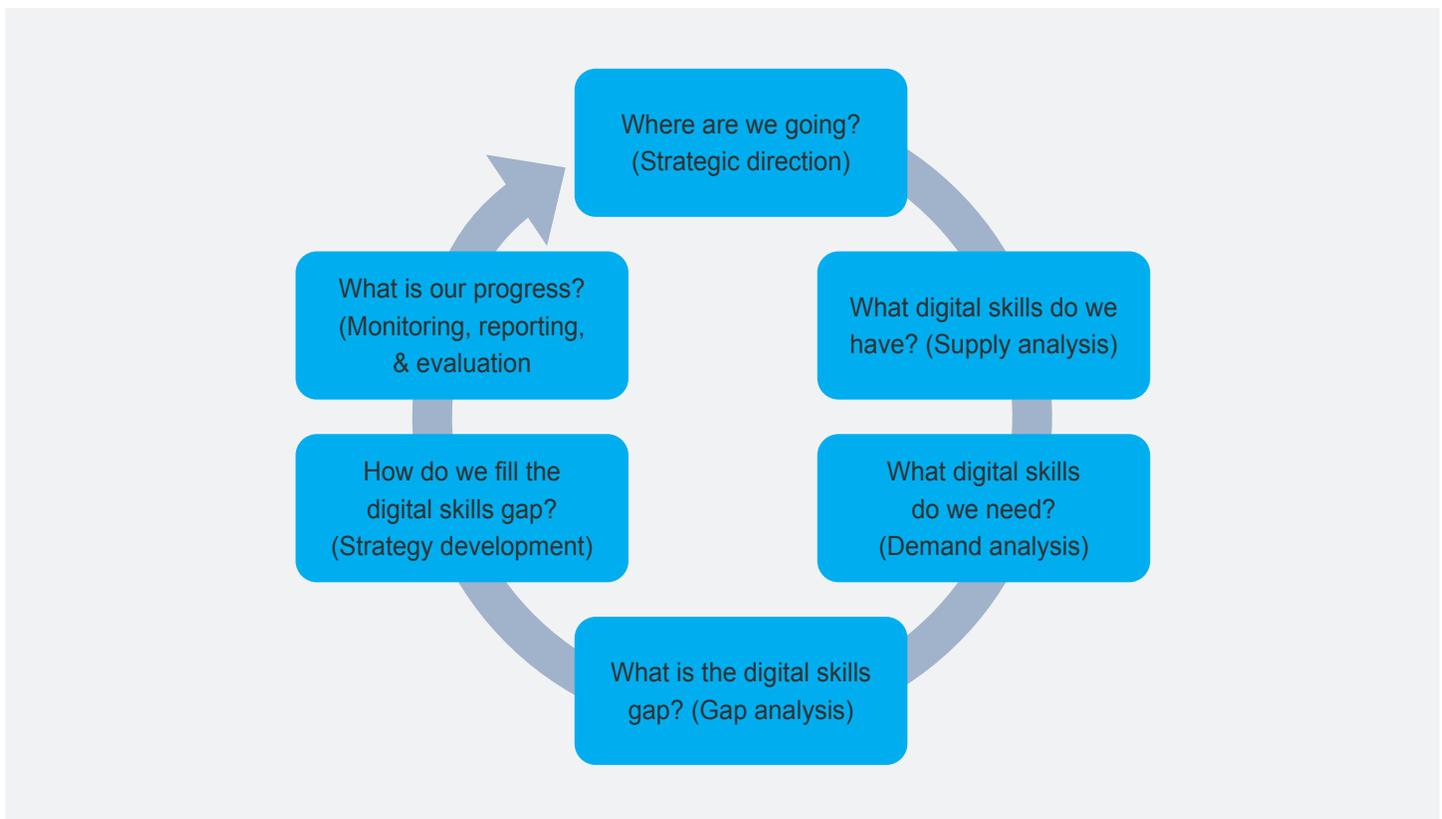
When focusing on digital skills, this would include examining any digital government strategy. A lack of clear and agreed strategic vision is likely to result in a mismatch of what skills are needed to achieve this vision.

The next step is to consider the “supply” or sources of relevant skills and skills preparation; this includes the current workforce as well as other sources of skills and skills development outside the organization. This would also include graduates from educational institutions as well as other potential staff. The process then moves to consider what skills, and how many, are needed by the organization in order to deliver on

the strategy direction from step one. This should also consider any anticipated changes in technology, policies, or service demand that might affect the workload of staff. Using these two sources of information, the gaps between the skills that are needed and the skills that are currently available in the organization will emerge. The solutions that can be identified to help bridge this skills gap will depend on the nature of the skills, but solutions will primarily include those that build, buy, or borrow skills as detailed later in this chapter. Finally, it is important to carefully monitor the solutions that are implemented to evaluate whether these have the intended impact.

> > >

FIGURE 14 - Digital Skills Workforce Planning Cycle



Source: Authors, adapted from existing models.

Workforce planning can have different timeframes, scales, and focus. Managers may be familiar with providing staffing estimates for the next year, in order to inform budgeting processes or meet establishment management caps. This type of short time-horizon planning allows little room for identifying the critical skills that may need to be developed or recruited over the medium term. It will also almost certainly assume that the current roles, skills, and occupations are the ones that are needed now and into the future. Similarly, when a longer-term strategic workforce planning exercise is undertaken, organizations are attempting to foresee and react to future shifts in technology or other changes and understand how this may impact on its existing workforce. The political cycle and length of government term can be a source of instability for civil servants and can make workforce planning, as well as attracting digital talent, more challenging. Generating broad support for strategic plans such as digital government strategies, together with ensuring that senior leaders are aware of the risks of insufficient planning can help to manage this risk.

The adoption of a medium-term time horizon, three to five years, may provide an optimal balance between solutions for more immediate skills issues as well as identifying solutions for issues which will require longer implementation time. Often the timeframe associated with upgrading or developing new digital systems in the public sector is of a similar timeframe. For example, the average time to implement ICT solutions in a study of World Bank projects was 2.5 years, and project completion took 7.9 years on average.¹⁶ Workforce plans can focus on a single function of an organization, such as finance or procurement or on specific roles such as accountants or IT staff. Regardless of the focus, timeframes, or scale of the workforce plan, it is important that workforce planning involves discussions with senior leadership in the organization as well

as front-line managers and supervisors. Workforce planning is a key organizational planning tool that should inform key decisions within the organization.

The most significant challenge for workforce planning is the availability of quality, relevant data. While it would be ideal to have a wide range of data available to inform and guide decisions, it is possible to complete workforce planning to a useful standard, with some more basic supply and demand data. Table 6 below provides examples of ideal HR data as well as options for more basic data that would be useful for workforce planning. This is especially true for lower-income countries who tend to be data poor.

> > >

TABLE 6 - Data Options for Workforce Planning

Ideal HR data	Minimum HR data
Information on current workforce – number of staff, levels/grades, job family, gender/other diversity data, education/qualifications, years of service.	Information on current workforce – number of staff, levels/grades, Ministry/departments, gender.
Recruitment, terminations, retirements over last five years and retirement and turnover forecasts for next five years.	Recruitment, terminations, retirements for current or previous year.
Staff competency information.	List of training offerings.
Performance management results/analysis of development plans.	Training priorities gathered from discussions with managers.
Training offerings, training expenditure, training needs analysis.	Courses offered at local and/or regional universities and colleges.
Training and development plans/talent management plans.	Number of yearly local graduates from relevant courses.
Courses offered at local and/or regional universities and colleges.	
Labor force survey data, demographic data.	
Staff survey results.	

Source: Authors.

16. World Bank. 2011. *Financial Management Information Systems: 25 years of World Bank experience on what works and what doesn't*. Washington DC: World Bank.

Organizations should start with existing HR data about its own workforce. This includes information on recruitment, terminations, turn-over, promotions, retirement projections, learning and development plans, performance management results, and employee survey data. Ideally, data over the previous three to five years would help to identify any trends. In addition to this internal data, information such as labor force surveys and other statistical surveys as well as information on educational facilities including universities, colleges, and public administration academies on courses offered and number and type of graduates will help to understand some of the issues related to the supply and demand of specific skill areas – such as digital.

While it can be challenging to forecast the supply and demand of skills, the pace of technological change can make it very difficult to identify skills that are needed to develop and maintain cutting-edge technology and even more difficult to understand whether there is a local supply of these skills. For some bespoke skills, such as artificial intelligence, machine learning, cyber security, the local supply of these skills is likely to be extremely limited or still under development.

Strategic Direction

The starting point for workforce planning is to discuss and agree on the strategic vision or objectives that the organization is working to achieve in relation to its GovTech transformation. This ensures a clear vision or goal that everyone is working towards. Without this clarity, it will be very difficult to identify the skills that will be needed in order to meet the goal. This means examining the broader policy system surrounding civil service skills and prioritization of GovTech, the extent to which the government is investing in other human capital initiatives, and whether there are adequate institutional supports. Digital government strategies are critical in providing policy and planning guidance in a constantly and rapidly evolving work environment. Strategies make it possible to align goals, objectives, and initiatives and are fundamental in establishing consensus and the necessary cross-government coordination for efficient and effective policy implementation (OECD Panama). In this regard, they form a basis of strategic direction in workforce planning.

Beyond higher-level digital government strategies, skills-specific strategies and frameworks are also important for GovTech workforce planning. While ambitious frameworks of digital skills are increasingly seen as a key requirement to seize the opportunities and manage the risk of the digital

transformation, there appears to be a gap between perceptions and the strategies and action plans in place. Most OECD countries have recognized the importance of strategizing and investing to strengthen the capacities of the public sector workforce, with 79 percent of countries having dedicated strategies or policies for digital competencies (OECD 2020).

However, even when a digital strategy or digital agenda makes specific references to digital skills, it often does not contain a structured approach that can guide public sector efforts in this area. For example, the Brazilian Digital Governance Strategy (Estratégia de Governança Digital, EGD) did not include any specific actions to improve the digital capabilities of Brazilian civil servants. When asked about the level of priority given to the improvement of digital skills in Brazil's digital government policy, 77 percent of public sector organizations surveyed considered it a low or medium priority.¹⁷ Digital skills remain a policy issue that requires more attention, commitment, and support from governments.

In African Portuguese-speaking countries¹⁸ and Timor-Leste, digital user and professional and complementary skill sets were identified as essential for enabling and ensuring the sustainability of digital transformation in these countries. Despite this, none of these countries had dedicated strategies in place to attract into the civil service people who have ICT qualifications, or strategies that recognize and retain such skills through a structured ICT career.¹⁹

Supply of Digital Skills

Once the strategic direction is clear and agreed, the next step is to analyze the supply of digital skills, both within the existing workforce as well as from other sources. Organizations can start by gathering information and data on current public servants working in roles within the scope of the workforce plan. This may be public servants who are working on any GovTech initiatives or on a more focused group of priority projects.

MEASURING INDIVIDUALS' SKILLS

Several tools have emerged to measure digital skills and competencies. They tend to take three different forms (LSE 2014, Kluzer et al, 2018, ITU 2020):

- Self-reported skills surveys. This is a commonly used method due to its easy and relatively low-cost implementation. Using online survey tools, a skills survey can be rolled out quickly and data can easily be analyzed

17. Responding to the OECD Digital Government Performance Survey.

18. Angola, Cabo Verde, Guinea-Bissau, Mozambique, São Tomé and Príncipe.

19. OECD. Promoting the Digital Transformation of African Portuguese-Speaking Countries and Timor-Leste.

and reported on. Many skills surveys do not require highly specialized staff or consultants. The challenge with self-reported data is the inherent bias and lack of third-party validation.

- Knowledge-based exams or survey. This can include formal education qualifications such as undergraduate and postgraduate programs as well as specific technical qualifications which require knowledge-based testing. The main limitation with this method is that it may not require any demonstration of skill or practical application of knowledge.
- Performance tests. These can be in an applied format, laboratory or other controlled environment that allows for participants to demonstrate their ability to complete digital skill tasks. They generally have a high level of validity, but can be costly to administer, however with scale and a rising number of options, costs are reducing. Many employment-oriented online tests and games have been developed to test digital skills, primarily at basic and intermediate levels used across a wide variety of jobs. Two well-known examples of performance tests are the Digital Competence Wheel²⁰ and the International Computer Driver's License²¹ (ICDL).

BASELINING CIVIL SERVANTS

Using or adapting the types of tools described above, public sector organizations are exploring a variety of diagnostics to assess and observe civil servants' knowledge and digital skills competence, helping to set a baseline and identify the needs for up-skilling existing staff. These include testing all or

samples of staff using self-reporting surveys of priority skills (Canada²²) and providing self-test tools for staff²³ (UK) as well as utilizing knowledge and performance assessments as described above. In Nigeria,²⁴ in response to the COVID-19 pandemic, surging demand for online government services, and catalyzed government transformation, the Ministry of Communication and Digital Economy established an e-Government Training Centre. The main aim was to support capacity building of the public servants on the use of digital tools and e-Government applications. One of the Centre's first activities was to conduct a widespread assessment exercise to profile capacity gaps of public servants in all agencies.

Surveys can track the level of data and digital skills, monitor the culture of public officials as well as measure the impact of reforms. Surveys can also provide insights into good practices in recruitment, promotion, and capacity building. An example is the Federal Viewpoint Survey (FEVS), which the US Federal Government conducts to improve the management of federal employees. It has been used in dozens of pieces of research to examine topics central to public administration (Marvel and Resh, 2019). Box 7 (below) describes the use of surveys during COVID-19 to monitor remote work in public administration.

Extending the type of information collected in HR Management Information Systems beyond the basic characteristics of the staff is essential to provide a clear picture of staff skills. A survey in the United Kingdom found that 40 percent of public sector organizations lack the skills needed for digital transformation (GovTechLeaders 2018).

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BOX 7 - Using Surveys during COVID-19 to Monitor Remote Work in Public Administration

Prior to COVID-19, regular remote work (or telework or work from home) was generally the realm of higher-income countries such as Australia, the United States, and Canada. Although remote work began in the 1970s, its popularity started increasing in the 1980s with the introduction of personal computers, internet access, and mobile phones.²⁵ During the pandemic, as a result of the need for the isolation of large proportions of the community, public sector organizations globally were forced to very quickly, and many introduced remote working for public officials. In at least 136 countries, some kind of remote work arrangements were introduced for public servants during the pandemic.²⁶ The overall impact of remote working is not yet clear. There has been growing research and evidence focusing on the effects of remote work including productivity benefits. A study from China in 2015 reported a 13 percent performance increase as well as improved work satisfaction and a halving of attrition, but the rate of promotion fell.²⁷

20. <https://digital-competence.eu/>.

21. <https://icdl.org/>.

22. <https://digital.canada.ca/2018/11/01/dear-colleagues-what-digital-training-do-you-need/>.

23. <https://www.gov.uk/government/publications/test-yourself-at-digital>.

24. <https://punchng.com/e-government-fg-compiles-civil-servants-digital-skills-competency/>

25. Choudhury, P. 2020. Our Work from Anywhere Future. HBR. <https://hbr.org/2020/11/our-work-from-anywhere-future>.

26. <https://blogs.worldbank.org/governance/home-based-work-public-sector-8-immediate-recommendations>.

27. Bloom, N, Liang, J, Roberts, J and Ying, Z. J. 2015. Does Working from Home Work? Evidence from a Chinese Experiment. The Quarterly Journal of Economics. February, Vol.130, Issue 1, pp.165-218.

It also appears that many staff who became remote workers during the pandemic would like to continue working remotely for at least part of their working time once the pandemic is over. In Canada, 80 percent of staff would like to work at least half of their hours remotely.²⁸ Some of the reasons for this continued support for remote working include better than expected experiences by staff when working from home, investments that have been made in physical and human capital to enable working from home, diminished stigma and a reluctance to return to pre-pandemic activities.²⁹

An upcoming World Bank report, *Managing the Impact of the COVID-19 Pandemic and Remote Work in Public Administration*,³⁰ describes 7 large-scale surveys of 109,000 public officials in Brazil, Cambodia, Chile, Colombia, Ghana, Morocco, and Kazakhstan conducted during the COVID-19 pandemic. The surveys, conducted by the World Bank's Bureaucracy Lab, explored the experiences of public officials during the pandemic and remote work, employee well-being, and perceived productivity as well as preferences about remote work in the future.

The survey data suggests that remote work training is associated with greater remote work productivity, yet most public officials had not received training in key skills and competencies for remote work. For example, in Colombia and Chile, only a minority of public officials reported having been trained in competencies to work effectively from home (46 percent and 28 percent respectively). One of the key recommendations of the report is that targeted training on digital skills should be introduced, with an emphasis on those institutions and staff groups with lower skill levels.

SCREENING AND APPRAISAL IN RECRUITING

Public sector entities are also incorporating digital skills criteria and assessment into recruiting processes for both position-based and career systems. This may take the form of integrating ICT competency-oriented questions into civil service exams; requiring completion of specific online assignments or participating in exercises; taking a test at an assessment center, which could include diagnostic digital skills tests noted above; or endorsing digital skills certifications/credentials in recruits. Several agencies in the U.S. have reintroduced exams for many IT positions.³¹ For position-based systems especially, it is critical to review the position descriptions to ensure that requisite skills are included and to update – and train as may be needed – evaluators and interviewers to be able to identify and screen for skills indicators, signals, and certifications, and ascertain competencies from resume or interviews. In Italy, an Internet Core Competency Certification (IC3) certification is listed as a state-recognized qualification that is required in tenders and in recruitment for public service staff, including teachers.³²

Demands for Digital Skills

With a clear view of the available digital skills, organizations should consider what specific skills and qualifications are needed in order to meet the agreed strategic direction and objectives. Senior technical staff as well as manager/supervisors from key technical areas should be involved in determining what skills and qualifications will be needed by the organization over the next three to five years. For the purposes of this discussion, staff should not be constrained by existing skills and qualifications within the organization, but rather they should identify the skills that will be needed. A gap analysis can then be conducted following the identification of the skills that are needed.

Ideally this discussion should also identify any critical positions which may pose a greater risk to achieving the strategic objectives. These risks include a loss of critical knowledge, long lead time to skill up another staff member and potential disruptions to work. Considerations of skill scarcity including how hard it is to recruit for the skills as well the importance of the position to the GovTech objectives, can be helpful to identify such positions. A simple risk matrix (see Table 7 below) can help with discussions.

28. Statistics Canada. 2021. Study: Working from home: Productivity and preferences. <https://www150.statcan.gc.ca/n1/daily-quotidien/210401/dq210401b-eng.htm>.

29. Barrero, J., Bloom, N., Davis, S. 2021. Why Working from home will stick, DOI: 10.3386/w28731. <https://www.nber.org/papers/w28731>.

30. World Bank. 2022. Managing the Impact of the COVID-19 Pandemic and Remote Work in Public Administration.

31. <https://www.washingtonpost.com/news/federal-eye/wp/2015/04/02/for-federal-worker-hopefuls-the-civil-service-exam-is-making-a-comeback/>.

32. <https://certiport.pearsonvue.com/>.

TABLE 7 - Critical Positions Risk Matrix

What is the likely impact of the position on the achievement of GovTech objectives?	How difficult is it to recruit for the digital skills?			
		Low level of scarcity	Moderate level of scarcity	High level of scarcity
High Impact		Moderate Risk	High Risk	High Risk
Moderate Impact		Low Risk	Moderate Risk	High Risk
Low Impact		Low Risk	Low Risk	Moderate Risk

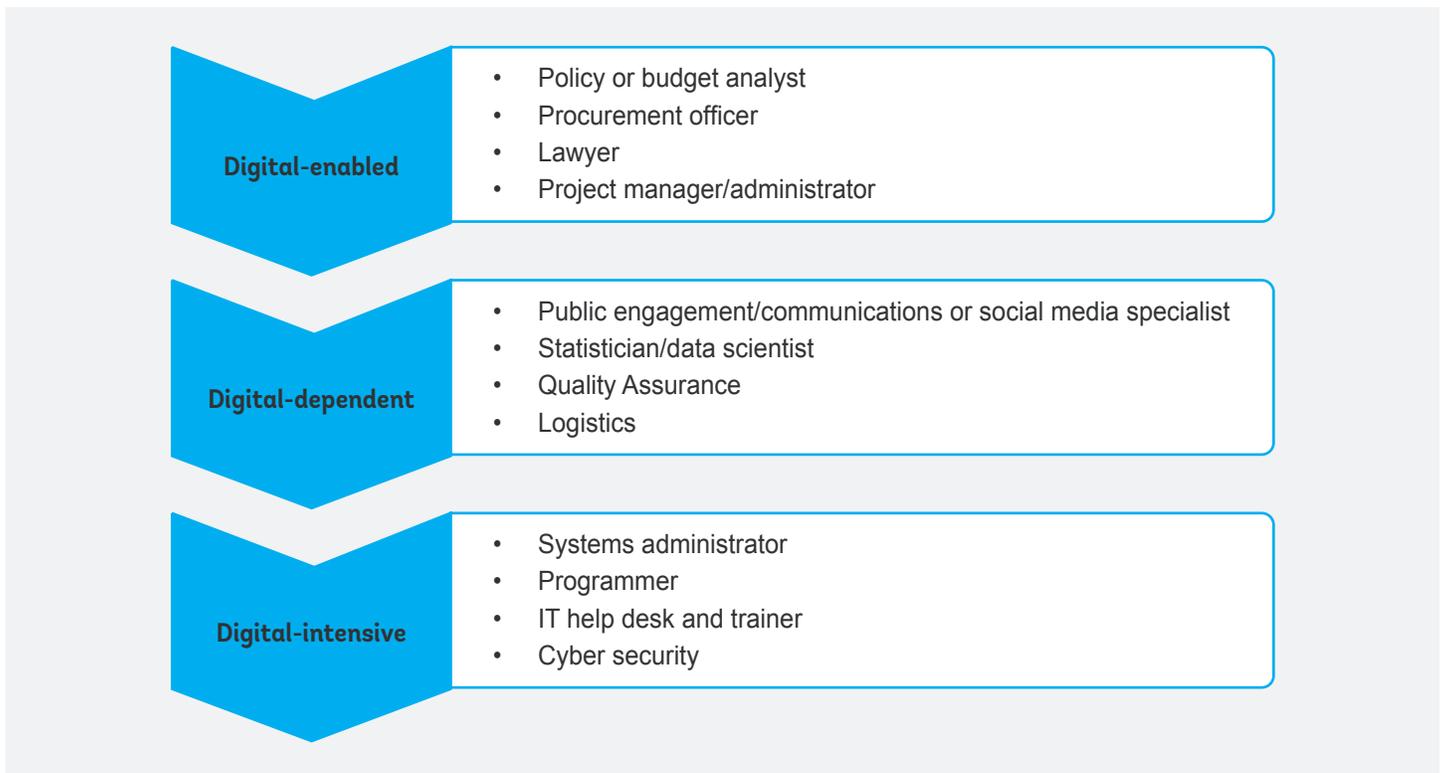
Source: Authors.

DIGITAL JOBS IN THE CIVIL SERVICE

Governments have been strategically using human resources data to improve the quality of the civil service (Van Ooijen, Ubaldi, and Welby 2019). For example, in Belgium, the Copernicus Reform introduced workforce planning combined with efforts to realign institutional objectives with the medium-term budget and the skillsets requirements. In Ireland, the government introduced Public Service 2020, a framework for fostering innovation in Ireland’s public service. In Italy, the government has used predictive analytics in the health sector to forecast the demand for doctors, nurses, dentists, midwives, and pharmacists.” (World Bank, ECA report 2021).

An organization needs to know the digital profiles of job functions to determine the number and type of digitally skilled employees it needs to recruit or retrain. For many civil administrations, mapping digital roles to government functions can be challenging, and assessment, recruitment and training can be difficult. Further to the definitional framework of digital work (see page 48), figure 15 below maps the spectrum of digital jobs to common types of positions likely to be found in most civil service agencies or departments, and in many cases, across all levels of government.

FIGURE 15 - Illustrative Framework Mapping of Digital Jobs in Civil Service



Source: Authors, adapted from World Bank 2013, and OECD 2005.



FORECASTING TOOLS AND STRATEGIES

One approach to identify and forecast digital skill needs in the public administration workforce is to utilize and adapt existing methods of skill forecasting that is used in the private and public sectors. These have varying requirements and can be suitable for use in lower resourced environments. They range from focus groups to employer surveys, quantitative modeling, graduate tracer studies, and vacancy surveys. For example, focus groups and roundtables may allow for a deeper understanding of needs, but could also be non-representative and provide only a partial or siloed agency view. Quantitative models could provide a more holistic, consistent, and concrete view of expected needs across government. Such activities require data, and expertise that may not be readily or fully available or ascertainable and could be cost-prohibitive. Sector-based employer/manager surveys may provide the most real-time, direct, relevant data if the response rate adds up to credible sample; and biases will need to be accounted for (ITU 2020, ILO/OECD 2018).³³

Comparative survey data of the private and the public sectors can help identify agencies that lag behind private sector counterparts and assess the impacts of these gaps. Labor market surveys or surveys of potential public sector recruits can complement this diagnostic. They could be used, for example, to evaluate the supply of empirical skills (see Thomson, Veall and Sweetman 2018). Surveys can also help policy makers understand how these factors affect the decision of empirically minded individuals to apply for or accept public sector positions and the role monetary incentives play in the decision, which are likely to be useful especially data points for in-demand digital talent (Dal Bó, Finan and Rossi 2013; Mastracci 2009).

Gap Analysis

Once the supply of existing digital skills within the organization is known and the skills and qualifications that will be needed in order to deliver on the digital strategic objectives have been defined, the organization can now begin to understand the gaps between supply and demand. This should also include identifying any priority gaps where the impact on organizational performance will be significant as well as any gaps which are expected to be the easiest to close.

As introduced earlier in this chapter, there are digital skills gaps evident worldwide. According to one global survey, 90 percent of public sector agencies acknowledged that workforce-related issues represent a challenge to manage their digital transformation and only 34 percent of agencies indicated that they have sufficient skills to implement their digital strategies. The survey also highlights a gap in public agencies' abilities to respond to these workforce and skills challenges with only 33 percent of respondents reporting that their agency provides the right resources or opportunities to obtain the digital skills that are needed. (Deloitte, *The Journey to Government's Digital Transformation*). A weak gap analysis can lead to or compound the difficulties in attracting and retaining digital skills in the civil service.

Skills Strategy Development and Implementation

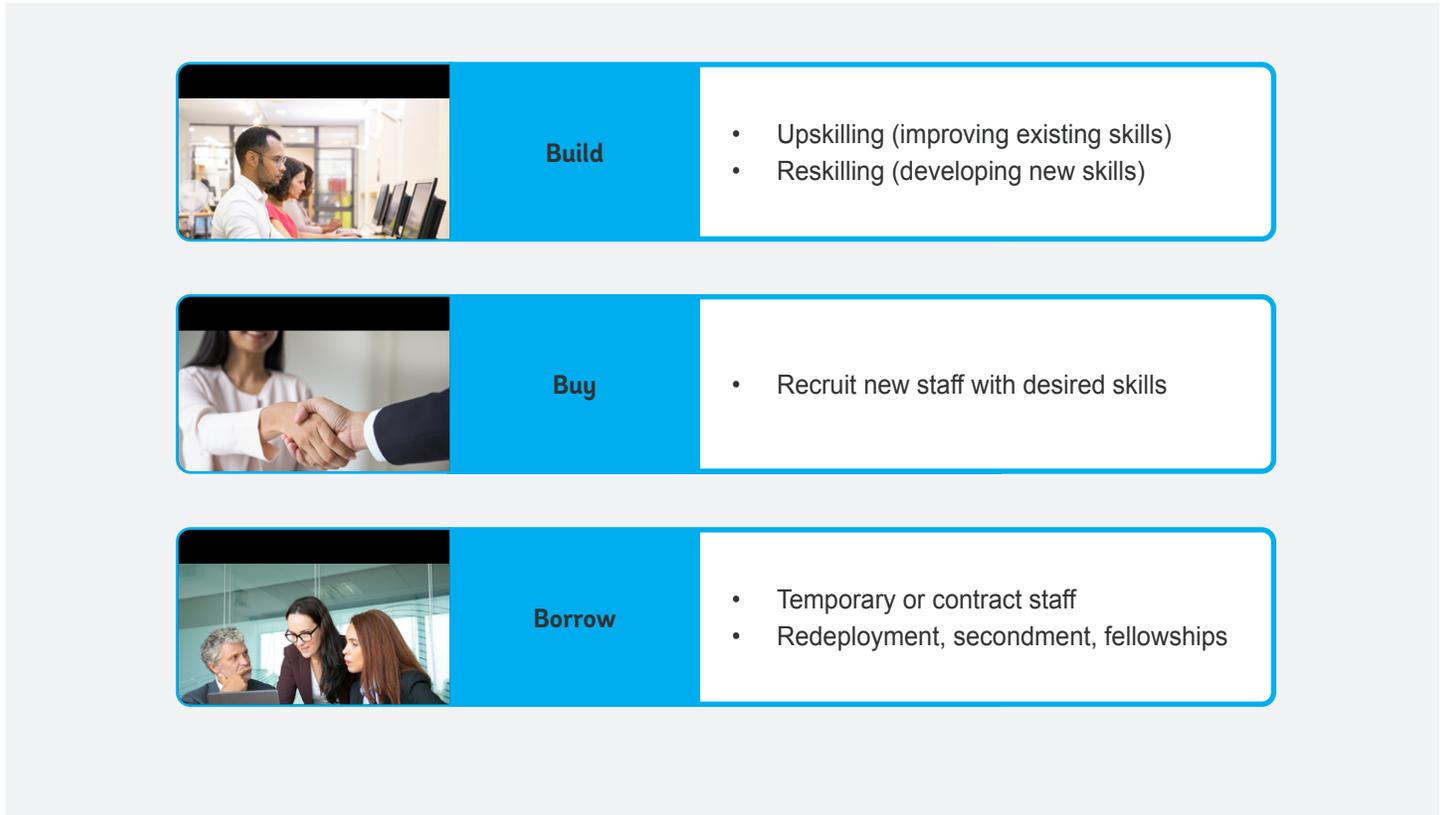
Armed with a list of digital skills gaps, including any priority gaps, organizations can then start to develop and implement strategies that will work to reduce these skills gaps. There are many different strategies that organizations could use to mitigate challenges and fill skills gaps, but implementing a single strategy is unlikely to provide the impact and effect that

33. ILO and OECD 2018, Approaches to anticipating skills for the future of work [wcms.646143.pdf](https://www.wcms.646143.pdf) (ilo.org).

will be required. We will focus on three core approaches:³⁴ *build* the skills within the organization through upskilling and reskilling of existing employees; *buy* the needed skills through recruiting new staff; *borrow* the skills by engaging temporary staff or contractors, utilizing secondment, or fellowship arrangements. See Figure 16 below.

> > >

FIGURE 16 - Core Approaches to Reduce Digital Skills Gaps in the Public Sector



Source: Authors, based on Ulrich (1998).

PRINCIPAL APPROACHES – BUILD, BUY, BORROW

There are three key approaches that can be used to narrow or close the digital skills gap – build, buy and borrow. Each approach has its own advantages and disadvantages (see Table 8), and it is important to understand these when deciding on which approach, or combination of approaches, could be used. Considerations such as how quickly skills need to be available, the time period that the skills are needed for, cost

and the maturity of existing HR systems will all need to be factored into the decision-making process.

A global survey of IT leaders in 2020³⁵ showed that there were a variety of approaches to handling skills gaps, with 56 percent intending to train existing staff, 17 percent hiring outside contractors, 16 percent hiring additional staff with the skills needed, and 10 percent having no plan to address the skills gap.

34. Ulrich, D. 1998. Intellectual Capital = Competency x Commitment, Sloan Management Review, Winter, 1998.

35. 2020 Global Knowledge IT Skills and Salary Report; accessed August 9, 2021. <https://go.globalknowledge.com/2020salaryreport>.

TABLE 8 - Approaches to Bridge the Digital Skills Gap - Advantages and Disadvantages

Strategy		Advantages	Disdvantages
Build	Upskilling Reskilling	<ul style="list-style-type: none"> • Positive impact on workforce. • Builds skills beyond employee’s immediate role (long-term value). • Longer-term less reliance on external sourcing and potential labor market risks. 	<ul style="list-style-type: none"> • Skill development can take time. • Existing training options are unlikely to be suitable – need to identify relevant and quality training options, likely external. • Requires continual investment to ensure longer-term retraining benefits.
Buy	Recruiting for new skills and hiring new staff.	<ul style="list-style-type: none"> • Skills can be available quickly. • Positive impact on workforce. • Builds skills beyond employee’s immediate role (long-term value). 	<ul style="list-style-type: none"> • Existing HR systems/practices may impact implementation. • More costly in the long-term with increased staff numbers. • May require future re-training and sustained investment.
Borrow	Temporary staff Contractors Redeploying existing staff Secondments, fellowships.	<ul style="list-style-type: none"> • Skills can be available quickly and on pace with new digital product/device advances. • Organization has systems/processes to action immediately. • May be cost-effective in short-term. 	<ul style="list-style-type: none"> • More costly in the long-term. • Does not build skills beyond the immediate needs (limited long-term value). • May not have positive impact on workforce.

Source: Authors.

Build

One of the most popular ways to reduce skills gaps is to provide training to existing staff. This could be either upskilling – improving or strengthening the existing skill set that an employee has; or re-skilling – providing employees with new or different skills to enable them to move into a different role or perform a different task. The “build” strategy offers an approach which can deliver long-term benefits, both for the staff as well as the organization. Developing or improving skills can help staff perform their current role more effectively or help them to progress to a higher-level or more complex role in the future. Offering staff opportunities to improve their skills through training and development can also have a positive impact on employee engagement.³⁶ There are also some challenges to adopting a “build” strategy for digital skills. Firstly, skill development can take time. Employees are unlikely to be immediately effective after completing training. This will also depend on the quality of training.

While we often default to thinking about training as formal courses or events that employees will attend, there are many different training modalities available. It is widely accepted in training and learning literature that informal learning has a critical role to play. The balance between different learning approaches is often referred to as 70-20-10 (see Figure 17 below). That is, that 70 percent of learning happens through on-the-job experiences (experiential learning), 20 percent from social interactions like team members or coaches/mentors (social learning), and 10 percent of learning happens through formal training events (formal learning). These percentages are not fixed but rather reflect the optimal way that individuals learn. Effective training interventions will ensure that each of these elements (formal, social, experiential) are incorporated as part of learning programs.

36. Chandani, A., Mehta, M., Mall, A., Khokhar, V. 2016. Employee Engagement: A Review Paper on Factors Affecting Employee Engagement, *Indian Journal of Science and Technology*, Vol. 9(15); Sattar, T, Ahmad, K, Hassan, S. 2015. Role of Human Resource Practice in Employee Performance and Job Satisfaction with Mediating Effect of Employee Engagement, *Pakistan Economic and Social Review*, Vol.53 (1).

Existing training options are unlikely to be suitable for all of the digital skills that are needed. Organizations will need to assess what training and development options they are best placed to deliver, and which skills or qualifications may need to be delivered by external training sources. The quality of these training sources is critical.

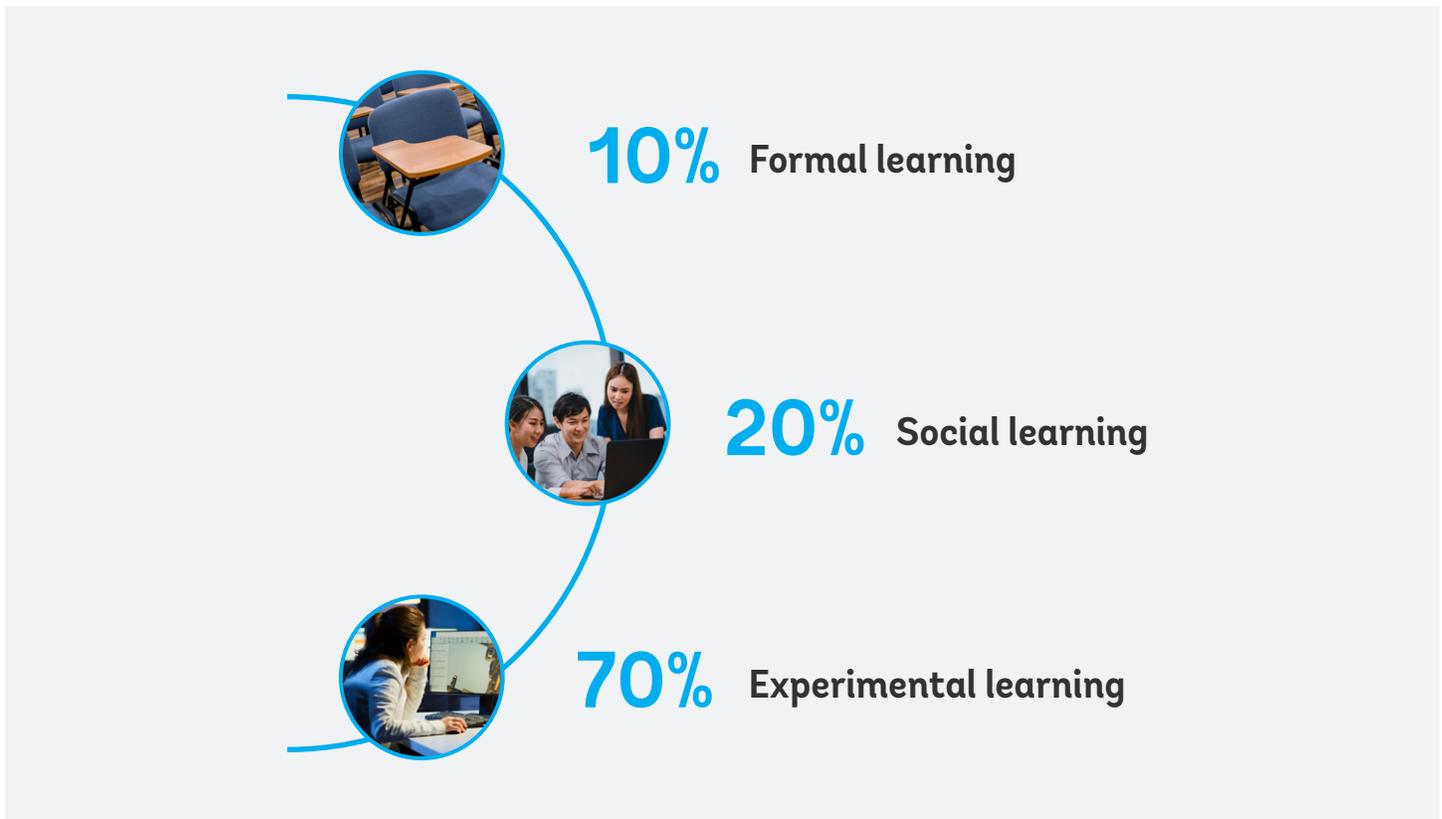
Sustaining and improving the competitiveness, effectiveness and efficiency of public sector employees in a fast-changing environment requires providing just-in-time education and training programs. However, specialized training in digital skills can be expensive. Maintaining a growing and dynamic public sector workforce requires investments that come from increasingly scarce resources. This is also true for the opportunities to acquire the required skills and knowledge to remain competitive and contribute to the country's digital transformation efforts. This presents the government with the challenge of striving to achieve the best return on investment for the creation and delivery of comprehensive workforce

education and training programs to meet their digital transformation aspirations.³⁷

There are often many items competing for governments' scarce resources. In that sense, budget allowances for training and certification are often relegated to a lower priority.³⁸ Most of the budget goes to investments in upgrading hardware and the implementation of new software. These investments come with the promises of more security and increased efficiency. However, new technology cannot exhibit its worth or its impact on efficiency and effectiveness without being backed by technologically capable and confident staff who have the necessary training and capacity building resources. The digital skills aspect is one of the "analog complements" necessary to maximize digital dividends. When technology is applied to transform tasks without working on improving these analog complements, technology applications can fail to bring the broad-based gain of making tasks cheaper and faster.

> > >

FIGURE 17 - Sources of Training - 70-20-10 Model



37. https://www.google.com/url?q=https://www.pdp.albany.edu/Media/PDF/CommuniquePDF/V28_PDP_Communique.pdf&sa=D&source=editors&ust=1627856583916000&usg=AOvVaw1-ZCFgRXNV9v-f6ECZwjY9.

38. <https://www.openaccessgovernment.org/digital-skills-remote-work-public-sector/116440/>.

Buy

The second approach to reducing a digital skills gap is to recruit and hire in new skills from outside the organization or “buy” the necessary digital skills. The extent to which this approach is relevant for public sector organizations will depend on the type of civil service that is in place. For countries which have a career civil service, recruitment of new civil servants will generally only occur at entry levels. Depending on the digital skills that are being recruited for, this approach may not be as impactful in the short or medium term as either build or borrow. Buying skills can also refer to longer-term changes to screening practices and requirements for civil service entrants. The most significant advantage of “buying” the necessary digital skills, is that the skills can be available relatively quickly, compared to building those same skills. Once the recruitment process has been completed and the new staff are in the workplace, the needed digital skills can be used. Effective recruitment processes will also contribute positively to employee engagement which can bring a positive impact on the workforce. As with the “build” strategy, recruiting for digital skills will bring long-term benefits to the organization by expanding and deepening the range of skills and qualification that are available within the organization and enabling the organization to perform a greater range of digital functions.

As previously noted, human resource process challenges may be especially burdensome to successfully implementing a “buy” strategy – the existing HR systems and practices may be outdated and insufficient, and it may be more costly in the longer-term, increased employee costs (wages, benefits, retirement obligations). There are multiple dimensions of HR system and practice that are important to ensure that public sector organizations can effectively recruit for digital skills. This starts with job or role descriptions which should clearly identify the digital skills that are needed as well as the critical tasks that are to be performed in that role. Adopting a contemporary and relevant job title can also help potential candidates easily understand the purpose of the role.

Many potential candidates are deterred from public sector roles due to experiences with recruitment processes. Even in high-income countries such as the US, recruitment processes may still be cumbersome which can deter younger applicants, in particular, who will not wait lengthy periods of time before receiving a response on a job.³⁹ For candidates with in-demand skills, such as digital skills, it is critical that public sector organizations work to streamline and optimize recruitment

processes. While the centrality of transparency and merit recruitment must be retained,⁴⁰ there are other aspects of public sector recruitment that can be improved, including advertising all vacant public sector roles via a government jobs portal or private sector jobs website as well as allowing online applications. See Box 8 below which describes the approach taken by the US Department of Homeland Security to the recruitment of cybersecurity specialists.

In order to recruit candidates with specific digital skills, it is critical that public sector organizations understand what digital professionals’ value and respond accordingly. Surveys and focus groups show worldwide consensus that highly skilled digital professionals tend to place factors beyond just compensation at the top of what they want from work; work-life balance, learning and entrepreneurial atmosphere, culture of innovation are often top of most lists (BCG 2019, CapGemini, HBR, Deloitte, The journey to government’s digital transformation). Issues such as flexible work options, collaborative work teams, and accessible management are in demand. While public sector organizations are limited in their ability to pay increased compensation for digital professionals, there are other aspects of employment where the public sector has an advantage. Digital transformation programs can have profound impacts on citizens and government performance. Highlighting the purpose of the role and the national interest of the digital transformation program is a unique benefit available only to public sector employees (WDR 2021, BCG 2019). The public sector should seek to brand itself as an employer through creation of a “value proposition for the next generation of talent.” This branding would make use of the fact that millennials and younger potential employees value opportunities and prospects that enable them to have a positive impact through their work. For example, public sector departments can attract younger talent by designing a workforce strategy that specifically communicates and highlights the impact that the work agency staff has on the different causes, including the lives of the citizens.

Targeting students and graduates with bespoke recruitment programs is also increasing in popularity. Such programs can offer benefits to students while they complete their studies together with guaranteed recruitment upon completion of their qualifications. Public sector organizations can benefit from developing a pipeline of entry-level digital specialists who are motivated and interested in public service employment. Australia has developed a Digital Cadetship Program⁴¹ for students looking for a digital or technical career in government.

39. <https://www.shrm.org/hr-today/news/all-things-work/pages/hiring-challenges-confront-public-sector-employers.aspx>.

40. This is often a legislative requirement for public sector recruitment.

41. <https://www.digitalprofession.gov.au/digital-cadetship-program>.

The program offers industry experience and part-time work during study, reimbursement of university fees, guaranteed employment upon completion and a mentor to help guide professional development. The United Kingdom offers an Apprenticeship program⁴² which combines work with study including the opportunity to work towards an industry professional qualification, undergraduate degree or postgraduate degree. The length of apprenticeships will vary depending on the qualification, but apprentices undertake paid work while studying. There is also the possibility to transition into a permanent role on completion of the apprenticeship.

> > >

BOX 8 - Challenges to Recruiting Cybersecurity Specialists at the US Department of Homeland Security

The Department of Homeland Security (DHS) faced significant and long-standing challenges to recruiting and retaining individuals with in-demand cybersecurity skills. As the scope of cybersecurity threats had grown over recent years, the agency had experienced a spike in attrition as well as longstanding cybersecurity vacancies. In 2014 Congress gave the agency the authority to design its own talent management system, – one that is exempt from many of the usual hiring, classification and compensation rules.

Under the new cyber talent management system (CTMS), DHS doesn't have to meet the usual job posting requirements and can strategically target new talent using, for example, social media. It can ask candidates to participate in simulations, tests and other interviews in order to demonstrate their expertise. CTMS compensation also works differently to the usual government rules. Salaries are benchmarked to the market and are subject to pay level caps as well as an aggregate CTMS compensation cap. There are no automatic salary increases and length of service is not a factor in CTMS compensation. Compensation increases and bonuses are based on work, or mission, impact and deeper levels of expertise in order to progress to higher career levels.

The new CTMS took nearly seven years to develop and went live in mid-November 2021 with an initial 150 target positions.

Sources: US Department of Homeland Security, Cybersecurity Service, <http://dhscs.usajobs.gov/Home> ; DHS wants to lead the way on civil service reform, Federal News Network, April 14, 2016. <https://federalnewsnetwork.com/management/2016/04/dhs-wants-lead-way-civil-service-reform/>; DHS details how it'll recruit, pay and promote new hires under cyber talent management system, August 26, 2021. <https://federalnewsnetwork.com/hiring-retention/2021/08/dhs-details-how-itll-recruit-pay-and-promote-new-hires-under-cyber-talent-management-system/>; Why the new DHS cyber talent management system was nearly 7 years in the making, November 30, 2021. <https://federalnewsnetwork.com/workforce/2021/11/why-the-new-dhs-cyber-talent-management-system-was-nearly-seven-years-in-the-making/>.

Borrow

Digital skills gaps can also be bridged by adopting temporary measures to obtain or borrow the needed digital skills. This can include directly engaging temporary staff or contracting a firm to provide the digital skills that are needed for a specified time. It can also include redeploying existing staff within the organization or seconding staff from other public sector organizations, who have the relevant skills, to higher priority roles or projects that need specific digital skills for a defined period of time. This approach can include implementing other specific, short-term employment arrangements such as “Digital Fellowships,” which can help to attract advanced skills through dedicated and expedited hiring arrangements. These could be particularly attractive to recent graduates or

new labor market entrants. For example, Singapore has the Smart Nation Fellowship Programme which offers three- to six-month fellowships for data scientists, engineers, software developers, technologists, designers, or applied researchers. Even if individuals cannot commit to the three to six months, the Government Technology Agency can offer part-time consultancies or even a role as a technical mentor to provide technical guidance to project teams.⁴³

The key advantage to the borrow approach is the speed at which the skills, which may not be available elsewhere, can be available. Subject to any specific recruitment (or procurement) requirements, bringing temporary or contract staff onboard can be very quick. Many public sector organizations will already have systems and processes in place to facilitate

42. <https://www.civil-service-careers.gov.uk/apprenticeships/>

43. <https://www.tech.gov.sg/careers/smart-nation-fellowship-programme/>.

temporary employment and contract arrangements which will not rely on complex HRM systems and practices. Over the short-term, “borrowing” digital skills may be cost-effective when compared to the costs involved in delayed projects or the unavailability of existing systems. It can also provide public sector organizations with access to in-demand skills that may not be otherwise possible through standardized recruitment processes. There is considerable flexibility with using temporary or contract staff, as organizations are able to adjust their staffing needs as workloads requires. However, over the long-term, this approach can be much more costly than recruiting permanent staff.

The main disadvantage of “borrowing” digital skills is that it does not contribute to building skills beyond the immediate needs. While temporary or contract workers may contribute to building some digital skills for existing staff, unless this is part of a structured and deliberate training and development strategy, this is likely to be ad hoc and may rely on the individual contractor as to its effectiveness. Temporary and contract workers are often paid on an hourly or daily basis and these costs are typically more than civil service wages. Contractors are not entitled to other employment benefits such as sick leave, annual leave, or retirement contributions. Entitlements for temporary workers will depend on country employment regulations. It is important to ensure that an inclusive approach is taken to any contingent staff to ensure that all staff are treated similarly when it comes to issues of organizational culture. If an inclusive approach is not taken, there is a significant risk that the separate groups of staff will not work cohesively together, which will impact teamwork and organizational performance.

There are additional risks associated with outsourcing arrangements for highly skilled digital talent.⁴⁴ Firstly, there are risks associated with the work that contractors may perform. Organizations will generally have less control over how the work is performed because often the reason to engage contractors is that the organization lacks the specialized skills to perform the work. There is also a risk that the contractor may not be sufficiently qualified, as their selection is often done by the contracting firm. This can lead to disputes over work quality. Secondly, there are risks associated with contract management and the relationship between the public sector organization and the contracting firm. The governance arrangements for contracts should be clear and both the public sector organization and contracting firm

should understand their obligations under the contract. Public sector organizations must ensure that the services delivered are those that are specified in the contract and not additional ones. Public sector organizations should also ensure that they understand any costs in the contract, particularly in the event that any changes to scope are required.

CHALLENGES

Attracting and retaining employees with in-demand knowledge and skills is a global challenge for private and public sector organizations, and this challenge seems particularly acute in relation to digital skills. In 2020, 78 percent of global IT decision-makers reported skill gaps and 45 percent of IT leaders reported talent attraction and retention as their biggest challenge.⁴⁵ Many of the digital skills that are needed in order to support GovTech are in short supply and have been the subject of considerable focus and work within the private sector and many high-income economies. While the research and evidence base for low- and middle-income countries is weaker, anecdotal and comparative experience signals these challenges are likely to be even more acute. The public sector may be an employer of choice in more traditional areas, such as public administration, but in many countries where competition from the private sector is strong, the public sector struggles to attract employees with specific technical skills.

Compensation

Compensation is a key factor because private sector competitors generally pay more than the public sector, and this tends to be especially true for jobs that require scarce skills such as digital skills. Beyond pay disparity, the civil service also competes with the private sector in terms of innovation, infrastructure, opportunities for career advancement, and social mobility. In Argentina, for example, the Secretariat of Modernization attributed high employee turnover within its digital and innovation agencies to the more alluring opportunities and salaries in the private sector as well as its more agile and innovation-driven mindset and culture (OECD Argentina).

There are a variety of different approaches to managing compensation for digital talent. In Australia⁴⁶ and Canada,⁴⁷ digital professionals are compensated using standardized public sector pay scales which are linked to job evaluation and job classification frameworks. The United Kingdom has

44. This is not an exhaustive discussion of the benefits and risks of outsourced arrangements.

45. 2020 Global Knowledge IT Skills and Salary Report, accessed August 9, 2021. <https://go.globalknowledge.com/2020salaryreport>.

46. <https://www.apsc.gov.au/remuneration-reports/australian-public-service-remuneration-report-2020>

47. <https://www.canada.ca/en/treasury-board-secretariat/topics/pay.html>.

adopted a digital data and technology pay approach.⁴⁸ The pay approach uses a capability/skill-based mechanism where staff are remunerated based on their capability, aligned to three levels – developing, proficient, and accomplished. The approach sets a maximum pay for each level of capability, with agencies free to make decisions for each staff member. The pay approach seeks to improve access to fair reward and is based on market benchmarking and demand across government. In addition, to support critical roles, there is also a separate pay framework which includes enhanced pay ranges and additional allowances. This pay framework is also closely aligned to capability and skills assessments. The Department of Homeland Security (DHS) in the United States has adopted a more market-based approach to employment and compensation for cybersecurity skills. Due to long-standing challenges recruiting staff with cybersecurity skills, the agency has given the agency the authority to design its own talent management system, including compensation rules.

Younger generations, such as millennials, can also be motivated by specific incentives (Zahree et al, 2018) which the public sector may not offer. Advanced economies, such as Australia and the United States of America, have developed specific programs to attract and retain digital skills. Bartlett (2020) describes how ICT experts in Australia are offered more structured careers in the federal public service, in order to retain and attract more skilled personnel. The United States Digital Corps⁴⁹ targets early career technology talent with skills in software engineering, data science and analytics, product management, design, or cybersecurity with a two-year fellowship program. The fellowship includes a dedicated learning and development curriculum and mentorship.

Surveys and focus groups show worldwide consensus that highly skilled digital professionals tend to place factors beyond compensation at the top of what they want from work; work-life balance, learning and entrepreneurial atmosphere, and culture of innovation are often top of most lists (BCG 2019, CapGemini, HBR, Deloitte, The journey to government's digital transformation). In addition, issues such as flexible work options, collaborative work teams, and accessible management are also in demand.

For example, the Government Digital Service (GDS) in the United Kingdom describes the following benefits to working for GDS:⁵⁰

- Wellbeing – activities to your mental and physical wellbeing, including yoga, meditation, circuits, knitting ... you name it. We want you to be able to be you
- Training budget – We have budget for you to be your best professional self, which you can use for training courses, books or conferences
- Community feel – There's a network waiting for you. Share an interest with others, you'll be supported and even encouraged to do so
- Civil service pension – This scheme has an average employer contribution of 27 percent
- In-year bonus scheme – To recognize when you've performed well in your roles and responsibilities year on year
- Flexible working – Hybrid working with opportunities to work flexible or compressed hours, part-time working and job sharing
- Parental leave – 12 weeks of full pay for maternity, paternity or adoption leave, to help you balance work with family life
- Supportive financing – for season ticket travel, eye-care, cycle-to-work and much more
- 25 days annual leave – plus an extra day off for the Queen's birthday.

Evidence of the competition between the public and private sectors can also be seen in the views of civil servants. Perception surveys of government workers in Indonesia and the Philippines show that many workers believe that the most competitive university graduates would rather work in the private sector, and that their co-workers, in the public sector, are often not productive (UN E-Government Survey). Most staff also hold that promotions happen on political bases rather than on merit (UN E-Government Survey, 2020). Anecdotal evidence suggests that these problems appear to be more severe in low-income countries (World Development Report, 2016).

However, issues of talent cannot be addressed in a vacuum. It is critical that public sector organizations develop strategies to attract and retain staff as well as consider the image and branding of the public sector as an employer (Weske et al, 2019; Keppeler, 2020). The public sector offers a unique opportunity for potential employees to contribute to projects and work that can make a difference to the lives of citizens. However, public sector organizations need to more clearly

48. UK Government Digital Service, Digital, Data and Technology (DDaT) Profession Starter pack, May 2020.

49. <https://digitalcorps.gsa.gov>.

50. Career at Government Digital Service, <https://gdscareers.gov.uk/>.

communicate this, together with the other benefits that public sector employment offers. This employee value proposition, or EVP, is one way that the public sector can compete more effectively with the private sector for digital talent.

Inadequate Downstream Digital Skills Education and Training Leads to Ill Prepared Workforce

The availability of digital-ready workers is a prominent issue, particularly for developing countries. Commonly, only a relatively small share of the population attends post-secondary education – whether technical and vocational education and training (TVET) or university – and the relevance or quality of learning is low even for those that do. Efforts to introduce even basic digital or computer content downstream at secondary or even primary levels are often stymied by poor infrastructure and lack of connectivity, inadequate or outdated curricula and materials, or ill-prepared teachers. Given that foundational learning – literacy, numeracy, science – is critically linked to computational thinking and digital skills learning, education is particularly important for the success of digital transformation efforts, and educational attainment is one of the strongest indicators of digital skill proficiency. Countries with larger segments of the population having access to higher education tend to have higher digital skill levels (ITU 2018).

It is estimated that only 50 percent of African countries have computer skills as a part of their curriculum and that only two percent of university students pursue a STEM degree. Equally crucial is the often-low quality qualifications of university faculties in the region as well as the lack of industry experience. Most universities are unable to keep up with the fast-changing environment of digital technologies and are still offering outdated courses in computer science, telecommunications, and information management systems. Specializations that are considered critical for a “broad and deep digital economy” such as cybersecurity, digital multimedia, and data analytics, are still missing (World Bank, Digital Skills: Frameworks and Programs 2020).

Poor Labor Market Information and Translation

There can be barriers to effectively using labor market information and data on skills for government policy purposes. Some of these are concerned with a lack of stakeholder involvement, the absence of consensus around skill needs, poor dissemination, and the scattered nature of the policy response (ILO/OECD). These challenges can be acute for digital skills labor markets where data is often limited or quickly outdated.

A digital talent study in Morocco⁵¹ highlighted that the digital skills gap is complicated by a “*fracture in levels of awareness between stakeholders.*” More than 85 percent of the Chief Human Resources Officers reported that the need for ICT talent will increase in the next five years. However, 38 percent of people already in the job market and 50 percent of students reported a negative outlook about the job market. Only three percent of respondents had a clear idea about the existing jobs in ICT.

In Argentina, in response to inaccurate data on public sector employment, the Secretariat of Public Employment (SEP) launched the Integrated Public Employment Database (Base Integrada de Empleo Público, BIEP) initiative in 2019. The goal of the BIEP is to aggregate and improve the quality of information and data sources on public sector employment to support decision-making. As a part of the project, software solutions were developed to facilitate the sharing of public sector employment information including with other human capital management systems.

Emigration and Demographics

Emigration poses another challenge for developing countries, as rising numbers of youth are searching for better education and employment opportunities abroad, with low rates of repatriation. This “brain drain” phenomenon is especially robust in ICT and among digital talent. There was a net outflow of at least 70,000 ICT workers from low- and middle-income countries to high-income countries from 2015 to 2019. This was due in large part to pay gaps, salary differentials of five to 10 times between data scientists in low- and high-income countries (WDR2021). In Africa, the brain drain challenge is further exacerbated by estimates that Sub-Saharan Africa alone will have around 230 million jobs that require digital skills (IFC, Sub-Saharan Africa Report).

Underdeveloped local digital infrastructure, limitations on the supply of training at the local level, and the availability (or lack) of suitable jobs when compared to wealthier nations, also contributes to the ICT-related migration. In 2018, ICT professionals accounted for 2.1 percent of total employment in high-income countries, versus 0.1 percent in low- income and middle low-income countries. (Choi et al, 2020).

Insights from Morocco show that more than 70 percent of students express their intent to leave Morocco in the short-to-medium term.⁵² They are mainly motivated by the lack of opportunity in the near-term, need to learn novel skills, and slow career progression. In 2017, 25 percent of the managers

51. https://www.huawei.com/minisite/future-talents/assets/files/dtr_v2eng_2020.pdf.

52. https://www.huawei.com/minisite/future-talents/assets/files/dtr_v2eng_2020.pdf.

in the ICT sector left Morocco for opportunities abroad. Similarly, in 2018 around 8,000 managers and technicians, 1,200 entrepreneurs, and 600 engineers left the country.

Progress Monitoring

The final step in digital workforce planning is to ensure that there is regular monitoring of the implementation of the digital skills action plan to ensure that it is meeting its objective of narrowing or closing the digital skills gaps. There is a range of data that can be used as part of any monitoring:

- HRM data such as:
 - Recruitment times (number of days from vacancy to advertising; advertising to shortlisting; shortlisting to longlisting; longlisting to interview; interview to appointment decision; appointment decision to commencement).
 - Length of time that critical digital positions are vacant.
 - Staff turnover rate, particularly for digital positions.
 - Performance appraisal results including identifying trends of skills for further development/training.
 - Staff profile information including age, gender, educational qualifications.
- Monitoring issues raised in staff grievances/complaints.
- Conducting exit interviews for staff who leave/resign from digital positions.
- Regular staff surveys.
- Results of training evaluations from staff and managers including specific questions on skill improvement and work performance.

A regular progress report, including a summary of key data, should be provided to senior leaders to ensure they are informed of achievements and challenges.

Emerging Lessons for Building Digital Skills in GovTech

In order to improve and strengthen the availability of digital skills for digital government transformation, there are four key areas that public sector organizations should focus on. Under each area we have identified a range of critical actions for public sector organizations. We understand that every government has a different level of GovTech maturity and not all actions will be relevant for the context in all countries.

Elevate the Importance of and Investment in Digital Skills

While digital skills have generally been recognized as critical to the overall success and sustainability of GovTech, more specific and actionable planning and investment is needed to make progress on capacity building and skill development. Digital skills should be a key and specific component of any digital infrastructure or systems development project to ensure that the digital skills required to effectively support and sustain the technology investment can be built and sustained during the project period. Finally, ensuring that a sufficient budget is available to support digital skill and capacity building is critical and demonstrates the importance of digital skills to public sector leaders.

The critical actions for public sector organizations are:

- Ensure that addressing the supply and demand of digital skills are included in any Digital Strategy that is developed including identifying any critical skills gaps and committing to reduce this gap through the development and implementation of a Digital Skills Strategy for the Civil Service.
- Develop a Civil Service Digital Skills Action Plan based on the results of a digital skills workforce planning exercise.
- Ensure a digital skill and capacity building component is included in any digital infrastructure or systems installation project.
- Allocate sufficient budget and include results indicators that are focused on digital skill building.
- Encourage the sharing of global best practices and resources across government including subnational.

Modernize HRM Policies and Practices

An effective and responsive HRM system is needed to underpin and support actions to build digital skills in the public sector. HRM policies and practices in attraction, retention, recruitment, job design, training, promotion, and compensation are all key components to ensure that the required digital skills are available within the organization. Public sector HRM is often governed by complex regulations and legislation designed to support underpinning principles of open and merit-based employment.

The critical actions for public sector organizations are to:

- Assess the maturity of existing HRM systems to highlight areas for strengthening including streamlining recruitment processes and assessing the flexibility of employment

modalities to contemplate multiple ways of engaging staff.

- Take action to streamline or reform any regulatory or legal barriers to support the adoption of more contemporary HRM practices.
- Identify which digital skills are needed and the proficiency level required in civil service roles (basic to advanced). Revise (or develop) competency frameworks to ensure that digital skills are incorporated for all civil service roles and revise job descriptions to include digital skills necessary for all roles.
- Develop talent strategies to support build, borrow, and buy approaches as part of a digital skills workforce planning exercise, for inclusion in a Digital Skills Strategy for Civil Service.
- Consider any incentives or special arrangements that might be necessary to ensure the effective recruitment and utilization of digital talent (specialized roles). This may include special measures such as establishing special pay scales, additional employment conditions beyond the usual civil service conditions, special digital career pathways and the use of a centralized digital unit to work across priority digital projects to maximize the use of scarce digital skills and improve technical opportunities for staff.

Incentivize Quality and Sustainable Learning, Training and Development

Improving learning and development opportunities for staff is not only a key staff retention strategy but can also help public sector organizations to respond more quickly to changing skills demands. Strengthening the quality of learning and development options will ensure better quality training and development outcomes for staff as well as being able to more effectively evaluate the impact of training investment.

The critical actions for public sector organizations are to:

- Encourage managers and staff to adopt a lifelong learning approach which recognizes the need for ongoing, voluntary and self-motivated learning. In the workplace, this should include continuous training on digital skills along with professional, management & leadership skills.
- Identify priorities for digital skill learning and development based on individual and organizational needs and risk to the achievement of GovTech priorities. These priorities should also be linked to individual performance development plans and the Digital Skills Strategy for the Civil Service.
- Strengthen the quality of learning and development options, including revising learning content to ensure

it is contemporary and incorporates digital elements (both in delivery modality as well as content); implement continuous professional development for instructors to ensure that training participants receive high-quality training experiences and review training institutions to ensure they are organized and resourced appropriately.

- Consider adopting a learning and development approach with a greater emphasis on on-the-job experiences (experiential learning) and utilize multiple options to make training available to staff including online and face-to-face as well as full-time and part-time options.
- Implement continuous monitoring and evaluation of training impact including assessment of short and medium-term training effectiveness, integrating multiple feedback loops and instituting longer-term impact evaluation of training programs.

Support Continued Research and Data on the Digital Labor Market and Skills for Public Administration

Quality and relevant data is important to support effective monitoring of digital skills initiatives. Better quality public sector workforce data will enable organizations to better understand the profile and dimensions of the workforce including existing digital talent. Additional data to help inform the effectiveness of current strategies can be gathered through surveys of existing and potential staff.

The critical actions for public sector organizations are to:

- Strengthen the collection and analysis of workforce data, including learning and development, skills/qualifications, and training priorities.
- Gather and analyze the views of the existing workforce on digital skills, learning and development, and career options for digital roles. This data should also be broken down by age and gender dimensions.
- Specifically focus on analyzing the profile of existing digital talent (specialized roles) including staff views on career options, retention, and learning and development. This should include age and gender dimensions.
- Survey a broader range of potential civil service staff including unsuccessful applicants, digital skills students, returning expats, and other groups who may be potential digital talent to gather data on what are they looking for in employment and whether they would or would not work in the public sector.
- Encourage public sector organizations to gather better data on digital labor markets through instruments such as labor force surveys and business surveys.

Annex 2.1: Summary Table on Country Examples

Issue	Country example	More information
Build	United Kingdom (Government Digital Service careers) Australia (Digital Profession training) Canada (Canadian Digital Service)	https://gdscareers.gov.uk/ https://www.digitalprofession.gov.au/digital-profession-training https://digital.canada.ca/careers/
Borrow	Singapore (Smart Nation Fellowship Programme)	https://www.tech.gov.sg/careers/smart-nation-fellowship-programme/
Buy	United States (Department of Homeland Security) United States (United States Digital Corp)	https://dhscs.usajobs.gov/Home https://digitalcorps.gsa.gov/
HR reforms	Philippines (Civil Service Commission, PRIME-HRM program)	http://www.csc.gov.ph/2014-02-21-08-16-56/2014-02-21-08-17-24/2014-02-28-06-36-08.html
Digital skills/ competency frameworks	European Digital Competence Framework (DigComp) Skills Framework for the Information Age (SFIA) United Kingdom (Digital, Data and Technology Profession Capability Framework) Australia (Digital Professional Stream)	https://publications.jrc.ec.europa.eu/repository/bitstream/JRC106281/web-digcomp2.1pdf_(online).pdf www.sfia-online.org/en https://www.gov.uk/government/collections/digital-data-and-technology-profession-capability-framework https://digitalprofession.gov.au/

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Leadership and Culture for Innovation

Zahid Hasnain, Wouter Van Acker, Galileu Kim

Introduction

How can managers and staff in the public sector initiate and sustain public sector technological innovation? What aids organizations, departments, and units to adopt new technology? What lessons can be learned from the experiences of governments that both succeeded—and failed—in promoting digital innovation in the public sector? This chapter aims to provide a conceptual framework and empirical evidence on the role of organizational leadership and organizational culture in driving the adoption and sustained implementation of technological innovation in government, and to identify priority reforms that can incentivize and capacitate public organizations to innovate and achieve digital dividends—as much of the private sector is doing. The focus of this chapter is leadership and culture within organizations to complement the inter-organizational and whole-of-government factors that were detailed in Chapter 1.

The chapter is organized as follows. The first section presents the conceptual framework, discussing issues of definition, scope, and analog complements to public sector innovation and technology, drawing on the large academic and policy literature on leadership and culture, and their role in fostering innovation in the public sector. The next two sections present empirical evidence on the importance of these analog complements, drawing on surveys conducted by the World Bank's Bureaucracy Lab and case studies of select World Bank digital technology projects. The final section concludes with policy recommendations.

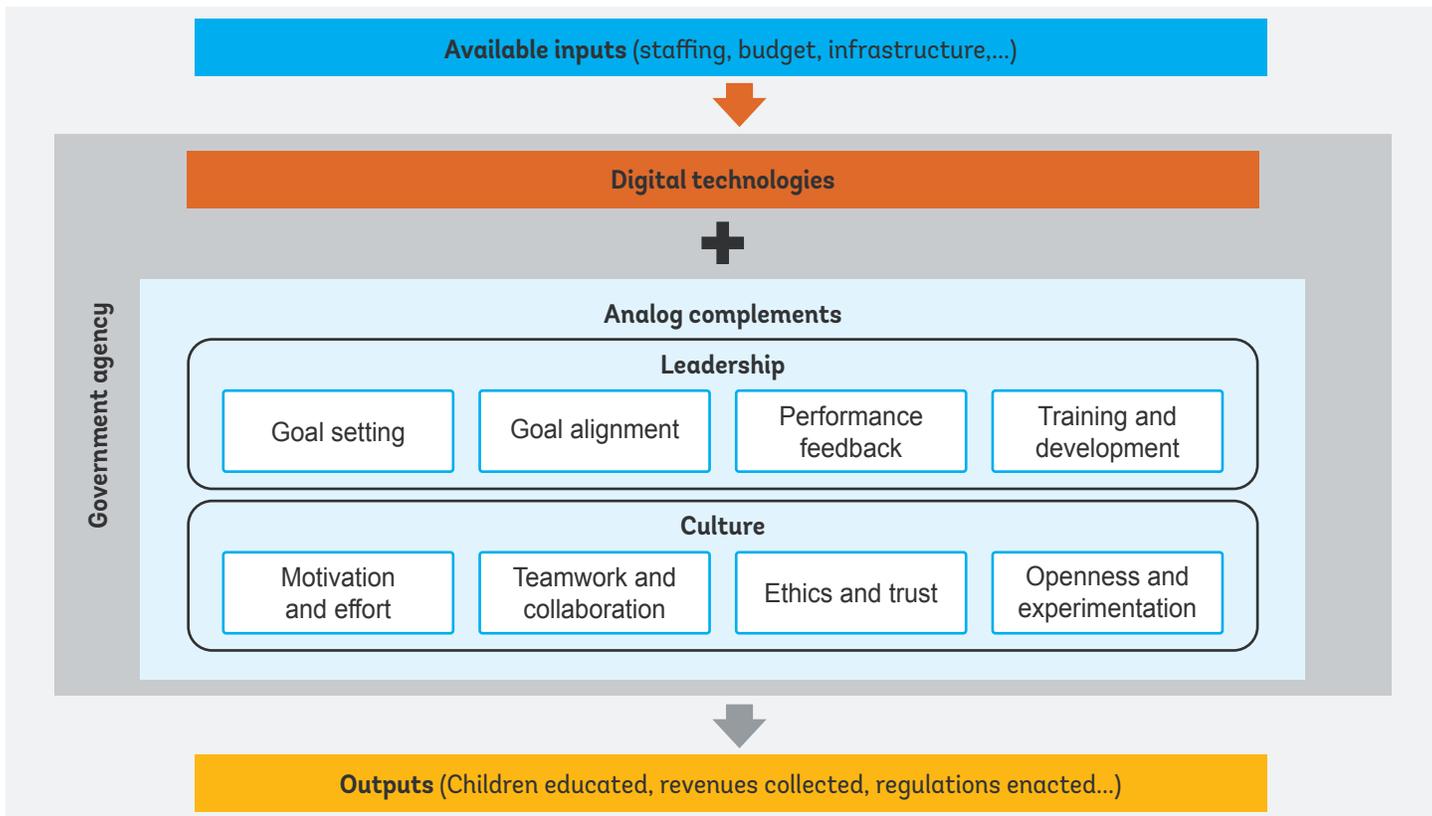
Conceptual Framework

This chapter uses the framework of a government agency production function for conceptualizing the analog and digital drivers of innovation (Figure 18). A production function is the process by which “inputs,” or the human and financial resources available to a public sector organization, are converted to “outputs” that citizens and businesses care about. These public sector outputs can be for example, the number of children educated, kilometers of roads built, the amount of revenues collected, or the type of regulations enacted. These outputs will, in turn, influence the long-term outcomes in education, health, and infrastructure. Innovation is defined as the use of new digital technologies with the aim of improving these outputs of government agencies. Innovative agencies are not only those with enough inputs but, more importantly, those that are efficient in converting these inputs into outputs through effective utilization of digital technologies. While bureaucracies do not operate in a vacuum and may be subject to external influence from political officials, this chapter will examine the internal factors of government agencies only. The focus of this chapter is therefore on the analog

complements box in Figure 16 below, specifically the two interrelated and complementary concepts of “leadership” and “culture,” which have been emphasized in a growing body of literature as driving technological innovation in the public sector (Van Wart 2003, De Vries, Beckers and Tummers 2015). Managers affect staff through their human resource practices such as performance evaluation and training, in addition to determining the organizational practices that structure the day-to-day work, like setting organizational goals, aligning staff to those goals, and regularly monitoring their achievement. Also, they have at least a partial impact on the culture of the department, unit, or team that they lead. Staff, on the other hand, implement the tasks and have significant discretion over how to do so (Lipsky, 1980). This means that, even given the instructions received from their managers, parameters set by regulatory frameworks and the culture in which they find themselves, they still have a large degree of freedom to choose if, or how, to act. It is through these mechanisms that we determine that management/leadership and culture are relevant for the adoption, fostering and sustainability of technological innovations, and that both managers and civil servants play an important role in this.

> > >

FIGURE 18 - Conceptual Framework



Source: Authors.

Leadership

The academic literature on innovation in public and private sector organizations has emphasized the role of leadership in innovation (Orazi, Turri and Valotti 2013; Drucker 1994). Transformational leaders understand that technological innovation requires changes in the implementation of existing tasks and play a proactive role in ensuring that organizations adjust their ways of doing things to the requirements of the new technology (Ebrahim and Irani 2005). Additionally, effective managers employ a dynamic mindset in innovation, identifying windows of opportunity for innovation where the likelihood of success is high (Teece, Pisano and Shuen 1997).

The attributes of leadership that the literature identifies as important for innovation are:

- Mission orientation and goal setting, or identifying organizational results that managers and staff will prioritize and will be held accountable for, and regularly monitoring the accomplishment of these goals.
- Aligning staff to these goals so that they have clear line of sight on how their individual tasks contribute to the goals of the organization.
- Providing regular feedback to staff, both formal and informal.
- Training staff so that they have the capacity to deliver on these goals.

While the first two aspects of this definition relate to the key concept of a mission- and results-oriented leadership, the remaining two concepts relate to how leaders facilitate dialogue within the organization and with staff and support them in achieving their individual results. Ultimately, effective leadership is a relationship between managers and staff, requiring a dialogue between management and those responsible for implementing and adopting these technological innovations. In the public sector, that requires that leadership engages with the civil servants responsible for implementing the task, ensuring that they have the resources required (time, budget, technology, skills, etc.) to adopt the new technology. Innovative organizations are constantly raising their ambitions and collectively monitoring the achievement of their ambitions. A study of non-governmental organizations in low-income countries revealed that the innovative ones, such as BRAC, were upping their targets in their program areas, in consultation with their community beneficiaries, but were also regularly critically reviewing their progress in achieving their goals through internal research (Seelos and Mair, 2017). The leadership in these organizations encouraged

staff to understand their “impact-creation” logics to embed how innovation can make the organization more effective in delivering its core mandate and affect the lives of the communities it served.

Culture

Civil servants play a crucial role in promoting innovation in the public sector. In contrast to managerial approaches to innovation, civil servant-led innovation depends on mechanisms such as organizational practices that can create the necessary environment (or climate) for this type of bottom-up innovation. “Innovation climate” describes the “employees’ perception of the degree to which an organization supports and encourages its staff to take the initiative to explore creative ideas that foster innovation within the organization.” (Chan, Liu, & Fellows, 2014).

Innovation climate is often cited as a predictor or enabler of innovative work behavior. The most often used definition of this behavior comes from Janssen (2000): “the behavior of an individual that is intended to intentionally create, introduce, and apply new ideas, processes, or products.” The employee-driven innovation process consists of three separate stages: idea generation, idea promotion or championing, and idea implementation (Reuvers et al., 2008).

By shaping organizational practices, managers can generate organizational environments that encourage teamwork and collaboration, which in turn increase the likelihood of civil servants to both accept and propose innovative ways of accomplishing tasks. This is how leadership and culture shape the possibilities for successful technological innovation at the level of the individual civil servant. Laursen and Foss (2003) highlight how organizations in which there is a greater degree of autonomy and knowledge sharing among individuals, employees feel empowered to propose new forms of technological innovation. These human resource management (HRM) techniques can create an environment that invests in employees, as they make better use of their existing skills and apply them in the work environment (OECD 2017).

Having an environment that facilitates this form of idea experimentation and collaboration, enabling learning through trial and error, can promote this route to innovation (Parna and Von Tunzelmann 2007). As noted in chapter two of this report, the recruitment and training of staff with the necessary skills for digital technologies can increase the likelihood of innovation.

Additionally, studies have pointed out that collaborative environments can foster innovation, by promoting collective gains in learning and adoption of technologies (Bland et al. 2010).

The above shows how an organizational culture can impact the success and sustainability of technological innovations. This means that for World Bank GovTech projects to be successful, culture should also be considered, and investments made to develop and sustain a more innovative culture. Task teams may ask, how open is an organization to new ideas and ways of doing things? Will mistakes be penalized, or used as learning opportunities?

How Leadership and Culture Impact Successful Technology Adoptions

There exists a significant body of research on the issue of technology adoption. This issue relates not only to why organizations adopt technology, but what it takes for individuals to actually adopt and use it in their day-to-day activities, and what prevents them from doing so. Studies on individual-level innovation have primarily adapted insights from UTAUT (Universal Theory of Acceptance and Use of Technology) outlined by Venkatesh, Morris, Davis and Davis (2003), which breaks down the choice to accept and use technology into a set of four factors:

- Performance expectancy or perceived utility: degree to which using the technology provides benefits.
- Cost expectancy: how difficult will it be to use the technology?
- Social influence: do other people expect them to use the technology?
- Facilitating conditions: does the user believe there will be resources available to deploy the technology.

In their systematic analysis of over a hundred studies, Gagnon and his colleagues (2010) found that the “perceived usefulness” of the innovative technology is the biggest factor among healthcare workers determining adoption and usage. De Vries and her colleagues (2018) found the same result for public sector innovation acceptance. Perceived usefulness from the side of the user (more specifically: individual civil servants) can largely be attributed to communication. In more plain terms: was the sales pitch done well? This shows an important role

for management and leadership, in terms of communication and convincing their employees, in the most important factor explaining technology adoption. In a similar vein, Dasgupta and Gupta (2019), found that Indian civil servants are more likely to use new technology if the organizational goals and objectives are clearly linked to the new technology.

The previous chapter described in detail how important skills are for the successful implementation of GovTech projects. Cost expectancy is a concept as more and better training and skills imply lower costs and higher chances of adoption and usage. De Vries et al. (2018) find that ‘supportive leadership’ is strongly correlated to the adoption of innovations. Such leadership includes listening to the needs of employees, and thus relate to skill improvement if found to be necessary. It takes the right kind of managers and management to deliver the right support for staff, thereby sharply increasing the likelihood of technology adoption and usage after implementation.

In the previously mentioned analysis of over a hundred technology adoption studies, Gagnon et al. (2010) identify both culture and management as important factors determining technology usage, besides perceived usefulness. The two issues are further linked, as was found in research by Melitski et al. (2010), who find that not just culture, but “a culture creating a perception of supervisory support” is related to individual willingness to adopt technology. Dasgupta and Gupta (2019), furthermore stated that individual civil servants who work within an organizational culture they characterize as one of “adaptability,” are more likely to use new technology. “[O]rganizational culture and all its constituent traits need to be managed carefully to enable successful acceptance of information technology.” Wang and Feeney (2016), and De Vries et al. (2018) also established that the organizational culture surrounding risk is also pertinent in predicting technology adoption. More specifically, the higher an organization’s risk averseness, the less adoption of technological innovations.

Empirical Evidence: Findings from Bureaucracy Lab Surveys

Surveys of private sector firms reveal the importance of management and organizational culture in the effective use of technology and data on the job. The OECD’s Survey of Adult Skills (PIAAC)¹ conducted in 40 countries, measures workers’ proficiencies in information processing skills, including the use

1. PIAAC – The Programme for the International Assessment of Adult Competencies is a program of assessment and analysis of adult skills. The major survey conducted as part of PIAAC is the Survey of Adult Skills. The Survey measures adults’ proficiency in key information-processing skills - literacy, numeracy and problem solving - and gathers information and data on how adults use their skills at home, at work and in the wider community. See <https://www.oecd.org/skills/piaac/>.

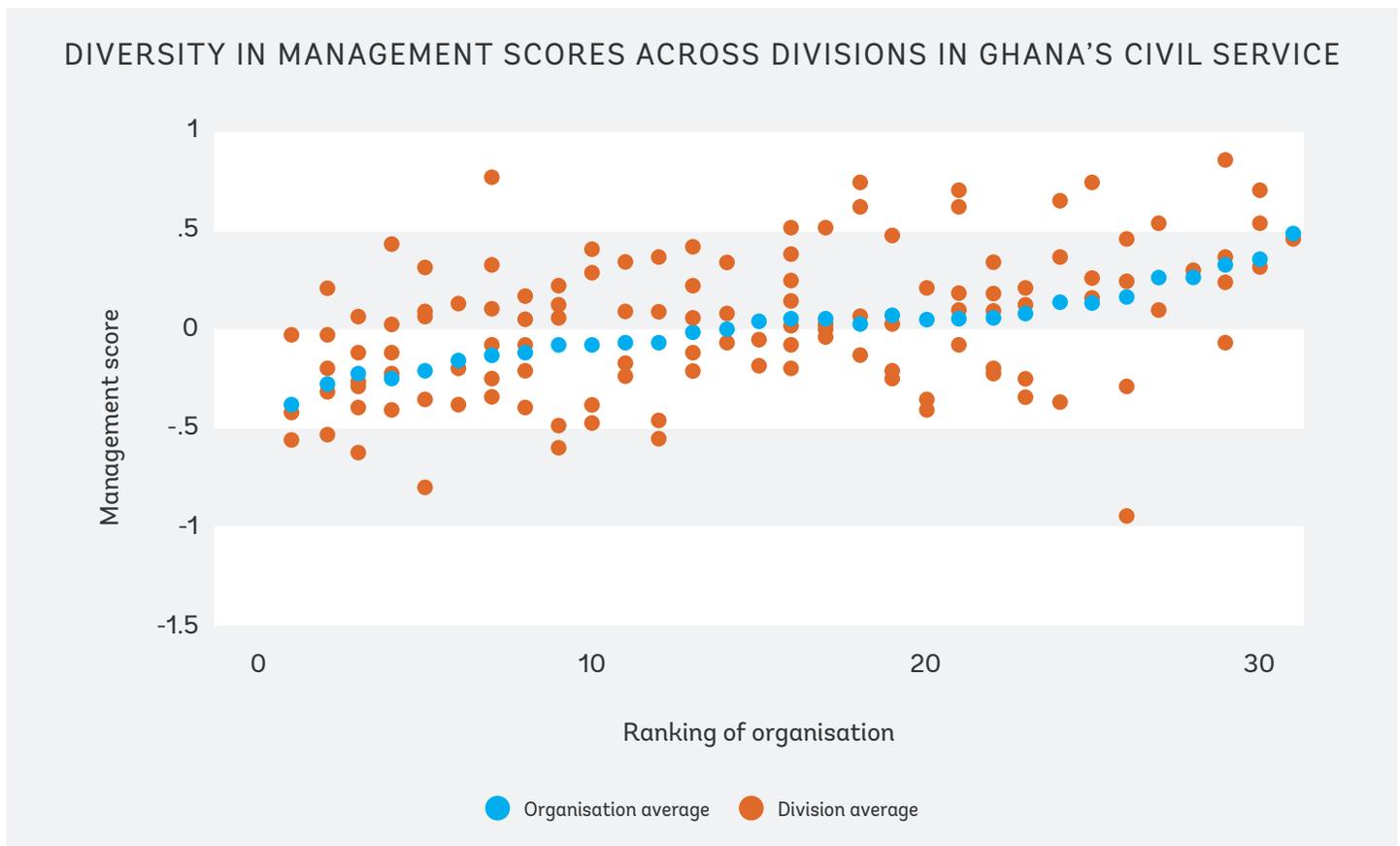
of digital technologies on the job. The survey found that “High Performing Work Practices,” defined as including aspects of organizational culture, such as teamwork, job rotation, applying new learning, and mentoring; and the quality of management, such as performance incentives, work flexibility, and training practices; were more important than individual competencies in driving the use of digital technologies in daily work (OECD, 2016). Another large survey of firms found complementarities between the use of management information systems, performance pay, and human resource data analytics; the adoption of human resource management software was highest in firms that have also adopted performance pay and HR analytics practices (Aral et al., 2012).

The World Bank’s Bureaucracy Lab surveys reveal that the quality of management varies considerably across public sector organizations within countries. The surveys measure

a variety of management aspects, including goal setting and how these are communicated to staff; the extent of monitoring of the achievement of these goals; how managers distribute tasks across employees, involve staff in problem solving, and give staff the autonomy to carry out their tasks; and the regularity and robustness of performance evaluations. In the surveyed countries, these questions on management practices were aggregated into an overall “management quality” index. In Ethiopia, Ghana, and Nigeria, for example, the index varied considerably across departments, ministries, and local administrations (See Figure 19 for Ghana). This dispersion in management quality implies that the experience of being a civil servant, despite a common regulatory framework, is highly dependent on the organization that the individual is employed in and underlines the importance of local context on government capability.

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FIGURE 19 - The Quality of Management Varies Considerably across Government Organizations within Countries



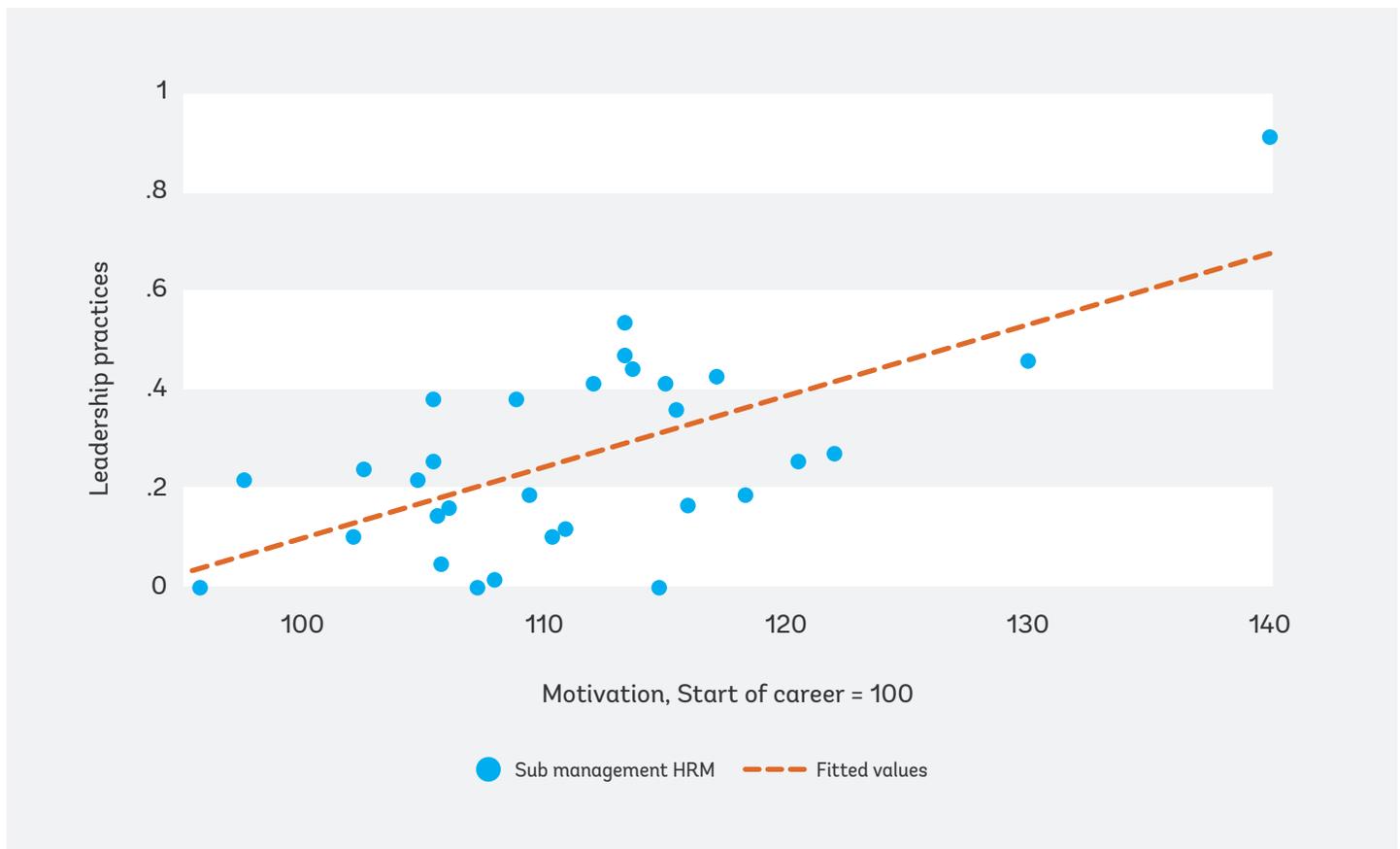
Source: Rasul, Rogger, and Williams (2017).

Another robust finding is that the quality of management is correlated with employee motivation. One study, based on a survey of 23,000 civil servants across countries in Africa, Asia, Europe, and Latin America, found that higher levels of self-reported performance orientation in public administration (civil servants reporting that performance mattered for promotion and rewards) were correlated with higher levels of self-reported satisfaction and work motivation (Meyer-Sahling et al. 2018). A Bureaucracy Lab survey of public servants in Liberia revealed that staff who reported having managers that regularly evaluated their performance were more motivated and satisfied than staff whose managers

did not evaluate performance (World Bank, 2020). Another survey of civil servants in Romania similarly revealed that alignment between individual and organizational objectives and regular performance feedback from managers was correlated with employee motivation. Respondents who rated their organization as scoring highly on various dimensions of leadership – for example, clarity of organizational objectives and targets, making employees feel proud of their organization, supporting career development, and regularity of performance conversations – were also more likely to self-report higher levels of motivation (Figure 20).

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FIGURE 20 - Correlation between Leadership Quality and Staff Motivation



Source: World Bank Bureaucracy Lab Survey of Romania public administration employees.

The survey in Romania also revealed that key elements of organizational culture such as teamwork and trust were correlated with employee motivation. The survey explored work environment and inter-personal relationships through a variety of statements which asked about communication and cooperation within the team, being able to rely on team members in difficult situations, being valued for one’s own work, and the encouragement of innovation. An index of team experience was created from these questions, and this index correlates positively with motivation, job satisfaction, and job engagement, and negatively with a desire to leave the public administration. Respondents were also asked the extent to which they trusted employees within their institution and there was a strong positive relationship between an organization’s levels of trust and employee motivation.

Findings from Kosovo and Argentina GovTech Surveys

These two surveys asked managers and staff a limited number of questions on the quality of management, and several questions to assess openness and changes in work practices, and determinants of the adoption of digital technologies in the workplace. The importance of these analog complements, and of skills, was underlined by responses to a question on listing the main constraints to implementing new digital practices (Figure 21). Most respondents in both countries point to a lack of training in the new practices as the biggest constraint to digital technology adoption (44.7 percent in Kosovo, 55.4

percent in Argentina), and they perceived new practices as not being implemented uniformly or fairly in similar proportions across countries (25.4 percent in Kosovo and 29 percent in Argentina). Respondents in Argentina and Kosovo differ in their assessment on whether staff or managers are more resistant to change. While in Kosovo, respondents consider managers more resistant to change (18.1 percent) than staff (14.2 percent), in Argentina, respondents consider that staff resist change (35 percent) more than their management counterparts (18.1 percent). These findings suggest that in different contexts, different types of civil servants may provide more resistance to change and innovation.

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FIGURE 21 - Main Constraints to Implementation of New Digital Practices (Argentina and Kosovo)

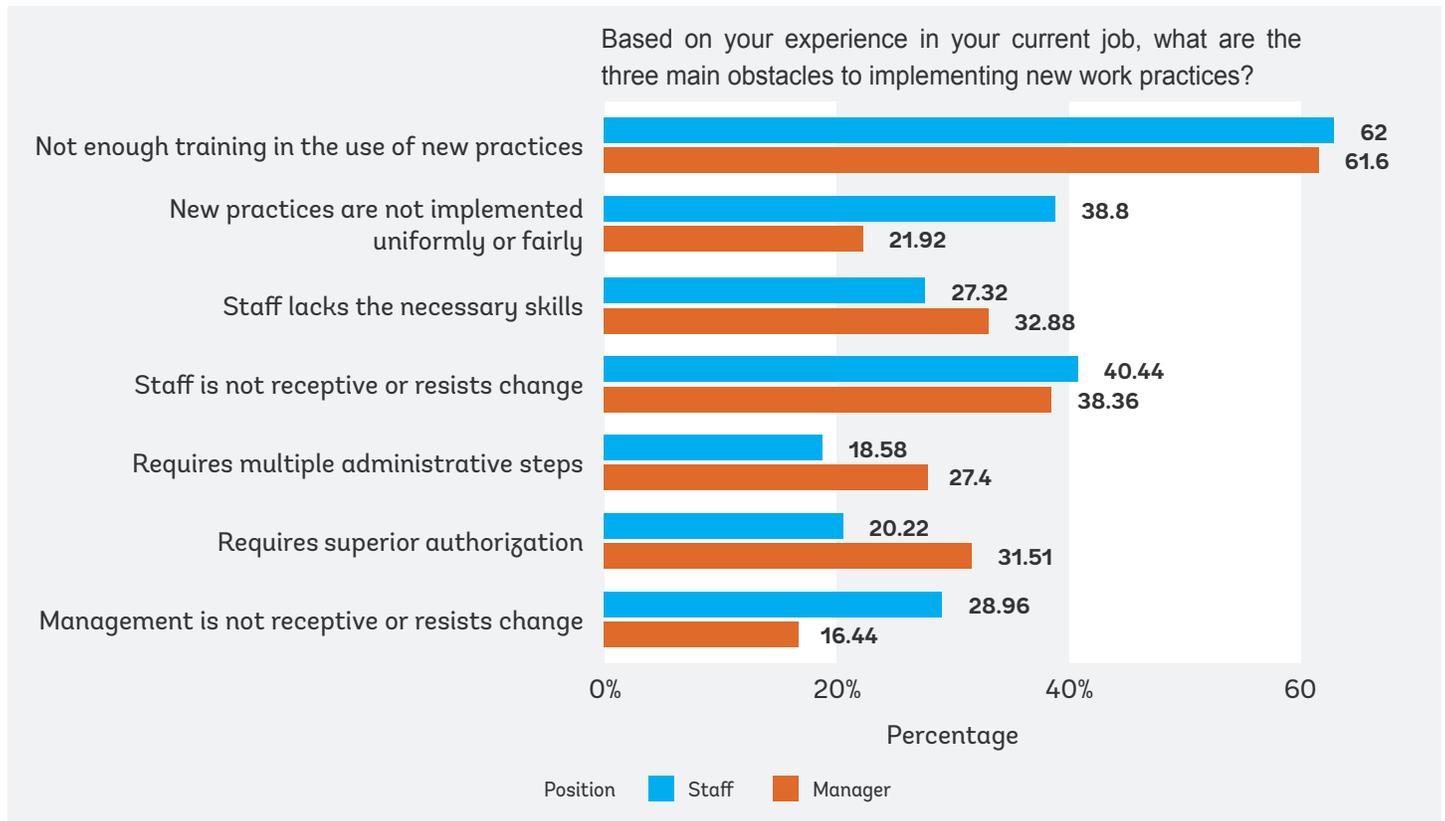


Source: World Bank Bureaucracy Lab GovTech surveys (Argentina and Kosovo).

Focusing on the different perceptions of management and staff, the survey findings show that the perceptions do not differ significantly, except with respect to fairness in the implementation of new practices and perceptions on management's receptiveness to change. For both Kosovo and Argentina, staff find that management is less receptive to change (23.9 percent in Kosovo and 29 percent in Argentina) as compared to managers views of themselves (18.8 percent and 16.4 percent, respectively), a difference that is not found with respect to staff's receptiveness to change. Additionally, managers in both countries (32.7 percent in Kosovo and 31.5 percent in Argentina) report greater levels of difficulty with respect to superior authorization and administrative steps, suggesting that management has greater difficulty with permissions to innovate than their staff counterparts. (see Figures 22 and 23 below).

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FIGURE 22 - Perceptions of Management and Staff on Constraints - Argentina



Source: World Bank Bureaucracy Lab Argentina GovTech survey.

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FIGURE 23 - Perceptions of Management and Staff on Constraints - Kosovo



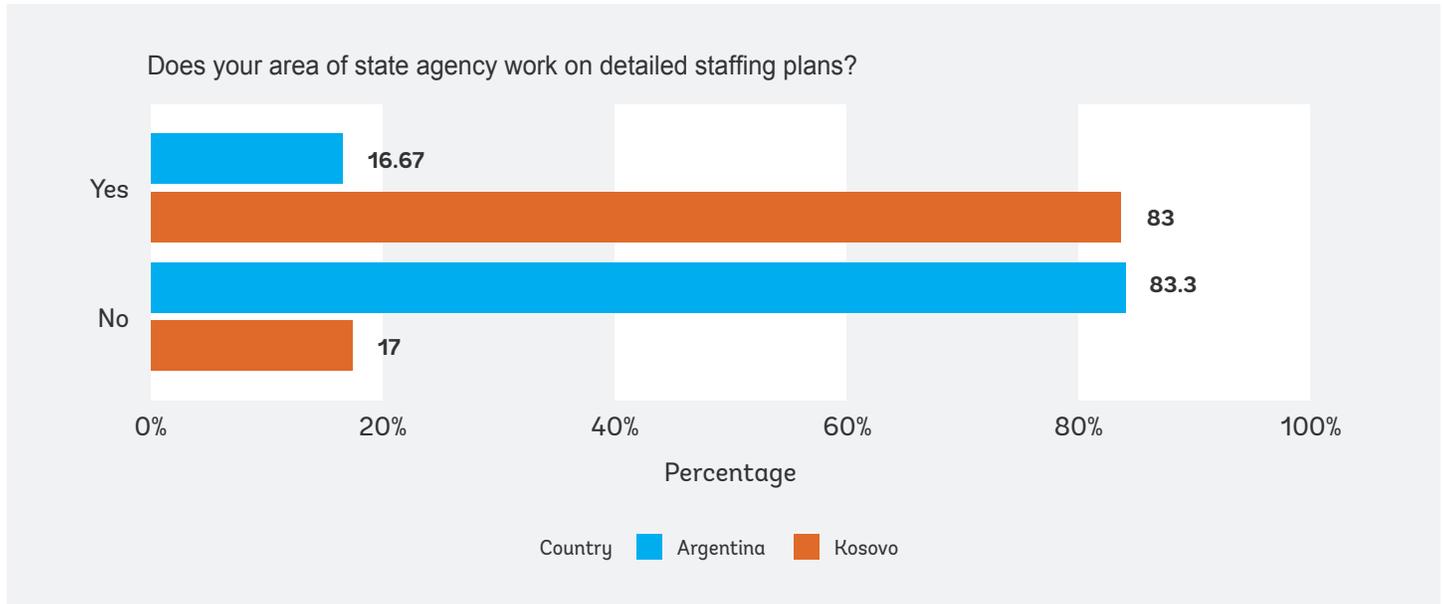
Source: World Bank Bureaucracy Lab Kosovo GovTech survey.

Difficulties in attracting digital talent, and lack of training opportunities have been identified as major bottlenecks to GovTech implementation, as detailed in Chapter Two. Respondents were also critical of the quality of human resource planning around these skills. In Kosovo, while staffing plans are widely believed to be available in their institutions (83 percent yes, see Figure 24), only 55.4 percent of managers believe that their institution gathers information

on staff skills (Figure 25). In Argentina, respondents had a more negative assessment, with only 16.7 percent stating that their institutions have detailed staffing plans and 29.33 percent of saying that their organization gathers information on staff skills. These findings point to major deficiencies in a critical aspect of leadership regarding staff skills, with clear implications for GovTech implementation.

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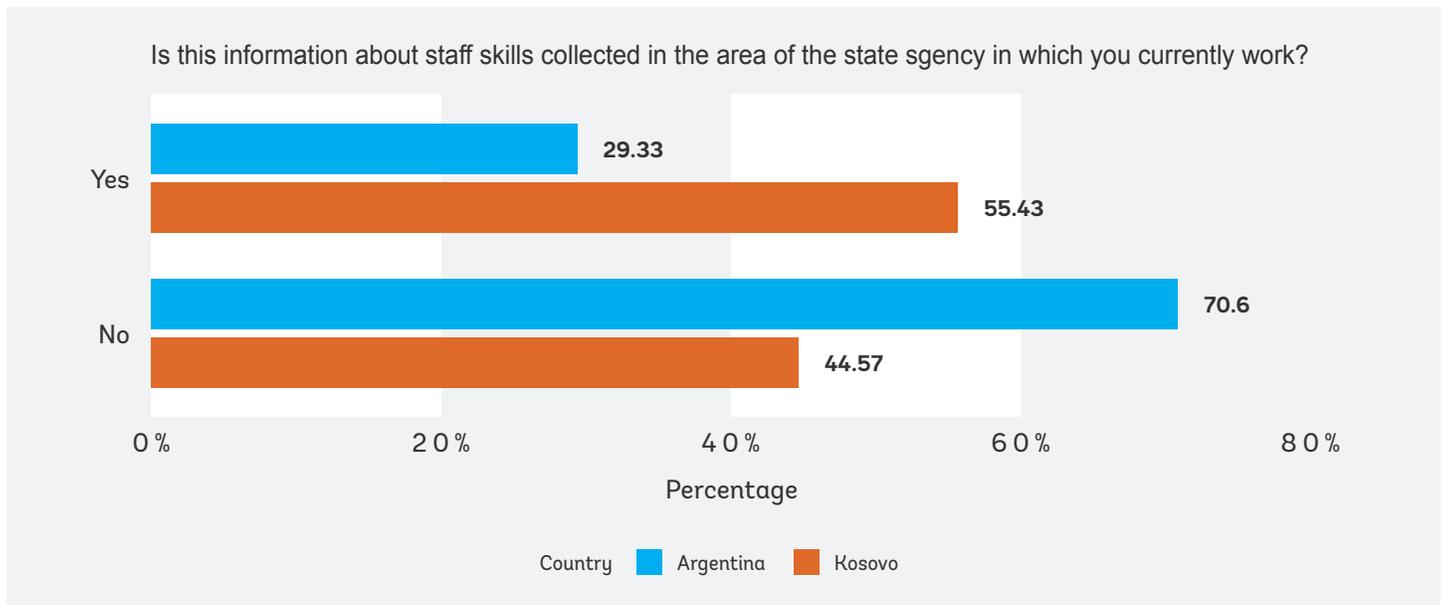
FIGURE 24 - Managers' Views on Information Gathering on Staffing Plans (Kosovo and Argentina)



Source: World Bank Bureaucracy Lab GovTech surveys (Argentina and Kosovo).

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FIGURE 25 - Managers' Views on Information Gathering on Staff Skills (Kosovo and Argentina)

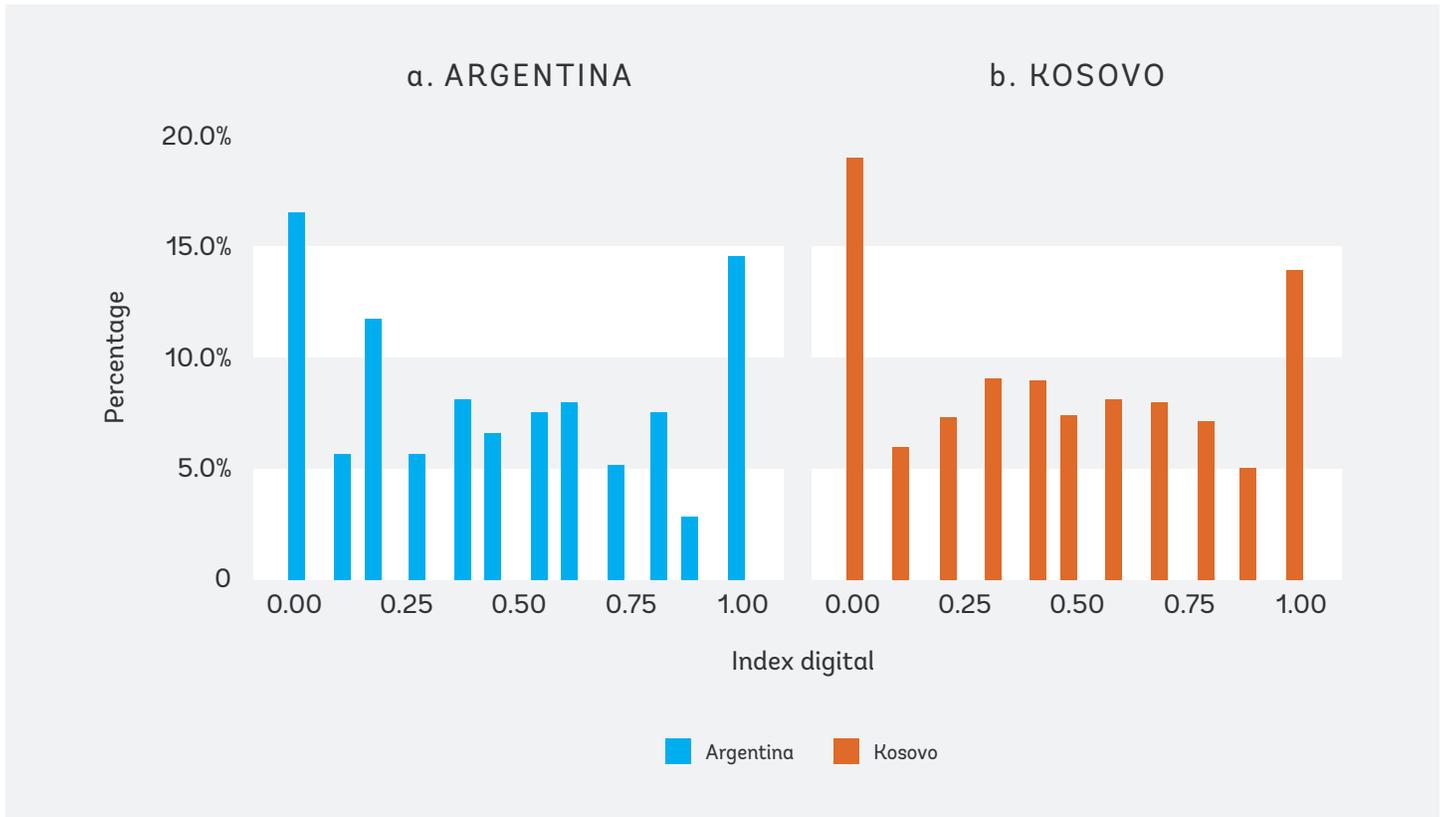


Source: World Bank Bureaucracy Lab GovTech surveys (Argentina and Kosovo).

To assess the relationship between organizational practices and use of digital technologies, an index of digital adoption was constructed for respondents in Kosovo and Argentina (Figure 26).² The index is a simple sum of a set of digital technologies for which respondents consider themselves advanced, scaled from 0 to 1. The first empirical fact identified is an inverted U-shape for the distribution of digital adoption. The majority of respondents are found on one of the extremes: either they are highly skilled in digital technologies or do not use them at all.

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FIGURE 26 - Distribution of Index of Digital Adoption (Argentina and Kosovo)



Source: World Bank Bureaucracy Lab GovTech surveys (Argentina and Kosovo).

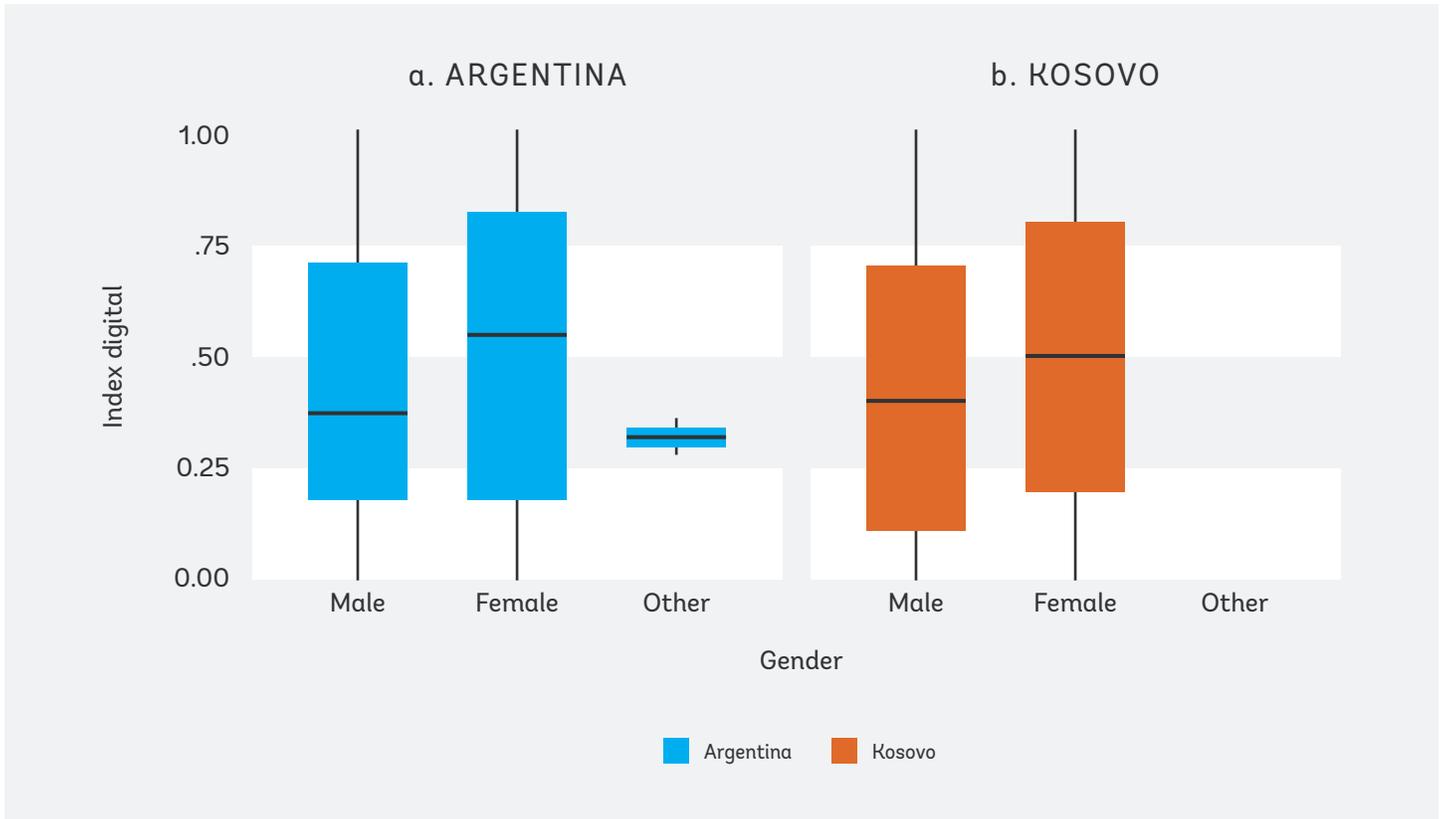
Gender and age were identified as factors that influence the use of digital technologies. Evidence suggests that younger respondents tend to be technologically savvy, a trend that is more pronounced in Kosovo than Argentina, and women civil servants tend to use more digital technologies than their male counterparts for both countries (Figures 27 and 28 below).

These differences are statistically significant. This polarized distribution of digital skills suggest that a highly skilled, young, and technologically savvy cadre of civil servants coexist with an older population that is less technologically skilled, and which could benefit from additional assistance.

2. The index is a simple sum of all digital technologies for whom the respondent feels they are "Advanced," rescaled to a 0-1 index.

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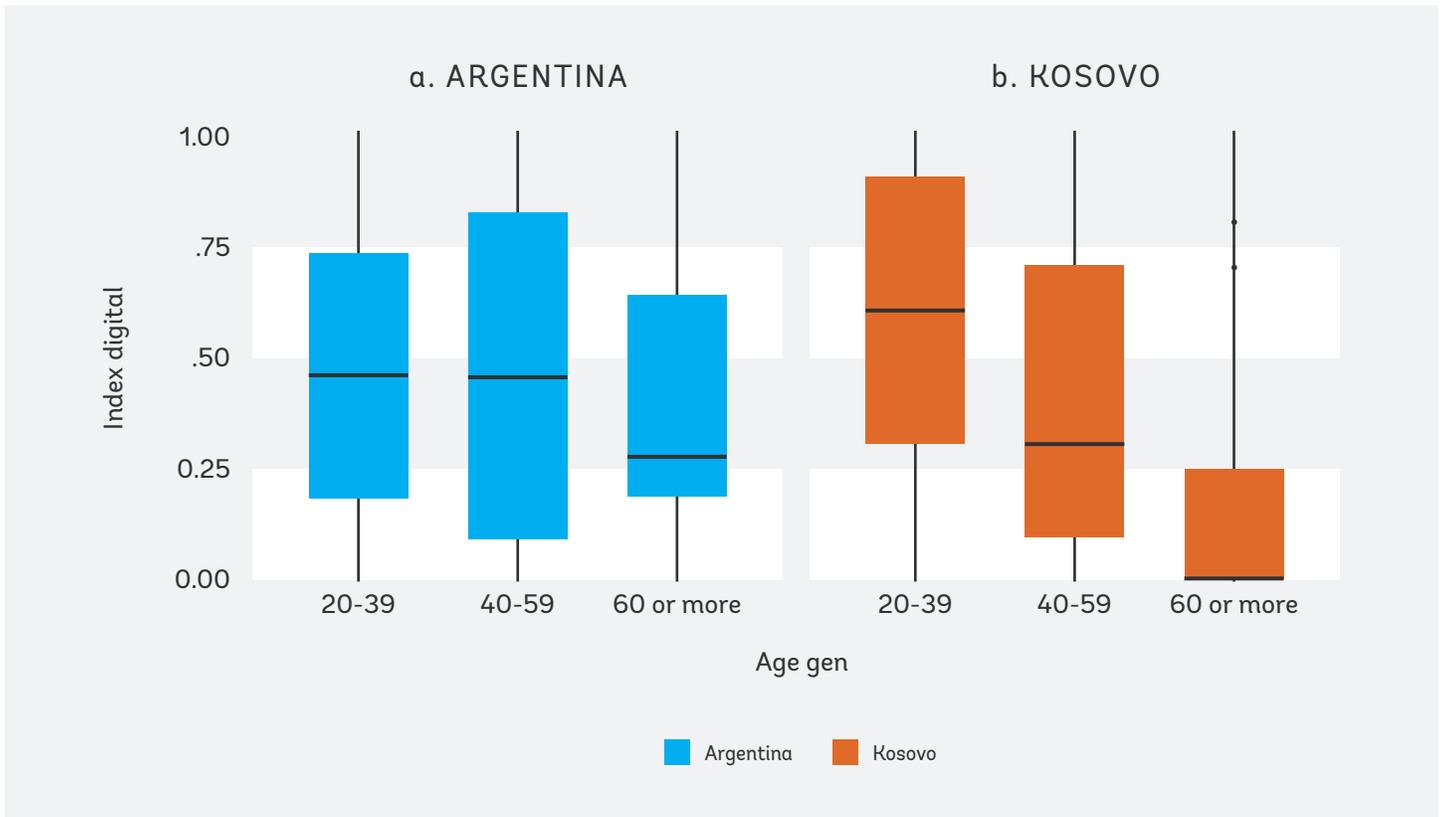
FIGURE 27 - Gender Correlates of Digital Adoption (Argentina and Kosovo)



Source: World Bank Bureaucracy Lab GovTech surveys (Argentina and Kosovo).

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FIGURE 28 - Age Correlates of Digital Adoption (Argentina and Kosovo)



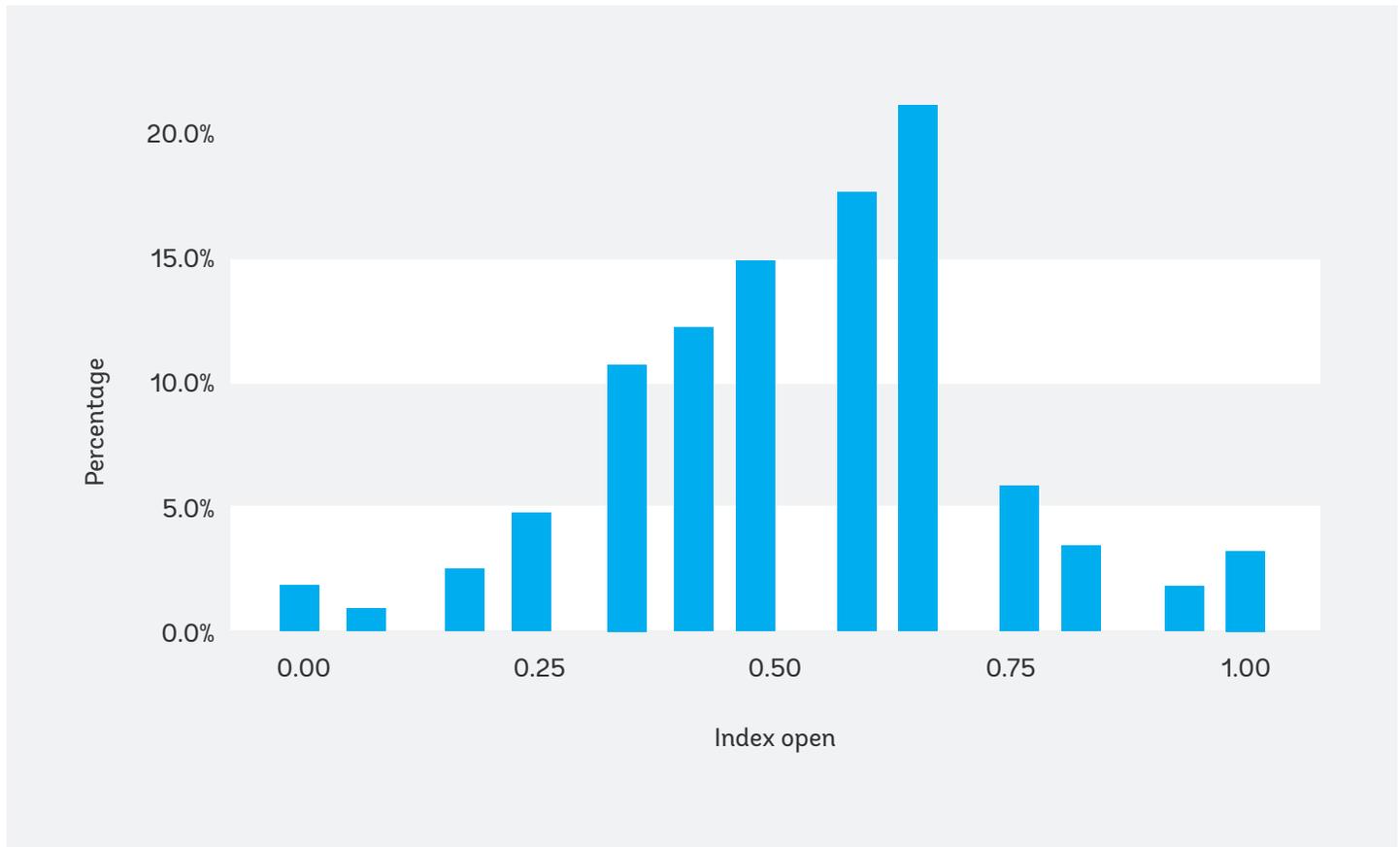
Source: World Bank Bureaucracy Lab GovTech surveys (Argentina and Kosovo).

Evidence suggests a correlation between the use of digital technologies and organizational cultures open to innovation. In the Kosovo survey, respondents were asked whether their institution encouraged innovation, either through direct encouragements or rewards. After verifying through a series

of statistical tests that the multiple questions indeed captured the same underlying concept of innovative work behavior, an index of openness to innovation was constructed, with the same methodology as the index of digital technologies (Figure 29).³

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FIGURE 29 - Histogram of Index of Openness to Innovation

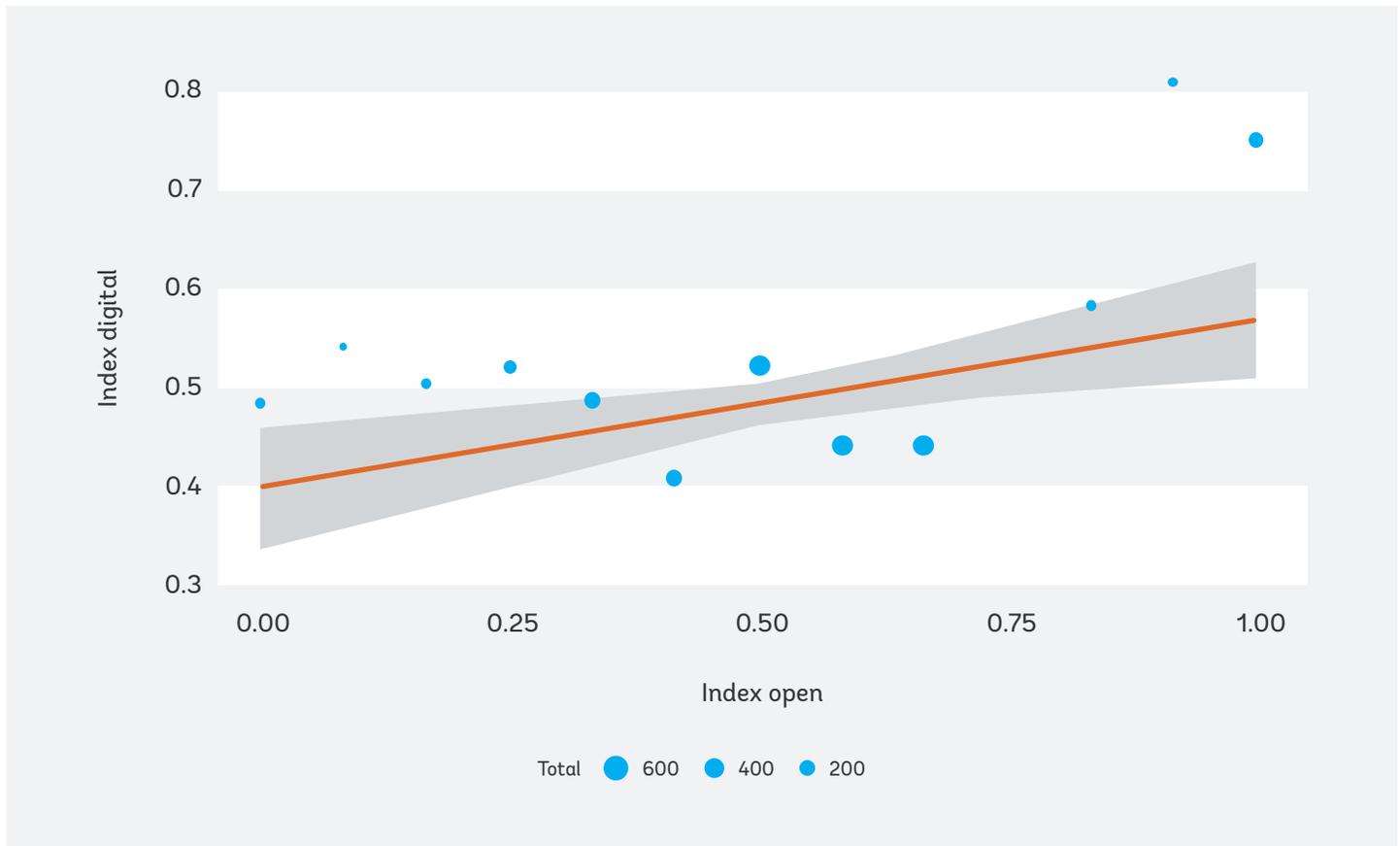


Source: World Bank Bureaucracy Lab Kosovo GovTech survey.

There are no significant differences in the index of openness to innovation across genders and age groups, in contrast to the index of digital adoption. However, there is a statistically significant, positive correlation between the two indices, as presented in Figure 30.

3. A Cronbach Alpha test was performed as well as factor analysis. Details can be found in Annex 3.1.

FIGURE 30 - Positive Correlation between Index of Openness to Innovation and Index of Digital Adoption

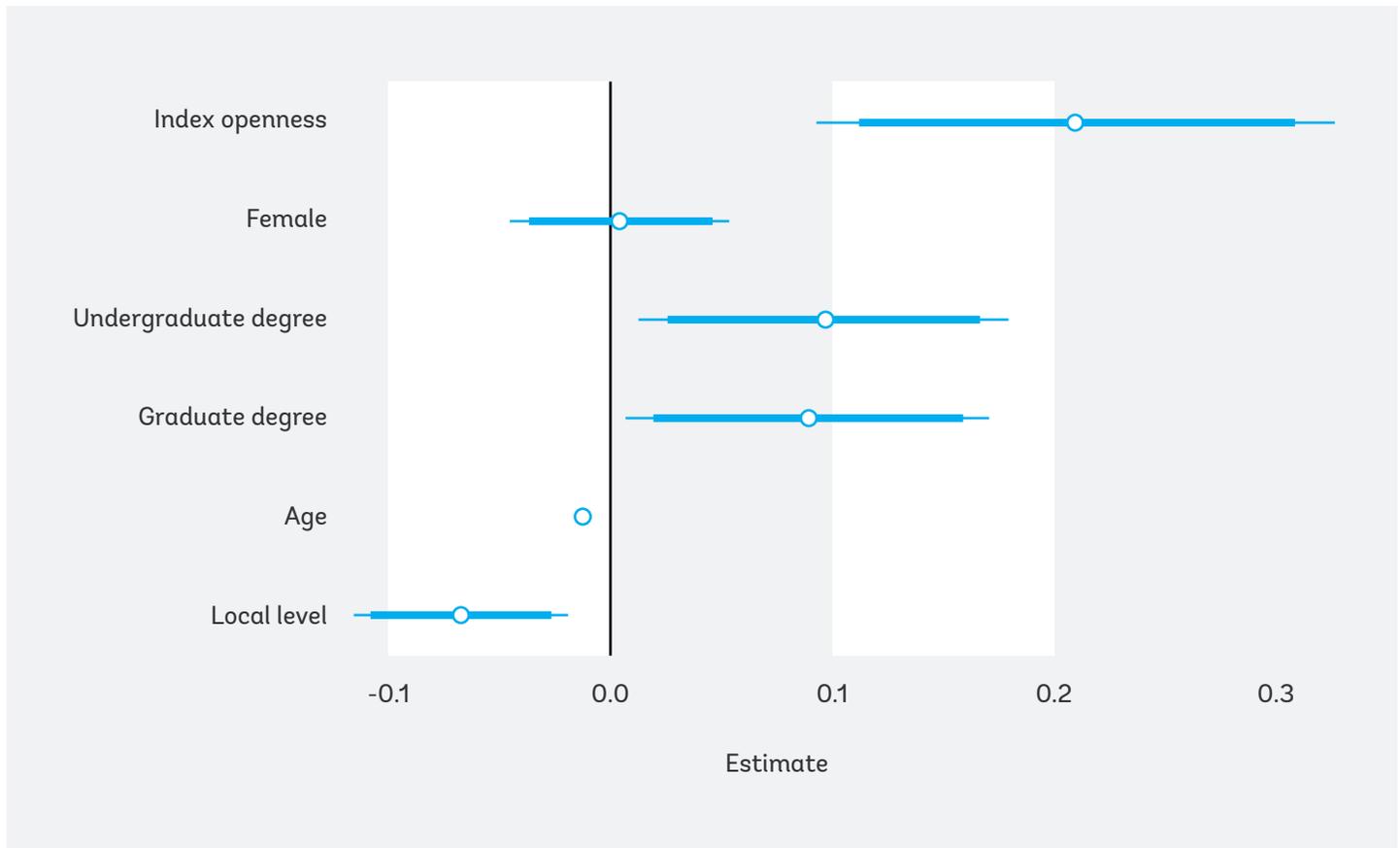


Source: World Bank Bureaucracy Lab Kosovo GovTech survey.

To test the robustness of this finding, a simple OLS (Ordinary Least Squares) regression of the Index of Digital Adoption on Index of Openness to Innovation was performed, controlling for education, age, gender, and level of government (Figure 31). A positive and statistically significant correlation between both indices was found, suggesting that respondents who find their environment more open to innovation tend to adopt

more digital technologies. Age is negatively correlated with the adoption of digital technologies, as well as being located in a local level government. Higher education levels are positively correlated with the adoption of new technologies, with respondents who hold an undergraduate or graduate degree adopting more technologies than their baseline counterparts.

FIGURE 31 - Regression of Index of Digital Adoption on Index of Openness to Innovation



Source: World Bank Bureaucracy Lab Kosovo GovTech survey.

Overall, the GovTech survey results in Argentina and Kosovo point to actionable items that can be addressed to improve the adoption of new government technologies. Staff request more uniformity and fairness in the rollout of technologies, while managers would benefit from less red tape to push for innovation. Adoption of digital technologies is highly polarized, with older and male civil servants in need of greater assistance

and opportunities for training. Finally, there is suggestive evidence that agencies that are open to innovation also benefit from greater adoption of digital technologies. While the direction of causality is not clear, further studies could explore the relationship between organizational cultures that promote innovation and their adoption by staff.

Empirical Evidence: Findings from World Bank Projects

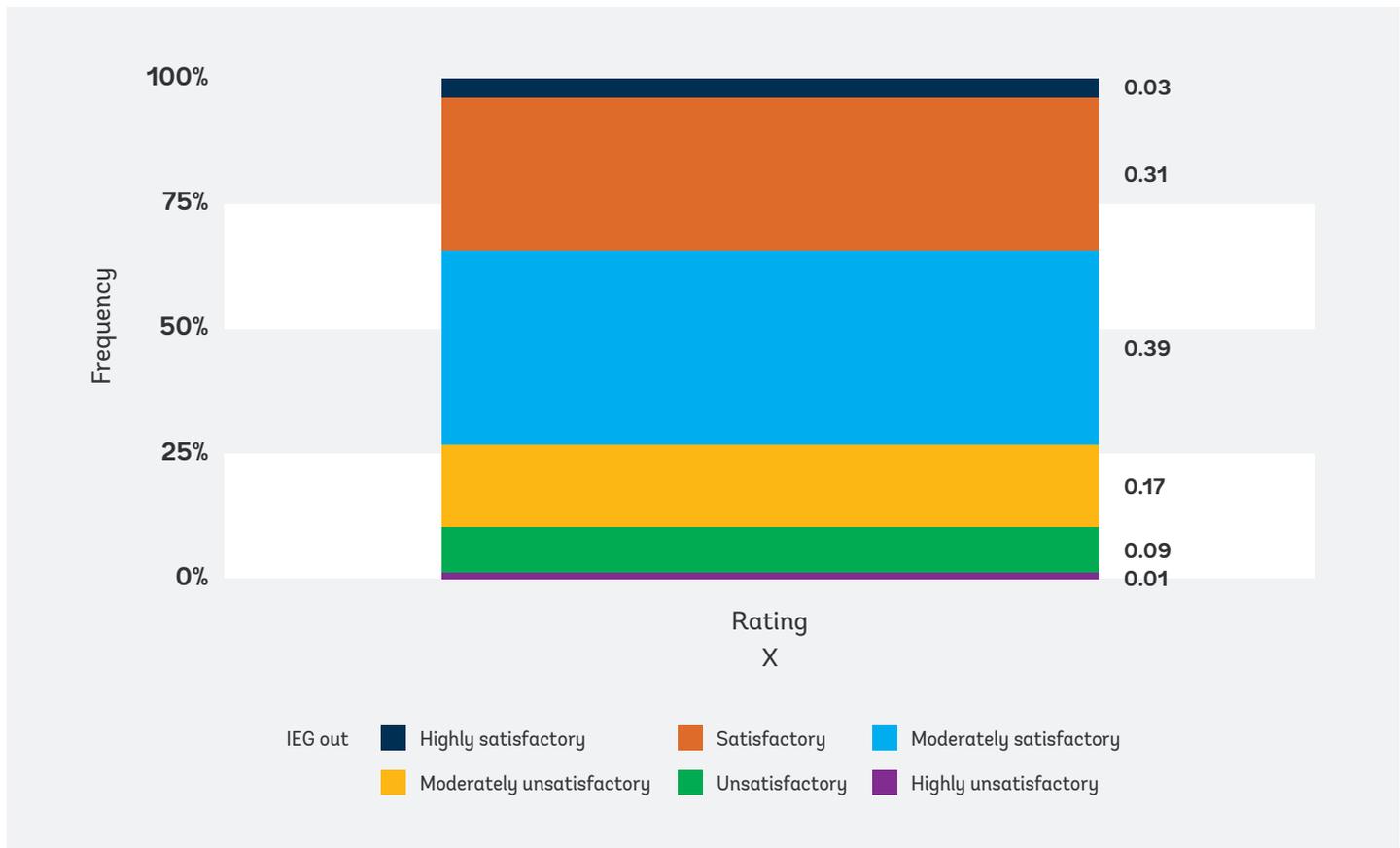
Public sector digital technology projects have a high failure rate. Although the evidence is limited, one comprehensive review of more than 1300 public sector ICT projects (primarily in the US and high-income countries) found an average time overrun of 24 percent, with 18 percent of the projects going over budget by 130 percent, posing “systemic” fiscal risks (Budzier and Flyvbjerg, 2012). In some cases, even if

e-government projects are successfully implemented they may worsen outcomes as, without proper regulatory safeguards in place, automation may even make it easier to perpetrate fraud and corrupt practices, and to erase records or avoid capturing them altogether, thereby eroding transparency mechanisms (Lemieux, 2016).

Even in World Bank-funded digital technology projects, 34 percent of the 839 information technology projects funded from 1995 to 2020 were internally rated by the World Bank as “satisfactory” or “highly satisfactory,” 27 percent were rated “moderately unsatisfactory” or worse – see Figure 32.

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FIGURE 32 - DGSS 1995 - 2020 (Approved FY)



Source: Authors calculations based on WBG Digital Projects Database.

There are several reasons why public sector digital technology projects may underachieve outcomes. First, digital technology projects are vulnerable to the same psychological biases of all complex projects, such as “optimism bias” that tends to underestimate costs and unforeseen events that delay implementation, and overestimate benefits (Flyvbjerg and Bester, 2021). Second, these projects require customization to local context and there is often a gap between the institutional and skill realities of government and the ambitions of the projects (Okunogbe and Santoro, 2021). Important sources of this gap are government procurement rules, IT vendors’ lack of understanding of government processes, and a failure to understand the country context (Dunleavy and

Carrera 2013; Fountain 2001; Heeks 2006; Bhatnagar 2009). In the private sector, executives can choose vendors based on personal experience and jointly determined guidelines that are deliberately kept vague to allow flexibility during implementation. Ministers and senior officials, by contrast, are explicitly forbidden by government rules to exercise this level of discretion and instead must purchase on the basis of detailed specifications. Third, is bureaucratic resistance to change and status quo bias, possibly for nefarious reasons but also because of limited incentives to change work processes to take full advantage of digital technology (Mayega et al. 2019, Ligomeka 2019). Fourth comes lack of adequate skills and training, as discussed in detail earlier.

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BOX 9 - Interviews with World Bank GovTech Project Teams

During discussions with TTLs of different GovTech teams, issues of management, leadership, and culture often turn out to be of key importance in change management strategies. Whether or not the project succeeds, whether or not the technology is actually implemented and used, is greatly dependent on these issues.

A GovTech project in Cambodia¹ decided to focus on creating a network of change agents. Although such agents do not necessarily have an organizational leadership role, they can take up such a role with regards to particular projects. “Innovation champions,” is another term often used for them. These leaders received specific coaching about the upcoming changes. Their role was to safeguard sustained communication to the other staff members about the project. In a project in Zambia,² managers were aided in navigating the many changes that accompanied the new technologies. This created a much more gradual implementation process. Managers can often function as influential blocks on a projects progress if they are not on board. This guidance took away a lot of resistance among them, and enabled them to communicate with their staff more effectively. In a project in Panama,³ resistant managers created a significant problem for the project’s implementation. This was largely due to a culture of conflict aversion, showing that culture is an important element of GovTech implementation, necessitating consideration by the project team. In the previously mentioned project in Panama, the project team could make use of the strongly improved work culture which was established through a previous engagement.

1 Cambodia PFM Modernization Project (P143774).

2 Public Financial Management Reform Program Phase I (P147343).

3 Enhanced Public Sector Efficiency Technical Assistance Loan (P121492).

Recommendations

This chapter has argued that impactful Gov Tech adoption requires an effective personnel ecosystem in organizations, zeroing in on good quality management and an organizational culture conducive to innovation. The policy recommendations, therefore, are on how to improve management and encourage an innovation culture, using a combination of capacity building and incentives. Digital technologies offer new approaches and opportunities to improve both training and incentives, creating a virtuous circle between Gov Tech and its analog complements that can lead to potentially transformative changes.

LEADERSHIP

Training

Improving management will require training on the core attributes—goal setting and monitoring, goal alignment, performance feedback, and supporting staff to enable them to deliver on their goals—necessary to develop a performance-oriented bureaucracy that encourage innovation and the use of Gov Tech. Organizational performance management, with goals and targets identified in strategic plans or budget documents, is necessary for creating a common vision for all staff and creating line-of-sight on how an individual's work contributes to corporate goals. Moreover, a training program that helps managers develop these goals, if done in a participatory way by involving staff, can improve both the quality of organizational plans and staff understanding and commitment to them, and help underscore the importance of innovation and Gov Tech to achieving the goals. To be effective coaches, managers will also need targeted training in assessing employee skills, mastering difficult conversations, and giving constructive feedback. For example, in Ireland, managers need to undergo 30 hours of training specifically on performance appraisal and, in Canada, managers receive special training on performance management from the Canada School of Public Service. Equally important is mentorship, ideally by high-performing managers in the public administration, who can provide hands-on coaching that can potentially have more impact given their embeddedness in the local context.

Incentivizing Better Management

Managers also need to be incentivized to improve management practices. These incentives can include

conditioning managers' own performance evaluations on the regularity and quality of the performance feedback that they provide staff, through the annual performance appraisal system and, more importantly, through regular performance conversations. Increasingly, managers in OECD countries have a different performance appraisal system than the rest of the civil service, with an emphasis on their achievement of strategic organizational goals as well as their managerial and leadership skills (Kuperus and Rode 2016).

CULTURE

Greater Citizen-Orientation

Greater citizen orientation and having a clearer link between how a bureaucrat's day-to-day work impacts the lives of citizens can have a powerful impact on organizational culture. Digital technologies provide a variety of tools to incorporate citizen feedback into an organization's work practices, including proactive feedback where organizations send short surveys to get granular and actionable information on the quality of their outputs. This feedback is most easily done for organizations involved in delivering services, such as social security administration, business licensing and registration, tax and customs administration, schools, and hospitals. It can also improve goal setting, goal alignment, teamwork, and motivation in organizations that are more removed from citizens by reinforcing the overall purpose of daily work and underlining the importance of citizen-orientation as a core job competency.

Improving Within-Organization Communication

Digital technologies can be used to improve goal setting, goal alignment, and performance feedback between managers and staff. Many private sector organizations use regular, short, "pulse" staff surveys to get rapid responses from employees on a variety of areas, to gauge employee motivation, and to measure collaboration (Ewenstein, Hancock, and Komm 2016). The ubiquity of smartphones makes such within-organization feedback channels feasible in even low-income countries. The important point is that this technology-enabled communication should not be about monitoring staff performance, as that can create perverse incentives, but instead be about eliciting staff views on issues and involving them in solving organizational problems. Communication in the form of open debate, where employees are comfortable talking about problems and disagreements, is furthermore important in the success of innovations (Van Acker and Bouckaert, 2017).

Training

The surveys in Argentina and Kosovo, and the public employee surveys conducted by the Bureaucracy Lab in general, underscore high demand for digital training from public sector personnel. Equally important for digital innovation and utilization of digital technologies at work are cognitive and socioemotional skills like critical thinking, problem-solving, communication, teamwork, and creativity, skills that are not adequately imparted in the general education system in many low and middle-income countries (World Bank, 2016). The public administrations of these countries, therefore, must develop curricula for civil servants to impart and receive these skills, and may also consider ways to tailor training to those who need it most. Singapore, for example, has a comprehensive “life-long” learning program for civil servants where a variety of online courses are available to develop technical and socio-emotional competencies. India’s ambitious “Mission *Karmayog*” is a capacity building reform program where civil servants will similarly be able to use a comprehensive online training portal to flexibly meet their diverse training needs.

Beyond imparting technical, cognitive, and socio-emotional skills, training can also be an avenue for cultural transformation. Training can be designed to include motivational elements, such as a film about how colleagues changed their team for the better, or a module on the trainee’s potential role in changing team culture. They can add a practical planning element to that motivation that explores how to overcome resistance and bottlenecks to reform. Trainees can define an action plan that identifies the obstacles to a change in the procedures they have just been trained in and articulate how they will be overcome. Beyond the training sessions, the training could set

up a supportive environment for the trainees’ transition back to their offices as they apply their training towards achieving the reform the training intended.

Innovation Awards

Encouraging innovations through leadership and culture can be complemented by the organization of innovation award programs. These awards can help in attaining two goals: on the one hand, they may form an incentive for employees to innovate, and on the other hand they can function as platforms for employees and organizations to learn about others’ innovations. To create internal incentives to innovate, internal innovation awards are most suitable where only internal applicants are eligible. To function as learning platforms, external innovation awards are most suitable where applicants from outside the organization are eligible – for example, the United Nations Public Service Awards (UNPSA), the European Public Sector Awards (EPSA), or the Harvard Innovations in American Government Awards.

Considerable thought ought to go into the design of such an award program. Although awards can form an extrinsic motivation for individual employees, poorly designed programs may lead to resentment and apathy towards future innovation amongst non-winners, especially in internal innovation awards. And although award programs are relatively easy to create, they need to be substantial enough (either in monetary or status terms) to be regarded as desirable (Rosenblatt, 2011). Even if awards may highlight and encourage innovation, they are no guarantee for continued success. Research has shown that awarded innovations can still fail later on if they are not properly attended to (Van Acker and Bouckaert 2017).

Annex 3.1: Surveys of Public Sector Employees to Measure Analog Complements of GovTech

The World Bank's Bureaucracy Lab surveys designed to measure public sector employees' experiences and perceptions of the three sets of analog complements that this report has highlighted. Below are some indicative questions

for the main modules that have worked well in other surveys and does not include any context-specific questions. In general, the surveys take from 20 minutes (online surveys) to 45 minutes (in-person surveys) to complete.

Module	Demographics and work history
Section 1	Basic demographic information
Example questions	Age, gender, educational background
Section 2	Employment history
Example questions	Current contract (civil servant, contract worker) Position title Years in current position Prior work experience

Module	Building and retaining digital skills
Section 1	Use of digital technology in the workplace
Example questions	What proportion of your regular work tasks involve the use of a computer? How would you rate your level of proficiency in each of the following tools? [list office applications]
Section 2	Training
Example questions	Have you received training in the last 2 years? Overall, how would you rate the quality of the most recent training you received on... How relevant/useful was the training on [...], to your day-to-day job? Which factors prevent you from participating in more training opportunities? Thinking about your current roles and responsibilities, what type of training would be most helpful and relevant to you?
Section 3	Building digital skills
Example questions	Does your institution gather information on staff skills? What are the new skill requirements of your institution? Does your institution use consultants or temporary staff to help fill any digital skills gaps?

Module	Building and retaining digital skills
	<p>To what extent do you agree with each of the following statements:</p> <p>There is a clear system for identifying staff skills in my institution</p> <p>Individual training needs are adequately identified and addressed</p> <p>Digital skills (e.g. skills relating to the use of IT and related software) are a key priority for me as a manager</p> <p>Digital skills (e.g. skills relating to the use of IT and related software) are a key priority for this institution as a whole</p> <p>My institution has strategies to retain critical skills</p>
Section 4	Attracting and retaining candidates with digital skills
Example questions	<p>In your experience, how easy or difficult is it for your institution to attract candidates with strong digital skills?</p> <p>What is the reason it is not easy for your institution to attract candidates with specialized digital skills? (Answers have multiple options)</p> <p>What is the reason there is more turnover of staff with specialized digital skills? (Answers have multiple options)</p>

Module	Leadership and culture for innovation
Section 1	Management quality
Example questions	<p>Does your organization have a clear set of goals and targets?</p> <p>How related are core tasks of individual staff members to the overall objectives of the organization?</p> <p>How does your organization track and measure how well it is performing?</p> <p>Has your performance been formally evaluated during the past two years?</p> <p>To what extent do you agree with the statement that performance reviews are fairly conducted?</p>
Section 2	Adoption of new practices
Example questions	<p>Should they wish to, staff in my institution have plenty of opportunities to speak up about new ideas or suggestions for improving existing processes</p> <p>The management of my institution actively encourages the introduction of new ideas and processes</p> <p>Staff in my institution are rewarded (through a bonus or award) for coming up with ideas for new processes or process improvements</p>

Module	Building and retaining digital skills
Section 3	Agility and flexibility
Example questions	<p>On a scale of 1 to 10, how would you rate each of the following in your institution:</p> <p>Speed of decision-making Speed of authorization processes Speed of institutional response to new opportunities Speed of institutional response to a crisis or negative development</p>
Section 4	Teamwork and collaboration
Example questions	<p>In your view, how often do employees of this organization trust one another to fulfill the commitments they make?</p> <p>Agree/Disagree: Working with my team helps me work faster, not slower.</p> <p>Agree/Disagree: My team operates as efficiently as possible, given our resources.</p>

Module	Whole-of-government coordination
Section 1	E-governance strategy
Example questions	<p>To what extent do you agree with the following statements:</p> <p>My institution has a well-defined e-Governance strategy: My institution's e-Governance strategy was developed taking the following into consideration (list options):</p>
Section 1	Coordination challenges
Example questions	<p>Thinking about the introduction of e-government, to what extent do you agree with each of the following statements:</p> <p>My institution has been invited to discussions on e-government strategies My institution has been consulted on how to implement the e-government strategy There is adequate government infrastructure and support for the development of digital solutions My institution has been kept informed and engaged on developments related to e-government I am convinced of the importance of pursuing the national e-government strategy My institution has the resources and capacity to implement the new e-government strategy.</p>

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