

Torchbearers of Digital Governance in Africa: A Selection of Practical Recommendations for Public Service Leaders

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Abstract

Artificial intelligence (AI) applications spark plentiful opportunities for the progress of humankind and the fulfilment of the Sustainable Development Goals (SDGs). AI could support duty bearers in the government, such as policymakers and civil servants, to accelerate the achievement of an inclusive, rights-based and equitable future. However, governments need to be equipped with the right attitudes and competencies to leverage digital transformation for the good of its constituents and mitigate AI's negative impacts.

This article aims to establish the digital transformation priorities and capacity building needs of governments, based on [an AI needs assessment survey of 32 African countries](#). All thirty-two countries in Africa who responded to the survey have requested for UNESCO's support for building human and institutional capacities in AI-related domains. Driven by national demand for digital capacity

building interventions in government, UNESCO has developed the AI and Digital Transformation Competency Framework.

The AI and Digital Transformation Competency Framework outlines the competencies that civil servants need to encourage digital transformation and digital governance in government. Challenges, such as work cultures averse to experimentation and innovation, lack of IT infrastructure investment and low investment in digital skills, impede government institutions from embarking on their digital transformation journey. Hence, this framework offers three competency domains with several nested competencies and nine recommendations to assist countries in overcoming these barriers and embracing the opportunities of digital transformation.

Introduction

Digital transformations are continuously changing the way people live, work and interact in society. The rapid development and use of information and communication technologies are also disrupting how governments function internally and engage with citizens.

Digital transformation has become one of the highest priorities for public organizations world-wide. Although governments are increasingly digitizing their services in response to growing public expectations, they are asked to do more to create an enabling environment in which a green and equitable digital transformation strengthens economies and societies.

However, studies have shown critical digital competency gaps in the public sector. It is therefore important to identify and address those digital transformation gaps so that the public sector can serve as a catalyst of growth in digital age.

What's Missing in Digital Transformation?

From the needs assessment survey, most governments have signaled that there is room to engage in digital transformation through building digital capacities and rights-based digital policies. In all three branches of government - the executive, the legislature and the judiciary, there remains space for improvement.

From the AI Needs Assessment Survey in Africa results,

- 27 out of 32 governments have not taken any direct steps for strengthening knowledge and capacities of personnel within the government to address the challenges of AI.
- 31 out of 32 governments have not taken any steps for strengthening knowledge and capacities of Members of Parliament or other legislative bodies to address the challenges of AI.

- More than 22 countries have requested support for knowledge exchange, training of officials and development of policies across the three government branches

These are gaps that can be narrowed with the competencies and recommendations provided in this article.

Opportunities of Digital Transformation in Government

Digital transformation in the public sector can strengthen public services and governance. With digital technology and AI, policymakers can support the SDGs more easily and efficiently. For instance, with predictive analytics, the Flemish unemployment agency has digitalised and automated their job matching system (OECD, 2020). Job seekers can receive personalised job recommendations more swiftly, supporting them in their job search and fulfilling SDG 8: Decent Work and Economic Growth.

From the survey, most African countries have AI-related priorities, which they rate as urgent and important areas of work. For instance, 27 out of 32 countries find it important to strengthen human and institutional capacities by updating education, skills and training systems. Also, 23 out of 32 countries consider the use of AI for the protection of human rights to be important, of which 14 countries consider it to be urgent. Further, some African countries have promising initiatives implemented or in planning for supporting AI education, research and training.

The governments' aspirations and their existing plans and initiatives for digital transformation are excellent springboards to continue their countries' digital transformation journeys.

Challenges of Digital Transformation in Government

For digital transformation to succeed, governments need to change the way they lead and manage. Currently, they may be held back by the fear of failure, rigid hierarchical governance structures, and infrastructural barriers, such as the lack of IT infrastructure and access to data. Also, civil servants' lack of digital skills can hamper the effective and coherent implementation of digital government policies.

These digital competency gaps are especially prevalent in lower-middle income countries, as they tend to have lower-resource environments and lower availability of digital skills. From the survey, all 32 countries report that either financial resources are unavailable and/or human resource capacity gaps exist in developing standards for AI product and service development.

Competencies

To propel themselves past these barriers and leverage the opportunities of digital transformation, leaders in the public sector need to develop new competencies that equip them with skills to address the complex challenges of digital-era governance. These competencies include developing enabling frameworks, mitigating ethical and human rights-related risks, understanding the development and use of digital platforms, and anticipating technological trends.

This competency framework identifies three key competency domains for policymakers in the digital age. They are digital planning and design, data use and governance and digital management and execution. Figure 1 depicts the framework with its competencies, proficiency levels and cross-cutting attitudes.




Figure 1. The AI and Digital Transformation Competency Framework

THE AI AND DIGITAL TRANSFORMATION COMPETENCY FRAMEWORK

01. DIGITAL PLANNING AND DESIGN

COMPETENCY AREAS AND SKILLS




PROBLEM IDENTIFICATION AND SOLUTIONS Identify problems in which digital technology might be part of the solution.	SYSTEMS THINKING Understand how problems are connected in systems.	STRATEGIC FORESIGHT Anticipate problems and unexpected circumstances.	AGILE STRATEGY Ability to plan initiatives while remaining flexible and adapting to unexpected circumstances.
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PROFICIENCY			
 Understand the complexity and interconnectedness of problems.	 Take a holistic and long-term view, and use simple tools to anticipate, identify and solve problems.	 Master approaches, tools and methods to anticipate, identify and solve complex problems.	<div style="border: 1px dashed green; padding: 5px;"> Identify and specify problems where AI is important, and anticipate future technological developments of AI. </div>
BASIC	INTERMEDIATE	ADVANCED	AI-SPECIFIC

02. DATA USE AND GOVERNANCE

COMPETENCY AREAS AND SKILLS




DIGITAL LITERACY Understand emerging digital technology and its applications.	DATA-DRIVEN DECISION-MAKING Mine, analyze and use data in the decisionmaking process of public policies.	OPEN DATA AND OPEN GOVERNMENT Capacity to effectively create and use open data.	PRIVACY AND SECURITY Knowledge of potential breaches and how can they affect government and society.	LEGAL, REGULATORY AND ETHICAL FRAMEWORKS Capacity to adapt and change existing legislation to emerging technologies. If needed, to create tech-friendly legislation.	AI FUNDAMENTALS Understand AI systems to a basic level.
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PROFICIENCY			
 Understand and use simple digital tools, and understand the implications of using data.	 Integrate digital tools into government systems, and understand the concrete implications of using data.	 Create and edit digital content, exploit, analyze and share data, and develop legal frameworks and systems that take into account privacy and security.	<div style="border: 1px dashed green; padding: 5px;"> Understand AI systems and master knowledge about the latest AI technologies. </div>
BASIC	INTERMEDIATE	ADVANCED	AI-SPECIFIC

03. DIGITAL MANAGEMENT AND EXECUTION


COMPETENCY AREAS AND SKILLS

PEOPLE-CENTRICITY Ability to take into high consideration the user experience and needs on digital public policies and technologies.	ITERATION Learn and accept mistakes as part of the digital project cycle.	AGILE EXECUTION Capacity to formulate technical, logistic and strategic requirements for public digital projects and execute them.	DIGITAL LEADERSHIP Ability to develop a vision for digital.
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PROFICIENCY			
 Understand agile management techniques and collaboration.	 Make use of simple agile management techniques in designing and developing projects.	 Understand how to incite, organize and manage the digital transformation process.	<div style="border: 1px dashed green; padding: 5px;"> Master, design and use specific agile management techniques, forge solid partnerships, and develop prototypes. </div>
BASIC	INTERMEDIATE	ADVANCED	AI-SPECIFIC

ATTITUDES


TRUST




CREATIVITY



ADAPTABILITY



CURIOSITY



EXPERIMENTATION



Data source: Authors

Digital Planning and Design

For the first competency domain of digital planning and design, its competencies support the identification of problems faced by civil servants in digital transformation and the development of the vision for designing and implementing green and inclusive digital transformation policies or projects. It encourages the development of competencies related to problem identification and solutions, systems thinking, strategic foresight and agile strategy.

Technological improvements are continuously changing the technology governance landscape. As an example, strategic foresight helps to anticipate and address rapid change and uncertainty, supports innovation by revealing options for experimentation, and helps in futureproofing by stress-testing existing or proposed strategies.

Competence in *strategic foresight* involves:

- Developing dynamic policy recommendations, supported by data and understanding of the policies' impacts
- Spotting trends and patterns to understand and make decisions based on strategic drivers of the digital era
- Thinking laterally and applying learnings from other fields and geographies
- Being aware of current best solutions and the future developments of relevant AI tools
- Being able to draft contextualized AI strategies and action plans

For example, directors in government can use strategic foresight tools (i.e. scanning the horizon for emerging changes, analyzing megatrends, and developing multiple 'what-if' scenarios) to anticipate how key emerging technologies could develop, the effects they could have on all spheres of life, and how to seize upcoming opportunities. Policymakers working on an education policy can also use strategic foresight by identifying opportunities and threats that may arise in the coming years and decades, as well as possible strategies to deal with them.

Data Use and Governance

By 2025, worldwide data universe will grow to 163 ZB (zetabytes) and it is projected to double every 2 years. The availability of digitally generated data and the creation of computational algorithms to analyze this data will provide new ways of solving complex problems and delivering services. However, policymakers must be ready to use such technologies. A data-driven public sector (DDPS) recognizes that data is an asset, core and integral to policymaking, service delivery, organisational management, and innovation.

The second competency domain of data use and governance encourages civil servants to understand the fundamental role and value of data, as well as the inherent risks, and the ability to use, analyze and share data, taking into consideration ethical, privacy and security concerns. This domain is fundamental for civil servants to be able to address governance challenges and meet the public's growing expectations, while at the same time using data effectively and responsibly.

For example, competence in *data-driven decision-making* is about:

- Using data efficiently, to support evidence-led policymaking and making informed decisions
- Embedding a data culture in the organisation
- Managing data value chain
- Leveraging the potential of existing data sets for the development of AI systems
- Supporting collection, organisation and use of data for AI applications, aligned with human rights and sustainability

The potential of leveraging this competency is immense. Civil servants who are capable of making decisions based on data to inform public policies, digital transformation, or decision-making processes can upkeep the integrity and quality of data used in the public sector and create use cases for existing data sets. For instance, a Chief Data Officer has the knowledge and expertise to use and manage the organisational data according to policy and regulation. They can use the data for predictive analytics and for insight generation to improve public services.

Also, the public sector needs to be ready to revise legal, regulatory and ethical frameworks with the emergence of digital technologies.

The competence related to *legal, regulatory and ethical frameworks* is about:

- Understanding if digital transformation initiatives conform to existing human-rights standards and legal frameworks
- Anticipating legal implications of emerging technology
- Drafting and implementing legal, regulatory and ethical frameworks that take into consideration digital technologies and their impact on societies
- Conducting regular assessments and removing ineffective frameworks

With this competency, civil servants can draft legislative frameworks that take into consideration the emergence of new technology. Also, experts on ethics, cybersecurity, and privacy concerns can conduct data impact assessments, privacy assessments and AI ethical impact assessments before, during and after development of AI systems. This ensures that AI systems are developed with close alignment to human rights.

Digital Management and Execution

The third competency domain of Digital Management and Execution enables civil servants to understand innovative project management and collaboration practices. It involves the application of working methods, and tools to use data and technology to address complex problems, and to foster new modalities for civic participation.

Developing an inspiring vision and the right ‘culture’ is at the core of digital transformation. Digital teams need the right environment for cooperation, collaboration and innovation. Another important competence is digital leadership. Leaders who are able to do so, are primed to lead in the digital age. Also, this is a competency that should be developed by all civil servants who work in teams to contribute towards shaping environments conducive to innovation.

In the context of AI, competence in *digital leadership* is about

- Influencing and motivating others by defining a vision and clear objectives, and structuring the team to promote experimentation
- Creating a collaborative and empowering culture
- Encouraging AI-enabled innovation in the organisation and supporting change with AI technologies
- Identifying skillsets and competencies needed for specific AI projects
- Supporting training and educational opportunities that provide staff with an AI-related skillset

With digital leadership, the heads of service design in the government are well-equipped to develop clear team vision and goals, and coach members on how to achieve them in an effective way.

Policy recommendations

For all the recommendations in this section, UNESCO recommends a human rights centric approach that upholds gender equality. Gender equality is a global priority. It is crucial to empower women through the equal participation of men and women and through including measures against potential gender biases and stereotypes with the inclusive and multistakeholder development of policies and standards.

The framework provides five recommendations for digital capacity building to all stakeholders:

- Raise awareness of artificial intelligence and digital transformation competencies.
- Contextualize, localize, and adapt AI and digital transformation competencies
- Share learning resources for AI and digital transformation capacity building
- Monitor the impact of AI and digital transformation projects
- Facilitate knowledge exchange and mutual learning through multi-lateral cooperation.

There are four recommendations by stakeholder groups:

- Governments:

- Take a holistic approach when using the framework. Begin by developing a national AI and digital transformation strategy, then develop digital action plans on strengthening specific competencies.
- Develop digital transformation-related capacity-building programs and trainings, as part of national digital transformation initiatives.
- Academia:
 - Leverage the framework to establish curricula and interdisciplinary programs for developing AI and digital transformation – related competencies.
- Private Sector:
 - Collaborate with governments to implement capacity-building initiatives by contributing expertise and knowledge based on experience with digital transformation.

The competencies domains are best implemented when contextualised, localised and adapted for their specific context, based on the analysis of existing capacity levels and capacity building needs at individual, team, department, and government levels. The proficiency levels embedded in all competencies of this competency framework can guide this contextualisation process.

Also, it is recommended to drive digital transformation initiatives forward with multistakeholder cooperation (UNESCO, i4Policy, 2022). For instance, the creation of coalitions and platforms are helpful for exchanging good practices on AI and digital transformation-related capacity building at the national, regional, and international levels. This also fulfils SDG 16 and 17 by creating strong institutions for action and promoting partnership for the goals.

Acknowledgments

This article is based on two UNESCO reports.

The first is the [Artificial Intelligence Needs Assessment survey](#) in Africa with reflections distilled from the survey responses of 32 Member States. The 32 Member States are: Angola, Benin, Botswana, Cabo Verde, Cameroon, Chad, Comoros, Congo, Ivory Coast, Democratic Republic of the Congo, Egypt, Equatorial Guinea, Eswatini, Gambia, Ghana, Guinea, Lesotho, Madagascar, Malawi, Namibia, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, Togo, Uganda, Zambia, Zimbabwe. The authors of the report are: Prateek Sibal and Bhanu Neupane.

The second is the [Artificial Intelligence and Digital Transformation Competencies for Civil Servants](#) report developed by the UN Broadband Commission Working Group on AI Capacity Building. The Working Group was co-chaired by UNESCO and Nokia. The authors of the report are: Tommaso Balbo Di Vinadio; Colin van Noordt; Carlos Vargas Alvarez del Castillo; Renata Avila

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