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RESEARCH REPORT

Digital transformation:
Critical success factors and challenges in the Commonwealth

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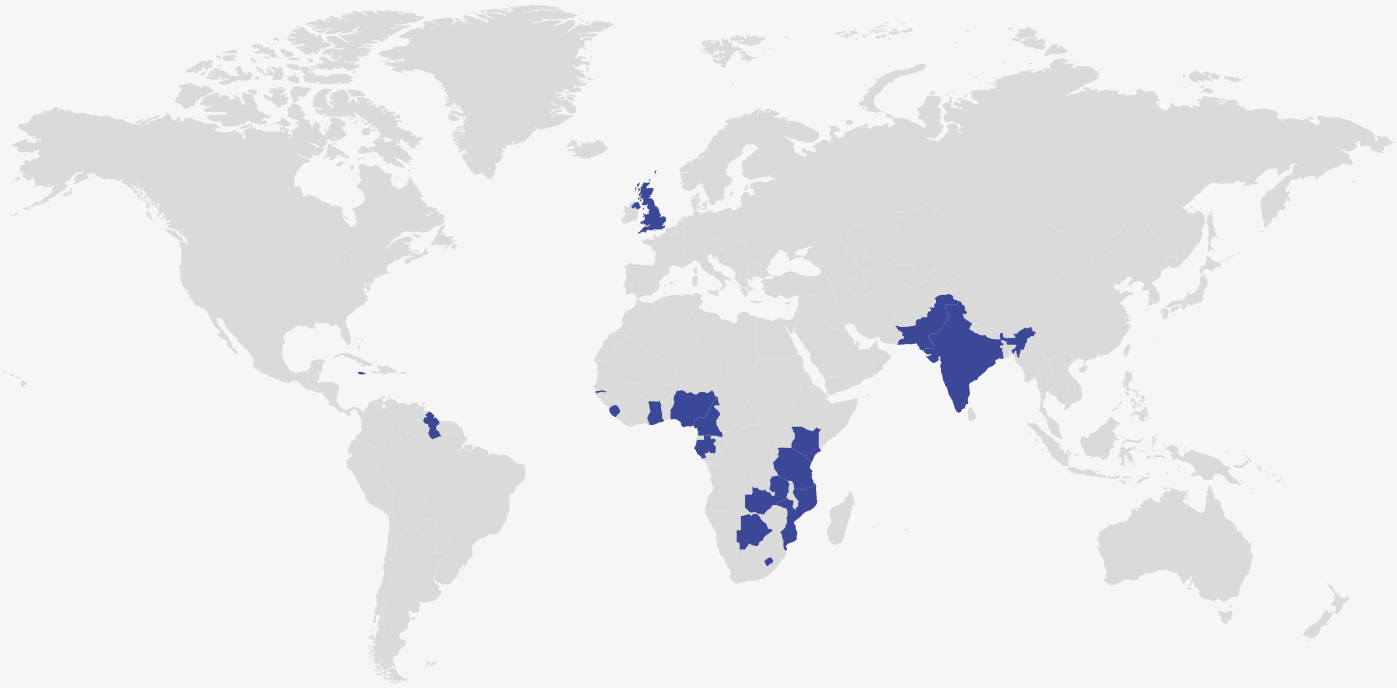

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Botswana	India	Rwanda	Uganda
Cameroon	Jamaica	Samoa	United Kingdom
Eswatini	Kenya	Seychelles	Vanuatu
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Gambia	Mauritius	Tanzania	
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Foreword

Bernadette Lewis
Secretary General, CTO

In today's rapidly evolving digital landscape, the imperative for nations to embrace digital technologies for transformation has never been more pressing. As we navigate the complexities of the digital age, it is essential for Commonwealth countries to harness the power of technology to drive innovation, enhance service delivery, and empower their citizens. This report serves as a valuable resource for policymakers, industry stakeholders, and all those committed to advancing digital initiatives across the Commonwealth.

In 2020, the Commonwealth Telecommunications Organisation (CTO) embarked on a new strategic course to support digital transformation in the Commonwealth. In October 2023 research began to better understand the progress of digital transformation and the CTO is now pleased to present this insightful report on Digital Transformation: Critical Success Factors and Challenges in the Commonwealth.

Through case studies, proven practices, and expert analysis, this document sheds light on the key success factors and challenges encountered in the digital transformation journey. By sharing knowledge and experiences, the CTO aims to foster collaboration, inspire innovation, and accelerate progress towards a more digitally inclusive Commonwealth.

I commend the authors, contributors, and all those involved in the creation of this report for their dedication to promoting digital excellence within the Commonwealth. My hope is that this document may serve as a catalyst for positive change and pave the way for a future where technology empowers individuals, transforms societies, and drives sustainable development in the diverse membership of the CTO.

Ms Bernadette Lewis
Secretary General, CTO

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Executive summary

This report explores key critical success factors and challenges of digital transformation in Commonwealth countries. The study aims to raise awareness of the imperative for digital transformation and provide tools and benchmarks for measuring its progress.

This report is aimed at government leaders seeking to implement digital transformation initiatives based on shared learning within the CTO network of member countries. It offers learnings in digital transformation and insight into the potential benefits of digitalisation in government, such as increased productivity, cost savings, scalability, resilience, flexibility, agility and information security. These can be realised if governments are able to develop their digital capacity.

Analysis was carried out through a combination of desk-based research, focused questionnaires and key stakeholder interviews. Established indices for measuring digital transformation, including the GovTech Maturity Index, United Nations E-Government Survey, and Digital Impact Alliance were used for comparative analysis across countries.

The backbone of the study is a series of case studies which provide learning and insight into the digital transformation journeys of the following CTO member countries: Mauritius, Ghana, Tanzania, Trinidad & Tobago and Bangladesh.

Benefits of digitalisation

- Operational efficiency
- Trusted data sources for reliable decision making
- New revenue streams from technology
- Empowerment of citizens to access public services
- New and scalable business channels
- Socio-economic development
- Dynamic regulatory environment that fosters innovation and competition

Six key considerations for the Commonwealth

1. **Political Will and Leadership:** Governments need a clear and coherent vision for digital transformation and be willing to allocate resources, empower stakeholders, and overcome bureaucratic hurdles.

2. **Partnerships:** Digital transformation requires participation from multiple stakeholders, both within governments and the broader public and private sectors. Public-private partnerships (PPPs) offer the potential to draw upon expertise from subject matter experts (SMEs), creating programmes of shared value and accountability.

3. **Regulatory Environment and Legal Frameworks:** Robust and responsive regulatory and legal frameworks are required to support and enable the adoption and correct use of appropriate technologies, whilst also protecting the rights and interests of the citizens and the state.

4. **Resourcing:** Significant and sustained investment (from governments and the private sector), is needed to establish physical and digital infrastructures together with the operational processes and change-management required to embed the transformation.

5. **Multistakeholder Approach:** Digital transformation requires consultation and engagement with a wide range of experts and stakeholders, both within and outside the government, to ensure that digital transformation is informed by evidence, feedback, and incorporates diverse perspectives that reflect the needs, preferences, and aspirations of the people.

6. **Digital Skills:** Successful digital transformation relies on the upskilling and inclusion of all members of society, resulting in widespread digital literacy. Only then will the digital infrastructures, processes and available tools provide an effective and accessible environment for socio-economic development of societies through digital transformation.

CHAPTER 1

Introduction

1

1.1 Background to the study

The CTO is an intergovernmental organisation founded on the principles of cooperation and shared vision. It supports its member countries in establishing their policies, strategies, and practices aimed at bridging the digital divide, by promoting inclusive access to information and communication technologies (ICTs). The CTO is the oldest and largest intergovernmental information and communications technology organisation in the Commonwealth. It has evolved through various iterations to address the changing landscape of telecommunications and its growing importance in socio-economic development. Today, it serves as a platform for collaboration among member countries, leveraging collective expertise and resources to advance telecommunications and ICTs. With a membership that includes countries from across the globe, the CTO is uniquely positioned to facilitate dialogue, knowledge exchange, and best practices among a diverse range of stakeholders.

In recent years, "lockdowns" in many countries as a response to the Covid-19 pandemic acted as a catalyst for digital transformation, accelerating the transfer of many activities into the digital space. In line with the focus of the 60th Council of the CTO, to support members in the formulation and accelerated implementation of digital transformation programmes, the CTO has produced this report. This document marks the commencement of an ongoing research initiative to further advance and showcase the digital transformation journeys of CTO member countries.

1.2 Approach and objectives of the study

In keeping with the aim of the research, triangulation research method was adopted for this study, integrating elements of both qualitative and quantitative research. Primary data, obtained from structured interviews and questionnaires, was an essential part that offered first-hand knowledge and insights into the processes, successes and challenges that Commonwealth nations face when executing digital transformation. Furthermore, secondary data was incorporated to improve the scope and depth of the research.

Public and historical documents, as well as reports from institutions and the government, were among the data sources used. A case study approach targeted senior government representatives and policy makers from selected Commonwealth nations who participated in structured interviews and responded to focused questionnaires. As a result, the case studies for Trinidad and Tobago, Bangladesh, Ghana, Mauritius, and Tanzania were chosen for inclusion in this report and offer examples of best practice.

Figure 1: Study objectives

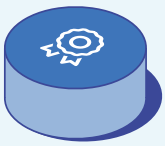
The main objectives of this study are:

Awareness

Raise awareness of the imperative for digital transformation

Best practice

Share examples of digital transformation frameworks used by member countries.

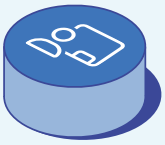


Successes and challenges

Identify critical successes and challenges for digital transformation in the Commonwealth.

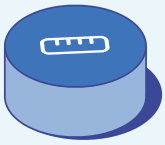
Review

Identify opportunities for mutual support amongst members in digital transformation.



Lessons learned

Share learnings from different digital transformation approaches.



Measurement

Provide tools and benchmarks for measuring the progress of digital transformation programmes.

1.3 Project roadmap

Figure 2: Project roadmap

The project was carried out in four key stages:

Desk-based research to gather information on digital transformation and digital transformation frameworks.

Interviews and questionnaires with key stakeholders to determine successful approaches, learnings and key benefits derived from digital transformation.

Review of the case studies with the participating member countries.

Report publication and dissemination.

CHAPTER 2

What is digital transformation?

Digital transformation is key to the success of businesses and industries but also at the national level, it reshapes the way governments and the public sector operates and interacts with its citizens.

Digital transformation encompasses a broad spectrum of activities and outcomes. The CTO[1] defines digital transformation as "a process that integrates digital technology into all areas of an organisation or nation, changing the operation of its people and systems to deliver value".

Similarly, the International Telecommunications Union (ITU)[2] describes digital transformation from a digital services perspective, as "a continuous process of multi-modal adoption of digital technologies that fundamentally change the way government and private sector services are ideated, planned, designed, deployed and operated such that they are personalised, paperless, cashless, presence-less, frictionless, and consent-based". (ITU, 2019). It also argues that digital transformation of governments and public services has the potential to enable citizens to access such services in a secure, reliable and timely manner, providing them with a greatly improved experience.

The World Bank's perspective on digital transformation emphasises its role as a transformative opportunity, crucial for addressing global challenges and promoting inclusive, resilient, and sustainable development. Digital transformation is universal, driven by advancements in technologies such as cloud computing, big data analytics, the Internet of Things (IoT) and artificial intelligence (AI). These technologies have a transformative impact on nations and economies.[3]

On a national scale, digital transformation involves the adoption of digital technologies by governments to improve service delivery, enhance citizen engagement, and drive economic growth and global competitiveness. This encompasses e-government initiatives, digital public services and policy frameworks that facilitate digital innovation at the national level.

This report reviews some of the resources from international development agencies such as the World Bank GovTech Maturity Index, the UN E-Government Survey, and the Digital Impact Alliance that can support digital transformation programs in Commonwealth countries.

1 About the CTO https://www.cto.int/
2 The ITU https://www.itu.int/itu-d/sites/priorities/digital-transformation/
3 Fourth Industrial Revolution Schwab 2016 https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/

CHAPTER 3

Measuring digital transformation: tools and benchmarks

In response to the increasing importance of the transformative power of technology in public administration and the need to support countries on their digital transformation journeys, several frameworks have been developed. The following sections of this report examine some of these frameworks.

3.1 GovTech Maturity Index (GTMI)

Government-Technology "GovTech is a whole-of-government approach to public sector modernisation that promotes simple, efficient, and transparent government, with citizens at the centre of reforms".

The GovTech Maturity Index (GTMI) was introduced as a key component of the GovTech Global Partnership (GTGP), a World Bank led initiative aimed at supporting countries in their public sector digital transformation efforts. The GTMI aims to provide a systematic and quantifiable measure of how different countries utilise technology to refine public sector operations, elevate the quality of service-delivery, and foster more robust citizen engagement. The index evaluates countries based on a range of criteria, encompassing core government systems, the digitisation of public services, the extent of digital engagement with citizens, and the foundational supports such as policy frameworks, legal structures, and institutional backing which are crucial to the success of GovTech initiatives. The GTMI is not intended to create a ranking of countries' readiness for or performance of GovTech.[4]

The GTMI was first launched in 2021 and updated in 2022 with the release of the GTMI 2022 report. The GovTech Maturity Index 2022 report evaluated the progress of government technology (GovTech) initiatives across 198 economies. The GTMI was primarily based on the World Bank's GovTech dataset. In contrast with the 2021 GTMI, the data collection process for the 2022 GTMI index was substantially improved through direct participation of interested government officials via an online survey.[5]

4 Trends in Public Sector Digital Transformation. World Bank Group
5 GovTech Maturity Index 2022 Update https://www.worldbank.org/en/programs/govtech/2022-gtmi

3.1.1 Insight from GTMI 2022

Ranking of economies in the GTMI 2022

GTMI 2022 data ranks 198 global economies as indicated below. The proportion of economies in the different GTMI groups are as follows: A (Very High), B (High), C (Medium), and D (Low).

Figure 3: GTMI groups of economies

Classification of Commonwealth countries in the GTMI 2022

In the GTMI ranking, 12 Commonwealth countries out of the 69 countries in Group A are listed as Very High — GovTech Leaders and 15 Commonwealth countries of the 46 countries in Group B are listed as High with Significant Focus on GovTech, 24 Commonwealth countries of the 53 countries in Group C are listed as having Some Focus on GovTech. In Group D where 30 countries are listed as having Minimal Focus on GovTech, five are Commonwealth countries.

Figure 4: Commonwealth countries in the GTMI 2022

Classification of Commonwealth countries

Group A	Group B	Group C	Group D
Australia, Bangladesh, Canada, India, Malaysia, Malta, Mauritius, New Zealand, Singapore, Tanzania, Uganda, and the United Kingdom	*Brunei Darussalam, Cyprus, Fiji, Ghana, Jamaica, Kenya, Nigeria, Pakistan, Rwanda, South Africa, Sri Lanka, St. Lucia, Togo, Trinidad and Tobago, and Zambia*	*Antigua and Barbuda, The Bahamas, Barbados, Belize, Botswana, Cameroon, Dominica, Eswatini, Grenada, Guyana, Lesotho, Malawi, Maldives, Mozambique, Namibia, Papua New Guinea, Samoa, Seychelles, Sierra Leone, Solomon Islands, St. Vincent and the Grenadines, Tonga, Vanuatu, and Zimbabwe*	*Gambia, The, Kiribati, Nauru, St. Kitts and Nevis, and Tuvalu*

Further insights into the state of GovTech across four dimensions

GovTech 2022 provides further insights across four significant dimensions of digital transformation as indicated in the figure below.

Figure 5: GovTech four dimensions of digital transformation

3.2 United Nations E-Government (E-GOV) Survey

The E-Government Survey, published biennially by the United Nations Department of Economic and Social Affairs (UN DESA), is acknowledged as a significant tool for both measuring and developing public sector digitalisation (UN, 2022). It functions as a monitoring system and a guiding structure for digital transformation in the public sector. The survey provides a broad overview of the status and trends in e-government across various regions and levels of government. It highlights the increasing integration of digital services into public administration and the ongoing efforts to ensure inclusive access to these services (UN, 2022). The survey features a ranking of digital government in all 193 UN member states. The E-Government 2022 survey, which is the 12th edition of the survey, is notable for being the first to include an assessment of e-government in the most populated city of each UN member state (UN, 2022).[6]

6 The future of Digital governments: Trends & Insights—E-Government Survey 2022. United Nations.

3.2.1 Insights from the E-Government 2022 Survey

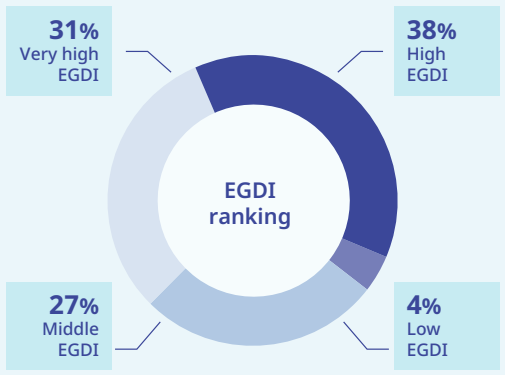
The survey assesses E-Government development using the E-Government Development Index (EGDI) to rank UN Member Countries. The E-Government Index (EGDI) is a composite index which comprises of the Online Services Index (OSI)[7]; the Telecommunications Infrastructure Index (TII)[8]; and the Human Capital Index (HCI)[9].

The Survey suggests that a strong local e-government strategy can advance sustainable local administration and technology integration.

E-Government Development Index ranking

The EGDI 2022 ranked the 193 UN member states in the following groupings depending on the level of development of the country's E-Government.

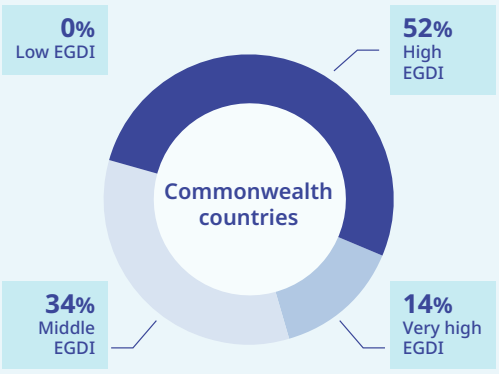
Figure 6: E-Government Development Index



It is important to note that of the seven countries in the Low EGDI group which are Least Developed Countries (LDCs), Low-Low-Income Countries (LLICs), and Small Island Developing States (SIDSs), six are in Africa, and one in the Americas. These are regions of the Commonwealth.

EGDI Ranking of Commonwealth countries

Figure 7: Commonwealth countries EGDI ranking



The report also highlights commendable E-Government initiatives in the following 12 Commonwealth countries: Rwanda, India, Mauritius, Seychelles, South Africa, Guyana, Belize, Fiji, Grenada, Bangladesh, Togo, and the United Kingdom. The initiatives include digital payments and digital financial services; social protection disbursements through Artificial Intelligence (AI) enabled data; satellite imagery; climate protection through AI, ensuring online government services meet accessibility standards in keeping with national digital strategy; national sustainability development plans, and the creation of government websites/ digital platforms.

The Covid-19 pandemic tested the digital resilience of all governments but was also a catalyst for the rapid deployment of digital solutions to enable and support delivery of public services. This led to accelerated e-government development, also highlighting the need for inclusive and accessible services for all members of society. This requires upskilling and innovation within the public sector to meet rising expectations for service delivery. There are good examples of several Commonwealth countries which have strengthened frameworks for e-government, with strategies and legislation on cybersecurity, data protection, open government data, and e-participation.

7 Categories assessed under the OSI include Institutional framework, Service Provision, Content Provision, E-participation, and Technology.
8 Categories assessed under the TII include Internet Users, Fixed broadband subscriptions, Active mobile subscriptions, and Mobile cellular subscriptions.
9 Categories assessed under the HCI include Adult literacy, Gross enrolment ratio, Expected years of schooling, and Mean years of schooling.

3.3 Digital Impact Alliance (DIAL)

The Digital Impact Alliance (DIAL) is an independent global alliance that aims to advance digital inclusion to achieve the UN Sustainable Development Goals. DIAL is funded by development agencies and private foundations such as the United Nations Foundation, Bill & Melinda Gates Foundation, the United Kingdom's Foreign & Commonwealth Office, the Swedish International Development Cooperation Agency and USAID among others.[10] It was established in 2015 with a strategy focused on practical research combined with evidence-based advocacy to address barriers to the .use of digital solutions and data by the international development sector DIAL has been instrumental in areas such as the advancement of digital payments in Africa and has engaged in discussions about how the continent could lead in Digital Public Infrastructure.

DIAL has also introduced initiatives such as GovStack, which aims to help navigate the complex world of digital transformation, and the Digital Impact Exchange, which is geared towards sharing knowledge and practices in the digital development sector. The GovStack initiative is a community-driven, open-source project that accelerates the development of sustainable and people-centric digital government services. It was founded by the International Telecommunication Union, Estonia, Germany, and DIAL in 2020.

It is designed to assist countries and organisations in building cost-effective, scalable and efficient digital public services. This allows citizens to seamlessly access services such as health records management, identity documents, digital payments, and other government services. It builds a common understanding and technical practice on fundamental reusable and interoperable digital components, referred to as Building Blocks. This effort is expert-driven and community-based, including the participation of multiple stakeholders to consolidate expertise.

GovStack is also part of the Digital Public Goods Alliance Roadmap, which supports governments in deploying, maintaining, and evolving digital public goods for digital public infrastructure and the development of a digital ecosystem. In terms of resources, GovStack provides capacity-building, training, and support for designing digital strategies through its GovLearn and GovExchange platforms. Furthermore, it also works with governments to identify real-life scenarios for digital services (use cases) that benefit their citizens through its GovSpecs service and provides an open demonstrative environment for developers to learn about and test the building block approach through its GovTech offering.[11]

10 DIAL Donors https://dial.global/about-the-digital-impact-alliance/our-donors/
11 GovStack – A community-driven initiative and open-source project https://dial.global/work/govstack/

CHAPTER 4

Case study of Mauritius

4

4.1 Introduction

Mauritius is an island state (overall area is 2,040 square kilometres) and part of the Mascarene Islands in the Indian Ocean. It is located approximately 2,000 kilometres off the southeast coast of Africa, neighbouring the French island of La Reunion, and to the east of Madagascar. Its economy has made great strides since independence in 1968 and is now classified as an upper-middle-income economy.

4.2 Digital transformation approach

Mauritius' approach to digital transformation is based on a progressive digital transformation framework that monitors activities against allotted timeframes, budgets and milestones. It was able to achieve success by implementing a range of robust digital strategies.

The following sections provide details on these activities over a ten-year period.

4.2.1 Vision and goals

In 2013, the e-Government Strategy was formulated with the aim of modernising government functions and services. Its objective was to rethink how government functions and services are offered, prioritising the needs of the population. Within a five-year period, 75% of the e-Government Strategy was implemented, helping to strengthen the integration of technology to support government operations and service delivery. Policies for data sharing, open source, open data, e-participation, e-payments, digital signatures, document management systems, e-procurement, and mobile apps, have changed the way the government engages and interacts with its stakeholders.

The e-Government strategy was followed by the 2018–2022 Digital Government Transformation Strategy (DGTS). To support government operations, optimise, transform, and produce better government services, and achieve large-scale business optimisation that increases efficacy, the DGTS acknowledges the positive effects of e-Government on the development of the Republic of Mauritius. It also places a strong emphasis on the necessity of using and reusing data. Given this, a methodology based on the 13 digital government pillars served as the roadmap for developing the plan. The plan adopts a needs-centric methodology that incorporates situational analysis, e-readiness, digital maturity assessment, digital synergies analysis, data insights from a digital government survey of businesses, government agencies, and citizens, as well as a scan of global and local best practices to inform the evidence-based approach.[12]

In keeping with Vision 2030, the Digital Mauritius 2023 Strategic plan offers a long-term vision and roadmap for the island nation's digital development. The Public Sector Business Transformation Strategy (PSBTS) and the DGTS combine to take advantage of public sector digital transformation opportunities to realise the Government's Vision 2030. The DGTS's digital policies are expected to help the government achieve all 17 of the Sustainable Development Goals.[13]

12 Mauritius Digital Government Strategy 2018-2022 https://mitci.govmu.org/Documents/Strategies/Final%20Digital%20Government%20Transformation%20Strategy%202018%20-%202022.pdf

13 Digital Mauritius 2030 https://mitci.govmu.org/Documents/Strategies/DM%202030%2017%20December%202018%20at%2012.30hrs.pdf

4.2.2 Strategic pillars

Figure 8: Mauritius government digital pillars

E-Governance		
E-Business Strategy	Agile Principle	Once-Only Principle
E-Procurement-by-Default	Data Driven Culture	Open Data-by-Default
E-Participation	End-to-end Service	Data Skills
Digital Inclusiveness	Co-Creation of Services	Digital-by-Default Services

Digital-by-Default Services provides support desks to help consumers with low digital abilities to utilise the service, which is by default, delivered through digital channels. The Once-Only Principle means that data collected from citizens and stakeholders should only be used once by the government if it is already in its possession. Through cross-agency cooperation, interoperability, and data exchange between systems, current services can be transformed into transactional, paperless, end-to-end paperless services. In the planning and execution of government services, Co-creation of Services is crucial with the emphasis on promoting participation and cooperation with citizens and other stakeholders.

An iterative Agile approach takes into consideration user feedback to refine and expand digital products until they are fully functional. The Open Data-by-Default programme seeks to guarantee ministries and departments' regular release of non-sensitive, non-personal public data in an open, anonymised format and to promote public participation in the co-creation of open data-driven applications. The Government of Mauritius is keen to promote a data-driven culture by ensuring that key performance indicators and public service consumption statistics facilitate the integration of data in decision-making, policy creation, monitoring, and service quality improvement. Digital skills play a central role in the digital transformation journey and Mauritius has created the Digital Industries Academy for the development of digital competencies in individuals of all ages and backgrounds. In addition to this, Digital Service Centres have been setup in Mauritius and Rodrigues to provide digital assistance to all citizens for accessing Government online services.

These centres also play a key role in the empowerment of public servants and foster digital skills in senior executives via capacity building and training initiatives.

Another key pillar is the development of e-Business strategies at the Ministries and Departments level to streamline and simplify their business processes, focusing on key elements of digital transformation. This is complemented with E-Procurement-by-default and E-Participation. The implementation of E-Governance frameworks to examine digital transformation at the organisational, project, and whole-of-government levels include minister-led committees, high-level task forces for digital governance, and project steering committees. Information on Government services is widely communicated through digital marketing campaigns, making use of mobile-friendly platforms which provide easily available online services.

4.2.3 Strategies policy

E-Government Strategy 2013–2017

The e-Government Strategy 2013–17 was developed by the MTCI in collaboration with CIB with the aim of enhancing the efficacy and efficiency of ministries and departments, with a particular focus on providing services to residents and companies. Seventy-five percent of the strategy's efforts, including e-procurement, e-work permits, online land and construction permit applications, and e-services, have been executed effectively.

Digital Government Transformation Strategy 2018–2022 (DGTS)

The Digital Government Transformation Strategy Framework, which oversees the strategy, acts as a broad digital policy that has influenced government priorities and has broken down service provider silos to enable cooperation in the creation of public services. In addition to setting the path for improved operational effectiveness and efficiency and better services for residents, companies, and government clients, the strategy was created to expedite efforts to digitise the public sector. The strategy reviewed the e-Government Strategy from 2013 to 2017, emphasised the process of engaging stakeholders, and resulted in an action plan for the strategy's implementation.

Vision 2030 Strategy

The DGTS offers strategic direction for digital government, while the Public Sector Business Transformation Strategy and Vision 2030 were utilised to transform Mauritius into a high-income, sustainable, innovative, and inclusive economy with state-of-the-art infrastructure, international connectivity, and cutting-edge skills and technology. The Vision 2030 strategy seeks to use state-of-the-art communication infrastructure and technology to transform Mauritius into a Smart Island and facilitate upscale operations such as cloud computing, big data analytics, software and animation development and disaster recovery. Creating new digital solutions and increasing operational efficiency have been made possible by the adoption of emerging technologies like blockchain and artificial intelligence (AI). Overseeing this task was the Mauritius Emerging Technologies Council (METC). Given the challenges associated with digital transformation initiatives, Mauritius collaborated with organisations like the UNDP and the CTO to identify best practices and maximise value.

4.2.4 International influence

The Digital Government Transformation Strategy was based on the digital government transformation framework of the Organisation for Economic Co-operation and Development (OECD). Apart from identifying opportunities and weaknesses, digital government surveys, adapted from UN e-Government survey questionnaires, were also carried out to measure and track advancements. Exchange of best practices and expertise in e-Government was also made easier by partnerships and collaborations with nations such as Estonia and India. International organisations like Gartner, UNDP, and ITU have made big contributions to capacity building by helping to close skills gaps and create regulations that control digital transformation programmes. For managing digital projects, the tried-and-true Project Management Body of Knowledge (PMBok) was adopted.

4.3 ICT adoption

The country's shift to a high-income, inclusive, and environmentally friendly economy has been made possible, according to the Ministry of Information Technology, Communication, and Innovation, in large part through ICT innovation. Through collaboration with ICT stakeholders, the country successfully achieved the following strategies and initiatives.

- Provided a state-of-the-art Internet infrastructure.
- Lowered the cost of telecommunications.
- Empowered citizens to be digitally ready.
- Allowed citizens to access government services online.
- Positioned Mauritius as a safe and reliable destination, capitalising on a bilingual and well-educated workforce, modern technical infrastructure and good governance.

Mauritius is recognised as a regional ICT hub in the African region, and ICT has been noted as the 3rd pillar of the economy that builds on open-source policies, open data policies, the Digital Government Transformation, Digital Mauritius and Artificial Intelligence strategies. The Government of Mauritius has understood the importance of technology and innovation in the world today and, as such, has proposed and implemented several policies and measures to encourage local and foreign investment in Mauritius. This has in turn transformed the country into a competitive, well-diversified and broad-based economy with strong links to neighbouring countries of the region and the continent. Thanks to economic optimism, investment in various ICT domains became pivotal, leading to significant investments resulting in the following significant developments:

Deployment of a state-of-the-art communications network.

Installation of high-spec fibre-to-the-home Internet access that provides high speed internet. In addition to this, Mauritius is connected to the rest of the world by two underwater cables called SAFE and LION. A third cable installation is currently being planned. It is worth noting that the nation is the first in the African region to provide residential customers with Internet bandwidth of 100 Mbit/s. The liberalisation of the telecom industry in 2003 led to healthy competition, cost savings and improved service quality.

Creation of an Enabling Environment for Effective ICT Adoption.

ICT policies, laws, and regulatory frameworks related to data security, cybercrime prevention, telecom liberalisation and regulation, and data protection have been established to create an environment that supports ICT development. In December 2017, Mauritius became the first country in the world to enact legislation compliant with the principles of the EU General Data Protection Regulation (GDPR).

Driving Economic Growth through technology adoption

The ICT sector in Mauritius has expanded to offer services overseas. Companies can access the African market if their headquarters are in Mauritius. As a result, more international ICT businesses are opening offices in Mauritius to offer a variety of services, generating income from overseas markets.

4.4 Leadership and responsibility

Mauritius success story is primarily due to the strong political backing, executive endorsement, and dedication of a resolute and persistent leadership team. Digital transformation programmes are being led by the President, the Minister of Information Technology, Communication, and Innovation, and other Sectoral Ministers. It's due to this leadership that the public and other important stakeholders are engaged with the digital vision. It also assisted ministers in obtaining the resources required to progress digital transformation projects.

The Ministry of Information Technology, Communication, and Innovation (MITCI) holds the responsibility of supervising the execution of digital transformation strategies and propelling the digital transformation agenda as well as creating national ICT policies and digital strategies. The Central Informatics Bureau (CIB), a department within the ministry, oversees executing e-government initiatives. To achieve their digital goals, line ministries and departments receive support from the CIB.

4.4.1 Governance

Effective governance plays a pivotal role in ensuring successful outcomes and the following committees have the responsibility to oversee different areas of the operation.

Minister-Led Committee

The responsibility of supervising and monitoring digital transformation projects of national significance or complexity has been placed on a committee headed by the minister.

Project Steering Committee

At the level of the line ministry or department, project steering committees are established. They are accountable for monitoring, assessing, and modifying the project's performance and advancement. Program managers, suppliers, and other stakeholders make up the committee, which is chaired by the Head of Line Ministry.

Project Monitoring Committee

Senior management staff from the line ministry or department, suppliers, and programme managers make up the Project Monitoring Committee which is chaired by the line ministry or department. As and when needed, additional members may be co-opted.

Mauritius took a comprehensive, coordinated, and collaborative approach to governing its digital transformation. A solid governance framework with clear coordinating powers and responsibilities was essential to follow up on effective implementation of the action plan.

4.5 Stakeholder engagement

A collaborative environment was established through well-structured and tailored communication, which allowed for in-depth dialogue and active stakeholder engagement. This made it possible for MITCI to understand the requirements and concerns of the stakeholders. From the outset, MITCI acknowledged that successful societal digital transformation relies on an engaged and informed population. As a result, the agenda and vision for the digital transformation were shared through a variety of communication channels, outlining the goals and advantages. This resulted in a well-informed population which understood the purpose of the digital transformation and how it would affect their daily lives. Clear communication enabled all stakeholders to remove uncertainty, resolve conflicts and align expectations.

The establishment of the National Open Data Portal, National e-Government Portal, and website provided a platform for citizens to meaningfully participate in decision making, as well as to access information about government activities.

Maintaining the official government social media accounts and routinely posting communications on platforms such as Facebook have been assigned to the Government Information Service (GIS), an organisation tasked with informing the public about government policies, programmes, services, and activities. Stakeholders' networking, cooperation, and communication are encouraged through social media platforms. Another effort to increase public awareness and knowledge of e-government services is called "Fasil," which involves gathering data and launching social media outreach programmes.

Key stakeholders included the Government Policymakers, Industry, Citizens, Civil Society, International Organisations and the general population. The engagements were through the following:

Involvement of Stakeholders in the Design of Digital Services

Whilst traditional governments may sometimes opt for a top-down approach to decision making, The MITCI took a different approach by informing and involving stakeholders in the digital transformation activities at every step. Active participation, support, and investment in projects have been observed as a result. In addition to fostering a culture of creativity and innovation, this promoted cooperation and made it possible for the nation to utilise its own talent.

Citizen Support Portal — E-Participation Platform

To facilitate public-government communication and foster inclusivity, MITCI installed the citizen support portal, an internet-based platform that serves as a conduit for citizens to offer input into decision-making processes. Through this portal, the government maintains regular communication with the public, providing them with information on policies and enabling them to submit requests, complaints and ideas, all of which the government is required to respond to.

4.6 Resources

Resource allocation and funding are pivotal in the success of digital projects. The availability of financial resources for the execution of digital transformation projects was made feasible by the buy-in and support of senior management.

For funding from the Ministry of Finance and Economic Development, line ministries and departments are required to submit business cases and proposals for their own digital projects.

4.7 Successes, opportunities and resources

Mauritius has demonstrated remarkable success, having completed at least 75% of its digital transformation initiatives within a ten-year period. The key achievements are listed below:

- Over 300 government sites have been connected to G-Cloud via fibre.
- Over 600 data sharing services have been implemented.
- Over 500 open datasets have been implemented.
- Over 50 Geo coded datasets have been set up.
- Over 130 operational digital government systems across different sectors have been set up.
- Info Highway, an award-winning data sharing platform connecting government agencies has been successfully implemented.
- Government cloud that hosts all government e-services, websites, mobile apps and systems have been set up.
- GINS, a platform that connects all government agencies to the Internet and systems via high-speed fibre links was successfully implemented.
- Government email services that serve all public officials have been set up.
- The revamped national portal, an official portal that complies with the latest web standards and makes information accessible has been put in place.
- Installation of an e-services portal which allows for a one stop shop for all e-services with a single login.
- A single, convenient, trusted and tested system, MauPass has been put in place for citizens to access services.
- Implementation of Mokloud, a secure, flexible and easy platform for sharing, issuing and verifying digital documents.
- MoRendezvous, an extensible electronic queue management system using digital kiosks was installed.
- MauSign which allows citizens to digitally sign documents online without tokens was set up.
- MoRobot/maia is a government interactive multilingual virtual assistant based on GPT for citizen engagement.
- Revamped national ID cards allows for additional security features including KYC, mobile ID, digital ID among others.
- National Open Data Portal — enables government agencies to release data of value to the public for data driven initiatives.
- Fasil is a national marketing campaign using preferred channels for citizens.

Although 75% of the digital projects, from e-Procurement to e-Services, as suggested in the e-Government Strategy 2013–2017, have been successfully executed by the MTCI through CIB, there are ongoing opportunities for digital transformation in the nation. With end-to-end digitisation, the ministry aims to revolutionise service delivery in important areas including health and education. To progress and revolutionise all industries, the MTCI also aims to utilise cutting-edge technology including artificial intelligence (AI), the Internet of Things (IoT), and data analytics. As digital technologies are deployed, the specialised skills required to operate them necessitates ongoing capacity building. The MTCI is dedicated to closing the skills gap by increasing digital skills across the country. Demonstrating numerous successes because of digital transformation has given Mauritius the chance to collaborate with other nations to support creative digital government projects, train officers in digital government solutions, and exchange and share talent.

4.8 Insights and lessons for the Commonwealth

As an example of successful digital transformation in the Commonwealth, Mauritius offers the following insights as success drivers.

- Development of a tailored national digital transformation strategy and alignment with the socio-economic goals, including realignment of digital policies with the evolving digital economy. This helps countries to design digital agendas with the SDGs in mind.
- Achieving interoperability through the development of technology-independent architectures.
- Commitment, support and buy in from top government officials.
- Effective communication, multi stakeholder engagement and a collaborative environment.
- Digital transformation projects are not only complex and costly but they take time. Projects should be piloted and only scaled up when ready, allowing for iterative development i.e. an Agile approach to design and delivery.
- Demonstrating quick wins and celebrating achievements builds interest, momentum and confidence which subsequently eases the digital transformation journey.
- Investment in digital skills development across sectors and the development of digital inclusion policies and strategies.
- Facilitation of talent exchange programmes and benchmarking exercises on best practices in e-Governance.
- Gaining insights, knowledge, and skills through affiliation with international organisation.

Significant lessons were learned in the case of Mauritius notably that the ability for any transformation project to succeed depends on the dedication and support of senior leadership. Digital projects were aggressively supported by the leadership from start to finish. Moreover, results were achieved through a culture that encourages creativity, innovation, stakeholder engagement and collaboration across sectors. The impact of digital transformation is clearly evidenced in Mauritius through increased efficiency and enhanced public service delivery.

CHAPTER 5

Case study of Ghana

5

5.1 Introduction

Ghana, located in West Africa, is a country with a rich history and vibrant culture. It is known for its diverse landscapes, including lush rainforests, expansive savannah, and stunning coastlines along the Gulf of Guinea. With a population of over 30 million people, Ghana is recognised for its warm hospitality and friendly locals. The country gained independence in 1957 and has since made significant strides in economic development and political stability. Ghana's economy is one of the strongest in the region, driven by industries such as agriculture, mining, and services. In addition to its economic achievements, Ghana is celebrated for its cultural heritage, traditional festivals, and colourful markets.

5.2 Digital transformation approach

Ghana has made significant strides in its digital transformation journey, leveraging technology to drive economic growth, improve public services, and empower its citizens. The country's approach to digital transformation is grounded in progressive strategies that have set clear milestones and guidelines for implementation within specified time frames and budgets. Over the course of a decade, Ghana has implemented several strategies to drive its digital transformation agenda, as detailed below.

5.2.1 Vision and goals

In 2003, the National ICT for Accelerated Development Policy which seeks to promote the use of ICTs and enhance sectoral services was promulgated. The policy has 14 pillars that cover all the economic sectors and how ICTS can be utilised to enhance service provision. It served as a base for digital transformation. The goal of the policy was to advance legislative reforms in terms of the regulatory environment and enable a shift from manual systems to digital systems. The shift meant that operations of sectoral services needed to be transformed, investments needed to be made and widespread adoption of the policy was necessary.

In addition, Ministerial policy statements were created, describing the operations of the sectoral services and how they may employ ICTS to reform and improve service delivery. Certain laws and regulations were amended, and new laws were enacted, to guarantee that the Digital Transformation policies were following the requirements of the law. The Government of Ghana like other Commonwealth countries is under increasing pressure to safeguard its citizens and vital infrastructure from cybersecurity threats, which are growing in complexity. Ghana enacted a comprehensive cybersecurity law in 2020, the Cybersecurity Act 2020. In addition, the National Digital Transformation Policy was established to oversee and guide the digital transformation process.

5.2.2 Strategic policy

Engagement and involvement with the political and ruling parties led to buy-in and support for digital transformation policies. Key to this was the support and dedication of top-level leadership. Digital change is championed by the Chief Justice, the President, the Vice President, and the Minister for Communications and Digitalisation.

Collaboration and involvement of all stakeholders in policy formulation and validation made it possible to provide information in a timely manner, explaining the necessity for digital transformation and influencing stakeholders' attitudes about the change. The ICT sector in Ghana is regulated by the Ministry of Communications and Digitalisation. The National Communications Authority is responsible for licensing and regulating all businesses operating in the communications sub-sector. The Ministry of Communications and Digitalisation ensures that policies relating to digital transformation are universally applicable to all industries.

5.2.3 International influence

Ghana is a member of several international organisations that support the digital transformation initiatives that served as the basis for digital strategies. These organisations include Smart Africa Alliance, the African Union, the International Telecommunications Union, and the Commonwealth Telecommunications Organisation. Ghana has undertaken benchmarking activities with nations including Dubai, South Africa, Estonia, Finland, Rwanda, and Nigeria providing Ghana with valuable insights and best practices, especially regarding e-cabinet and e-parliament. Recently, conferences, workshops, and seminars have been a useful means of disseminating information and valuable ideas that aided Ghana in putting its digital transformation policies into practice. The National Digital Transformation Policy was significantly influenced by international best practices. The government hired two independent consultants to assist with the creation and execution of the digital transformation policy.

5.3 ICT Adoption

Ghana's adoption of technology is influenced by several factors, including the institutional environment, market orientation, the size of businesses, geography, and human resources. ICT adoption is more common among larger businesses, service sector businesses, urban businesses, businesses with highly skilled labour, businesses that export or import and businesses with lower regulatory hurdles.

Google disclosed in June 2023 that it was working with Ghana on six artificial Intelligence projects to support communities in Africa.[14] This was done through the Google Labs in Accra with projects focuses on AI technology for:

- Mapping buildings.
- Forecasting floods.
- Predicting locusts.
- Improving maternal health outcomes with ultrasound.
- Helping people with non-standard speech to make their voices heard.
- Teaching children how to read.

Like many countries in the Commonwealth, adoption of technology in Ghana is a dynamic and complex process that involves multiple stakeholders, influences, and approaches. Technology can be a powerful tool for innovation and development but it also requires appropriate policies and strategies to ensure its effective and inclusive use. Ghana has invested heavily in ICT and has implemented the following initiatives:

E-Government services

The Ghanaian Government has embraced digital transformation to enhance public service delivery. Initiatives like the Ghana.gov platform enable citizens to access a wide range of government services online, including civil registration, social services, tax filing, business registration, and immigration services such as passport applications.

e-Transform Ghana project

The Government of Ghana and the World Bank are collaborating on a project aimed to:

- improve targeting of government resources, leading to more efficient use of public funds.
- improve efficiency and coverage of priority government services, particularly in rural and under-served areas.
- nurture entrepreneurship and employment through ICT-enabled entrepreneurship.

This project includes unique electronic identification systems, which validate, and confirm a citizen's rights to public services, offering them better access to online transactions, financial, and other services. It also provides innovative applications to improve service delivery in the key areas of health, education, judicial, and parliamentary services.

ICT-based regional transformation

To promote inclusivity, the ministry established computer labs in remote areas (particularly in newly established regions), to further ICT studies in Science and Engineering. Additionally, the Ministry is working to expand ICT education throughout the nation and close the gender gap in digital technology. Initiatives have been launched to encourage females' interest in and involvement in ICT studies. Rural telephony sites were also built to improve voice and data access in remote areas

Digital infrastructure and internet connectivity

As a leader in market liberalisation and deregulation, Ghana has led the way in the African telecommunications sector. It also provides a gateway for underwater cables that connect southern and northern Africa to Europe, offering outstanding internet bandwidth and an enhanced communications infrastructure. Equipment costs and usage charges have decreased due to a significant rise in Internet bandwidth.[15]

14 The Mobile Economy Sub-Saharan Africa, GSMA 2023 https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/10/20231017-GSMA-Mobile-Economy-Sub-Saharan-Africa-report.pdf

15 Digital Infrastructure and Connectivity: https://moc.gov.gh/2023/08/29/ghana-to-establish-a-neutral-shared-infrastructure-company-to-deliver-nation-wide-4g-5g-services-ursula-owusu/

5.4 Leadership and responsibility

Ghana's digital transformation strategy succeeded thanks to the highest-ranking political leaders' endorsement and leadership in the national digital transformation policy. Setting realistic expectations early on was essential to preventing policy from being negatively impacted by changes in government. The digital transformation agenda is led by the President and backed by the Vice President. The Minister for Communications and Digitalisation takes the lead in the implementation of the projects.

The highest-ranking officials, notably Ghana's president and vice president, have been instrumental in inspiring, promoting, and communicating the digital transformation agenda to the general population. This featured municipal governance, the National House of Chiefs, which was entrusted with winning support from indigenous communities and the legislative assembly/parliament. All stakeholders agreed that digital transformation is the only way for Ghana to maintain its competitive advantage.

Together with facilitating and arranging other sectors' use of digital technology, the Ministry of Communications and Digitalisation undertook the role of leading the development of the National Digital Transformation Policy. It is also responsible for setting up the frameworks needed for digital technologies to be used by other industries.
The Ministry establishes the quality standards, operability frameworks, and specifications for those digital solutions to meet compliance requirements. Sectoral ministries are responsible for ensuring that any solutions or equipment they purchase adhere to the established specifications.

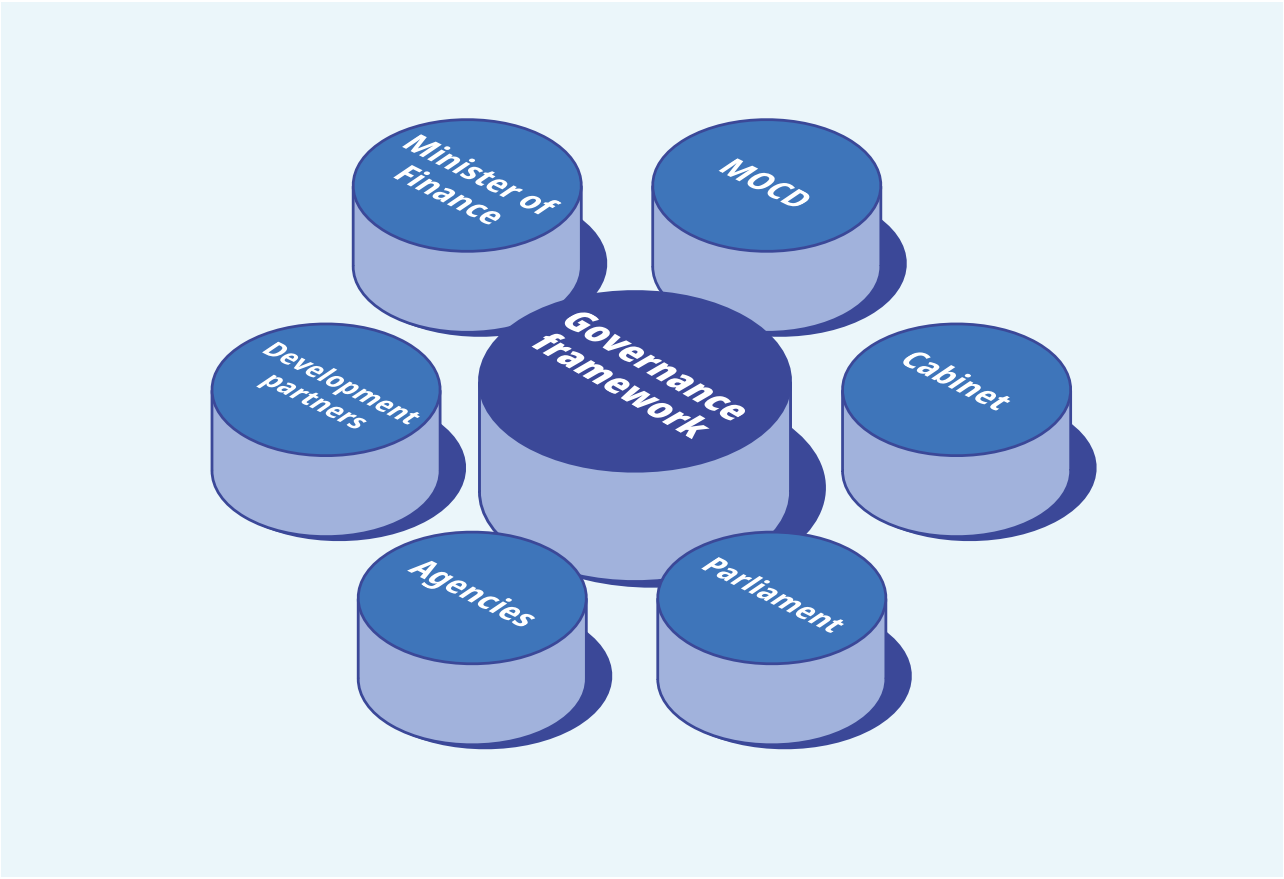
5.4.1 Communication strategies

A strong governance framework is essential to the success of digital transformation initiatives and is shown below:

The Ministry of Communications and Digitalisation is responsible for developing digital policies. Obtaining the acceptance and backing of the legislative assembly of the parliament is key. This ensures that the laws and policies facilitating digital transformation initiatives are swiftly enacted. Policy approvals are carried out at Cabinet level and once approved they are binding.

Digital transformation initiatives require significant resources. It is essential to secure the buy-in and support from the Minister for Finance, who serves as the primary sponsor for all national initiatives. In this case, the Ministry of Finance was able to witness first-hand the advantages of digitalisation as their manual processes were converted to digital ones, allowing payment processing and tracking within a digital platform.

Figure 9: Governance structure (Ghana)



5.5 Stakeholder engagement

Leadership recognised the critical value of communication and stakeholder engagement in raising awareness and acceptance of the digital transformation vision. In-depth dialogue and structured communication took place at every level, starting at the highest level with the opposition parties, the parliament, and the government. Obtaining political commitment was crucial.

Educational programmes were launched to bring all stakeholders on board with the Digital Transformation objective. Target audiences for these initiatives included the cabinet, lawmakers, chiefs, security agencies, media outlets, and the public. This was carried out to ensure all stakeholders were informed of and understood the advantages of digital transformation and its impact on daily lives. In addition, the President, the Minister for Communications and Digitalisation hosted national media briefings (through television and radio) to promote the benefits and vision of the digital transformation strategy.

To obtain buy-in and commitment, extensive meetings and consultations were held at the cabinet level, security agencies and other line ministries. Stakeholders were given the opportunity to communicate their expectations, ideas, concerns and views through the creation of collaborative platforms, including focus groups, formal meetings, and workshops.

The power and influence of media agencies was recognised as a key enabler. They were consulted at the initial stages, informing them of the advantages of digital transformation thereby enabling them to effectively communicate the digital vision nationally in different languages and dialects.

The Ministry of Communications and Digitalisation recognised the many challenges some individuals faced with reading. It combined questionnaires and surveys with interactive face-to-face conversations.

5.6 Resources

The government of Ghana plays a key role in the financing of the country's digital transformation project through the Ministry of Finance. In 2024 the Ministry of Finance pledged to increase funding for research and development in recognition of the accomplishments already achieved under the digital transformation strategy. This is in addition to assistance and support from international organisations. Funding for the Ghana digital acceleration project was secured by the Ministry of Communications and Digitalisation from the World Bank. The World Bank's contribution to the initiative is approximately USD 200 million. Through collaboration and partnership with the Smart Africa Alliance, the Smart Africa Digital Academy provides citizens with digital skills training. Additionally, the Tony Blair Institute has aided in delivering digital skills training targeting civil service personnel who oversee the creation of digital policies.

Additionally, two international consultants were recently engaged to conduct digital economy studies (communications and connectivity) within the agriculture, education, entrepreneurship, and industry sectors. The findings from these studies will inform the new digital economy policy and strategy. There are also studies being conducted on energy, tourism, hospitality, transportation and local government sectors. Through its partnership with Smart Africa Alliance, the digital economy index has been built. This platform monitors the progress of digital transformation projects.

5.7 Successes and opportunities

The following is a selection of the most notable achievements in the digital transformation journey:

- Effective deployment of a digital ID that is connected to a bank, health insurance, social security and SIM card. This deployment served as a benchmark for other nations.
- Implementation of the e-justice system, which has revolutionised the legal and judicial systems.
- Installation of e-health management systems, which enables inter-hospital system interaction.
- Transformation of the educational system that has connected school libraries and enabled electronic book access.
- The school placement mechanism has been put into place with success.
- The transition from analogue to digital television preserved frequencies, paving the way for the rollout of 4G.
- Remote connectivity has been made possible through the Universal Access Fund.
- Improved digital skills across the nation.

The Ghanaian economy has been entirely transformed through the mobile money interoperability platform. By enabling cross-border money transfers between banks, networks, and nations, the service reduces the dangers associated with cash handling. The public can purchase goods and services online as well as transfer funds from their mobile wallet to their bank accounts. Citizens recognise the advantages of mobile money despite the transaction charges.

Thanks to the many opportunities and possibilities available through digital platforms, young entrepreneurs are now able to successfully launch virtual stores and e-businesses by utilising technology. The recently introduced digital ID connects with mobile money accounts and SIM cards. It is now easier to monitor transactions across all platforms. This also helps reduce fraud and tax evasion.

5.8 Insights and lessons for the Commonwealth

Commonwealth countries can benefit from the following insights:

- Investments in research and development are vital for digital transformation projects.
- The country's digital transformation must be managed by a single, centralised Organisation or unit and the digital agenda must be consolidated under one Ministry.
- When drafting policies, consideration must be given to the interests and opinions of stakeholders. An engagement strategy, not a mandate approach, is required.
- Establish collaborations with donor partners to establish integrated digital development strategies.
- There is an opportunity to create solutions that can be exported to other nations through the African Trade Agreement.
- Acknowledge and work with the media so they can influence the public to support the digital agenda.

Political will and buy-in is important as it minimises resistance to change. The shared vision proved to be effective as opposed to imposing digital change on stakeholders.

Leadership at political and policy level also played a significant role in driving and championing the digital transformation agenda.

CHAPTER 6

Case study of Tanzania

6

6.1 Introduction

Tanzania, situated just south of the Equator on the East African coast, came into being in 1964 through the union of the mainland state of Tanganyika with the offshore Zanzibar Archipelago. It has a rich cultural heritage and a rapidly evolving digital landscape. With a population of over 61 million, Tanzania is the largest country in East Africa and home to iconic natural wonders like Mount Kilimanjaro and the Serengeti National Park.

Covering more than 99 percent of the combined territories' total area, mainland Tanzania boasts vast stretches of plains and plateaus, contrasting with spectacular relief features such as Mount Kilimanjaro (Africa's highest mountain) and Lake Tanganyika (the world's second deepest lake). The designated official capital, Dodoma, is centrally located on the mainland, while Dar es Salaam is the largest city and port in the country.

6.2 Digital transformation approach

Tanzania's approach was a comprehensive government-led initiative to drive the country's digital transformation. The approach supports a four-pronged strategy:

- Establishing a favourable regulatory, legal, and fiscal environment for the digital economy;
- Building digital skills and capacity in government institutions and youth;
- Prioritising gender inclusivity and developing a critical mass of innovators, entrepreneurs, and support services
- Developing a robust local ICT industry and closing the digital divide to ensure all citizens and businesses benefit from digital development, especially the poor, women, elderly, and rural communities.

The initiative was founded on private investment, strengthening cybersecurity, and aligning with the African Union's Digital Transformation Strategy for Africa to drive Tanzania's transition to a knowledge-based, semi-industrialised middle-income economy by 2025.

6.2.1 Vision and goals

The Digital Economy Strategic Framework (DESF) 2024–2034 seeks to transform Tanzanian citizens by deploying affordable and user-friendly cutting-edge digital technologies. In addition, the strategy aspires to promote a universal and disruptive innovation and digital economy that benefits all citizens.

The DESF 2024–2034 is the overarching policy for designing and implementing the digital economy. The strategy is pivotal, as it integrates all systems, policies, laws, regulations, initiatives, and other strategies in Tanzania. Before the DESF 2024–2034 was promulgated, Tanzania launched several digital transformation projects, as listed below:

- National ICT Broadband Backbone (NICTBB)
- National Internet Data Centre
- National Physical Addressing (NaPA) Project
- Digital Tanzania Project

The design and implementation of the ICT Regulatory Framework strengthened the initiatives mentioned above and cultivated an environment that fosters innovation, attracts investment, safeguards consumer interests, promotes connectivity and skills development.

The great success of digital transformation was also enabled by wider policies, strategic plans and development blueprints, which were essential

constituents of the foundation of the digital economy. These encompassed:

- Tanzania Development Vision 2025
- National Five-Year Development Plan — III (2021/22/2025/26)
- National Information and Communications Technology Policy (2016)
- National Broadband Strategy 2020
- Sustainable Development Goals 2030 (SDG -2030)
- Africa Agenda 2063
- National Cyber Security Strategy 2016
- E-Government Cyber Security Strategy 2022
- Financial Sector Development Master Plan.

The National ICT Policy, 2016 (NICTP-2016) and the successive reviews ensured successful harnessing of ICT to digitalise the economy towards achieving the nation's socio-economic goals. The policy has effectively put in place measures and mechanisms to accelerate broadband penetration by individuals and organisations, including strengthened ICT cybersecurity.

6.2.2 Strategic policy

The Tanzania Digital Economy Strategic Framework 2024-2034 presented a range of strategic initiatives and policies aimed at propelling the nation's digital transformation and nurturing economic growth. The framework underscores key strategic initiatives and policies as follows:

- **Foundational Pillars of the Digital Economy Strategic Framework**: The framework identifies core pillars for a resilient digital economy, encompassing digital innovations, connectivity, skills development, policy coordination and fostering an inclusive culture. Tanzania's focus on these pillars aims to cultivate an environment conducive to harnessing digital technologies to drive economic advancement.
- **National Information and Communications Technology Policy (2016):** This policy and its subsequent revisions, plays a pivotal role in steering the deployment and exploitation of ICT to digitise the economy and attain socio-economic objectives. The policy supports initiatives to increase broadband penetration, bolster cybersecurity, and stimulate local content development.
- **Transformation of Government Services:** Initiatives such as the Government Electronic Payment Gateway (GePG) exemplify the digital overhaul of governmental services, leading to enhanced service delivery, streamlined tax collection, and improved payment infrastructure. These are geared towards enhancing public sector efficiency and fostering economic growth through digital transformation.
- **Programs for Skills Development and Digital Literacy:** Tanzania's strategic focus on enhancing digital literacy and essential skills across diverse sectors aims to equip the workforce with the necessary competencies to leverage ICT effectively. By investing in skills development programs, Tanzania seeks to bridge the digital skills gap and drive innovation within the digital economy.
- **International Collaboration and Alignment:** Tanzania's commitment to aligning its digital economy strategy with global frameworks and best practices underscores dedication to fostering collaboration and knowledge exchange on ICT adoption. Engaging with international partners and stakeholders enables Tanzania to leverage external expertise and resources to accelerate digital growth and development.
- **Sector-Specific Policies and Legal Frameworks:** Tanzania's initiatives to review and formulate sector-specific policies, laws, regulations, strategies, and guidelines demonstrate a commitment to supporting the development of the digital economy. By establishing robust governance frameworks and standards, Tanzania aims to cultivate an environment conducive to digital innovation and economic progress.

These strategic initiatives and policies underscored Tanzania's proactive stance in leveraging digital technologies, fostering innovation, and driving economic modernisation through effective policy coordination, skills development, and international collaboration.

Figure 10: The Digital Economy Strategic Framework (DESF) 2024–2034 (Tanzania)

The Digital Economy Strategic Framework (DESF) 2024–2034 focuses on six pillars, integrated to build a resilient digital economy, as shown above.

- **Enabling Digital Infrastructure** — creates adaptable and integrated infrastructure that supports the sustainable development of the digital economy and solidifies interoperable digital service delivery platforms, including storage infrastructure.
- **Governance and Enabling Environment** — focuses on building regulatory and legal frameworks that enable the digital economy and development of institutions' capacity for operationalisation of the digital economy agenda.
- **Digital Literacy and Skills Development** — facilitates the building of digital literacy and promoting a digital-savvy society.
- **Digital Innovation Culture and Enabling Technologies** — emphasises deploying emerging technologies to boost economic growth, develop and implement robust cybersecurity strategies and cultivate a culture that fosters creativity and innovation.
- **Nurturing Digital Inclusion and Accessibility** — seeks to develop and implement frameworks that nourish and envelop an inclusive digital economy.
- **Digital Financial Services** — ensures interoperability in digital financial services and inclusive digital financial payment platforms to support the emerging digital economy.

6.2.3 International influence

The Tanzania Digital Economy Strategic Framework 2024-2034 was shaped by internal and external factors, for example, global frameworks and trends within the digital economy sector, including the Digital Transformation Strategy for Africa (2020-2030). The impact of the international framework on Tanzania's digital economy strategy is evident across several key areas:

- **Global Connectivity:** Utilising digital technologies to link businesses and individuals to worldwide markets are a response to the global trend of increased global connectivity in the digital economy. Competitiveness and engagement in the global digital marketplace are boosted by adhering to international connectivity initiatives and standards.
- **Policy Alignment:** Emphasis is placed on developing effective policies and regulatory frameworks for the digital economy that align with international best practices and norms. By harmonising its regulations with global standards, Tanzania is able to establish an environment conducive to international collaboration, investment, and digital trade.
- **Skills Development:** The importance of enhancing digital skills is recognised, resonating with the global emphasis on cultivating a proficient workforce for the digital era. Skill-building initiatives are aligned with international benchmarks.
- **Resource Optimisation:** Digital technologies are leveraged for sustainable resource utilisation, mirroring the global trend of employing technology for resource management and sustainability.
- **Collaborative Ecosystem:** The government fosters a collaborative environment involving both public and private sectors, reflecting the international trend of multi-stakeholder partnerships that drive digital innovation and progress.

6.3 ICT adoption

The Tanzania Digital Economy Strategic Framework 2024-2034 strongly emphasises the adoption and integration of Information and Communication Technology (ICT) as a fundamental catalyst for economic growth and advancement. Acknowledging the transformative capabilities of ICT across diverse sectors, the framework highlights the pivotal role of ICT adoption in enhancing operational efficiency, productivity, and competitiveness. Key aspects concerning ICT adoption in Tanzania, as documented in the framework, encompass:

- **Digital Transformation for Economic Advancement:** The framework accentuates the importance of digital technologies in fortifying economic progress and expediting economic growth. By harnessing the power of ICT, Tanzania endeavours to leverage the potential of digital innovations to foster creativity, generate fresh business prospects and enhance overall economic efficacy.
- **Advancements in Infrastructure:** Tanzania has made notable strides in strengthening communication infrastructure to facilitate the assimilation of emerging technologies like artificial intelligence, big data analytics, and blockchain. The presence of robust ICT infrastructure enables widespread ICT adoption and propels digital transformation across various sectors.
- **Expansion of Mobile and Internet Reach:** Tanzania has experienced a significant surge in mobile telecommunication services subscriptions, internet users, and mobile broadband coverage. This escalating penetration of mobile and internet services signifies the broadening accessibility of ICT in the nation, granting more individuals and enterprises access to digital tools and online services.
- **Enhancements in Government Services and Digital Transactions:** The digital overhaul of governmental services has resulted in enhanced service delivery, streamlined tax collection, and

improved payment infrastructure. Initiatives such as the Government Electronic Payment Gateway (GePG) have revolutionised revenue collection, substantially boosted government revenues and exemplified the impact of ICT adoption on public sector efficiency.

- **Focus on Skills Development and Digital Literacy:** Recognising the significance of nurturing digital skills, Tanzania concentrates on increasing digital literacy and essential competencies across all sectors. Through investments in skill development initiatives, Tanzania aims to equip its workforce with the requisite proficiencies to effectively leverage ICT and propel digital innovation.
- **Global Collaborative Endeavours:** Tanzania's endeavours to align its digital economy strategy with international frameworks and best practices underline a dedication to fostering collaboration and knowledge exchange on ICT adoption. It can harness international expertise and resources to expedite ICT adoption and propel sustainable digital expansion by engaging with global partners and stakeholders.

The government recognises the pivotal role of ICT adoption in propelling Tanzania's digital transformation agenda, fostering economic modernisation and positioning the country as a formidable contender in the global digital economy arena.

6.4 Leadership and responsibility

Tanzania's Digital Economy Strategy emphasises the following:

- **Government Leadership:** The government is central in providing leadership and guidance for digital economy initiatives. It is tasked with formulating policies, regulations, and frameworks that underpin the growth of the digital economy.
- **Ministry of Information, Communication and Information Technology (MICIT):** MICIT is recognised as a key entity responsible for coordinating and supervising the execution of digital economy strategies. The ministry is entrusted with fostering innovation, supporting start-ups, and fortifying the digital ecosystem.
- **Stakeholder Engagement:** The importance of involving diverse stakeholders is recognised-including citizens, private sector entities, and development partners, in the digital transformation journey. Collaboration and partnerships are deemed essential for realising the framework's objectives.
- **Capacity Building:** Prioritising and enhancing leadership capabilities within government institutions and other relevant organisations is emphasised. Cultivating digital skills and expertise among leaders and decision-makers is deemed critical for successful implementation.
- **Accountability:** The significance of accountability in ensuring the timely achievement of targets and indicators. Monitoring and evaluation mechanisms were established to monitor progress and hold accountable parties responsible for their roles.

6.4.1 Governance

In the Tanzania Digital Economy Strategic Framework 2024-2034, the governance framework is pivotal in steering the development and execution of policies, regulations, and initiatives to shape the digital economy landscape. The framework highlights the significance of establishing a robust governance structure to effectively tackle the challenges and opportunities arising from digital transformation. Key aspects pertaining to the governance framework include:

- **Policy Development:** The governance framework was dedicated to advocating and enacting suitable policies, regulations, and laws to govern the digital economy effectively.
- **Legal and Regulatory Framework:** Ensuring the establishment and implementation of a legal and regulatory framework that adapts to the evolving digital landscape is crucial for fostering a conducive environment for digital innovation and growth.
- **Data Privacy and Protection:** Resolving data privacy and protection issues is a critical facet of the governance framework to instil trust and assurance in digital transactions.
- **Cybersecurity:** Giving prominence to cybersecurity measures within the governance framework is essential to safeguard digital assets, shield against cyber threats, and strengthen the resilience of digital infrastructure.
- **Intellectual Property Rights:** The governance framework incorporated provisions for safeguarding intellectual property rights to stimulate innovation, creativity and investment in digital technologies.
- **E-commerce Regulations:** Establishes transparent and effective e-commerce regulations within the governance framework for fostering online transactions, ensuring consumer protection, and driving business expansion in the digital economy.

Tanzania is aiming to cultivate a secure and reliable digital environment that nurtures innovation, growth, and sustainability in the digital economy. The governance framework acts as a guiding structure to navigate the intricacies of the digital landscape and ensure that digital economy initiatives are executed transparently, accountably, and efficiently.

6.5 Stakeholder engagement

The government of Tanzania recognised that effective communication strategies are crucial for disseminating information, engaging stakeholders, and advancing the digital transformation agenda. The strategy highlights the significance of clear and targeted communication to ensure the successful execution of proposed initiatives. Key aspects concerning communication strategies are highlighted as follows:

- **Transparency and Clarity:** Communication efforts helped prioritise transparency and clarity to ensure all stakeholders comprehend the digital economy initiatives' objectives, strategies, and anticipated outcomes.
- **Multi-channel Approach:** Adopting a multi-channel communication strategy to reach a diverse array of stakeholders, including citizens, private sector entities, government agencies, and development partners. This approach facilitated the effective dissemination of information across various platforms and mediums.
- **Engagement and Participation:** Communication strategies are geared towards fostering stakeholder engagement and participation in the Tanzania digital transformation journey. This was aimed to instil a sense of ownership in the digital economy agenda.
- **Feedback Mechanisms:** The government established feedback mechanisms for gathering input, insights, and stakeholder suggestions. This two-way communication approach enabled continuous improvement, adaptation, and responsiveness to the evolving needs and challenges in the digital economy landscape.

- **Capacity Building:** Communication strategies encompass efforts to enhance digital literacy and awareness among stakeholders through training, workshops, and educational campaigns. The framework aims to empower individuals and organisations to actively engage in the digital economy.

In the Tanzania Digital Economy Strategic Framework 2024-2034, public and stakeholder engagement is pivotal in implementing digital economy initiatives successfully. The framework highlights the significance of involving a broad spectrum of stakeholders, encompassing the public, private sector, civil society, and development partners, in digital transformation. Key aspects concerning public and stakeholder engagement are highlighted as follows:

- **Inclusivity:** The framework advocates for inclusive engagement, ensuring that diverse voices and perspectives are considered in decision-making processes related to the digital economy.
- **Partnerships:** Establishing partnerships with stakeholders from various sectors is crucial for fostering collaboration, sharing expertise, and pooling resources to propel digital innovation and growth.
- **Consultation:** Engaging stakeholders through consultations, workshops, and forums facilitates the exchange of ideas, feedback, and insights that can shape the development and execution of digital economy strategies.
- **Empowerment:** By involving stakeholders in the digital transformation agenda, the framework aims to empower individuals and organisations to actively contribute to shaping the future of the digital economy.
- **Transparency:** Transparent communication and decision-making processes are fundamental for building stakeholder trust and credibility, fostering an environment conducive to collaboration and partnership.

Through inclusive participation, partnerships, and transparent communication, the framework endeavours to leverage stakeholders' collective expertise and resources to actualise the vision of a flourishing digital economy.

6.6 Resources

Tanzania's government's commitment to digital development is evident through the National ICT Policy 2016 and the ongoing efforts to update it. However, financing these digital transformation initiatives could be challenging given the limited resources available and other competing needs in Tanzania. Overall, the digital transformation of Tanzania is being supported by significant funding from international development institutions like the World Bank and the European Union, in addition to the government's own policy initiatives. The World Bank is providing significant funding for Tanzania's digital transformation through the Digital Tanzania Project. The project focuses on:

- **Digital Ecosystem** — This component aims to make Tanzania more attractive for digital investment and innovation, including strengthening the digital enabling environment, building digital skills, and developing the local ICT industry.
- **Digital Connectivity** — This component focuses on improving access to high-quality broadband internet services.
- **Digital Platforms and Services** — This component supports the development of digital public services and platforms.

In addition to the World Bank funding, the European Union launched a "Digital4Tanzania: e-Governance Support Programme" to contribute to the digital transformation impact on Tanzania's inclusive economic growth and citizens' well-being.

6.7 Successes and opportunities

The following are a selection of Tanzania's most notable achievements in their digital transformation journey:

- **Expanding digital infrastructure and connectivity:** The Regional Communications Infrastructure Program Phase 3 (RCIP-TZ) has played a critical role in increasing connectivity for citizens and the government, enabling digital transactions and contributing to economic growth and financial inclusion. Tanzania has expanded the National ICT Broadband Backbone to capacitate last-mile connectivity. The Universal Service Access Fund was used from July 2022 to June 2023 to build 304 towers in 291 wards, benefiting 3,343,565 residents.
- **Improving access to key digital services:** Through government facilitation, mobile operators have provided affordable access to life-enhancing services, such as mobile financial services and M2M/IoT, for people in under-served communities through inclusive and innovative business models.
- **Establishing a robust digital and data governance structure:** The National Digital Health Steering Committee, comprised of experts from the health and private sectors, government, and donor community, played a vital role in driving the digital transformation initiative forward and ensuring alignment across different stakeholders.
- **Transforming healthcare delivery:** The Data Use Partnership (DUP) initiative transformed Tanzania's healthcare system by strengthening digital governance and policy, developing healthcare worker capacity, co-creating connected digital health systems, and coordinating the digital health ecosystem. This led to better training for healthcare workers, more robust digital governance and policy, improved coordination of digital health efforts and significant advancements in primary healthcare.
- **Digital literacy:** The government has integrated digital literacy programs into educational curricula and offered training opportunities. Notable progress includes the establishment of Digital Clubs in educational institutions through the Tanzania Communications Regulatory Authority (TCRA), aimed at empowering youth in cyberspace-related matters. Additionally, access to mobile telecommunication services has helped address the knowledge and information gap for farmers in Tanzania and enabled efficient interactions and transactions between key players in the agricultural value chain, driving productivity.
- **Developing a favourable regulatory, legal, and fiscal environment:** The government is working to create an enabling regulatory, legal, and fiscal environment for the digital economy, including reviewing national digital policies and legislation to support the growth of the digital landscape.

6.8 Insights and lessons for the Commonwealth

Key insights include:

- **Collaborative Ecosystem:** While stressing the significance of a collaborative ecosystem involving both public and private sectors, the framework highlights the necessity for synchronised endeavours to propel digital innovations, connectivity, skills development, and policy coordination. This collaborative model nurtures an environment conducive to digital transformation and inclusive growth.
- **Global Connectivity:** Acknowledging the global nature of the digital economy, Tanzania aims to harness digital technologies to link businesses and individuals to markets transcending geographical borders. Such global connectivity unveils fresh market prospects and eases customer access worldwide, fostering economic diversification and inclusive expansion.
- **Policy Development:** Tanzania acknowledges the importance of effective policy formulation and regulatory frameworks to govern the digital economy. By enacting appropriate policies and regulations, Tanzania can establish a favourable environment for digital innovation, investment, and sustainable progress.
- **Skills Development:** While recognising the fundamental role of digital skills in propelling economic modernisation, the framework accentuates the imperative of enhancing skills across diverse sectors of the economy. Through investments in digital literacy and essential skills development, Tanzania can bridge the digital gap and empower its workforce for the digital era.
- **Resource Optimisation:** By leveraging digital technologies to unlock the economic potential of blue resources, Tanzania aims to advocate for the sustainable exploitation of its maritime ecosystem. Through utilising emerging technologies and promoting local content generation, the country can optimise the economic benefits derived from its natural resources.

CHAPTER 7

Case study of Trinidad and Tobago

7

7.1 Introduction

Trinidad and Tobago, a vibrant twin-island nation at the southern tip of the Caribbean, with a population of over 1.5 million is known for its rich cultural diversity. Trinidad, the larger of the two, spans approximately 1,850 square miles (4,800 square km) and is separated from the Venezuelan coast by the Gulf of Paria. Meanwhile, Tobago, smaller in size with an area of about 115 square miles (300 square km), lies to the northeast of Trinidad. The nation achieved independence in 1962 and became a republic in 1976. It is on a transformative journey towards digital modernisation and aims to diversify its economy, improve public services, and enhance the overall quality of life of its citizens, marking a strategic pivot from traditional industries to a more inclusive digital future.

7.2 Digital transformation approach

Trinidad and Tobago's digital transformation is guided by its ICT strategic planning frameworks. The most recent of these was the National ICT Blueprint 2018-2022[16], which aims to empower individuals, boost business competitiveness, and revolutionise government operations through technology. Trinidad and Tobago has made noticeable progress towards digital transformation in recent years. Having regard to the development of a forward-looking National Digital Transformation Strategy for the period 2023-2026, is being pursued. It will provide the foundation for a digitally inclusive society that emphasises meaningful connectivity and fosters economic growth and competitiveness.

7.2.1 Vision and goals

Trinidad and Tobago's vision for digital transformation is articulated through its National ICT Blueprint 2018-2022. The primary goals of the blueprint are outlined in the following five strategic thrusts:

- Improving connectivity: Advancing the deployment of ICT infrastructure to support securely connected people, businesses, and government.
- Increasing human capacity: Enhancing digital literacy and developing the skills to enable productivity and innovation.
- Digital Government: Ensuring the use of ICT to transform the delivery of public goods and services and strengthen institutional capacity.
- Fostering Economic Development: Creating an environment for an innovative, entrepreneurial, and vibrant ICT Sector
- Advancing the Environment for Societal Benefit: Managing the use of ICT to minimise possible damage to the natural environment of the islands of Trinidad and Tobago.

Trinidad and Tobago's vision for digital transformation is articulated through the Ministry of Digital Transformation's mandate for which the following primary goals have been identified:

- Increased access to ICT in under-served communities
- Improved digital literacy

16 Trinidad & Tobago's National ICT Blueprint 2018—2022: https://mdt.gov.tt/wp-content/uploads/2023/03/ICT-BLUEPRINT-JULY-2019-1.pdf

- Improved governance efficiencies — faster transaction times; "no wrong door" for access to Government services.
- Reduced bottlenecks, duplication, and fraud in public systems for grants and allowances.
- Opportunities for developers and entrepreneurs — lessening international risks and anchoring ICT infrastructure at home.
- A strengthened ICT legislative framework — ensuring the protection of all citizens' rights to privacy and protection.
- A stimulated local economy and reduced reliance on forex for international solutions, creating better value for money.

The National Digital Transformation Strategy (NTDS) which is currently being finalised will serve as the country's updated roadmap for digital transformation.

7.2.2 Strategic policy

Trinidad and Tobago's Digital Transformation Agenda is centred around three thematic areas, and they form the basis for the (NTDS):

- **Digital Society:** The goal is to increase participation of citizens in the digital ecosystem and to enhance educational opportunities to support distance and virtual learning extensively, thus promoting digital inclusion and fostering social cohesion. Key initiatives include ensuring universal access to digital tools and resources, bridging the digital divide, and enhancing digital literacy.
- **Digital Economy:** It aims to establish a resilient e-commerce sector capable of adapting to changing global market conditions, thereby contributing to economic diversification. Strategies focus on promoting innovation, strengthening the enabling policy and regulatory environment, and making substantial investments in digital infrastructure to support new and existing businesses.
- **Digital Government:** The focus is on creating a fully digital public service that enhances the efficiency and accessibility of government interactions for all citizens. This includes streamlining governmental processes, digitising public records, and providing online services that are secure and user-friendly.

These strategic pillars will be supported by a National Data Strategy, that will emphasise the ethical and effective use of data to drive decision-making and policy development.

Trinidad and Tobago is adopting the following strategies to build a resilient, inclusive digital society that adapts to current technological advances and anticipates future trends, ensuring sustainable growth and development:

- Adoption of Agile approaches for project development and execution which leads to greater adaptability and sustainability.
- Continuous collaboration and stakeholder engagement at all levels to secure buy-in while taking into consideration the needs and interests of all stakeholders.
- Securing support at the highest executive level and the identification of digital champions, as these are key to overall success.
- Implementation of National ICT Strategies aimed at leveraging digital technology and ICT to improve the lives of citizens, drive economic growth (including competitive businesses) and foster transformational and responsive government.
- Creating a secure and resilient cyber environment, based on collaboration among all key stakeholders. The National Cyber Security Strategy[17] is being refreshed.

The development of the National Digital Transformation Strategy, as indicated above, is in keeping with this strategic approach.

17 Trinidad and Tobago's National Cyber Security Strategy: https://ttcsirt.gov.tt/wp-content/uploads/2022/04/National_Cyber_Security_Stategy_2012.pdf

7.2.3 International influence

Trinidad and Tobago is guided by international metrics and frameworks presented by leading research organisations and institutes such as the World Economic Forum (WEF) and the United Nations Department of Economic and Social Affairs (UNDESA), which inform the development of key national digital transformation policies.

Trinidad and Tobago also collaborated with a development partner — the United Nations Development Programme (UNDP), which conducted the Digital Readiness Assessment (DRA) in 2022[18]. This assessment provided critical insights into the current state of digital capabilities within the government and the broader ICT landscape, offering strategic recommendations to enhance ongoing digital transformation efforts.

The European Union's General Data Protection Regulation (GDPR) has also been identified as a benchmark for Trinidad and Tobago in establishing robust data protection and privacy standards. This international model guides the formulation of the National Data Strategy and the operationalisation of the Office of the Information Commissioner (OIC) to ensure compliance with data protection laws.

Additionally, the United Nations Commission on International Trade Law's (UNCITRAL) Model Law on Electronic Commerce was instrumental in shaping the country's Electronic Transactions Act, 2012. This Act lays the groundwork for secure electronic transactions and e-commerce, reflecting Trinidad and Tobago's commitment to aligning its digital legal framework with international legal standards, thus fostering a secure and trustworthy digital environment for both citizens and businesses. Work is underway to update key pieces of legislation which form part of the enabling environment for digital transformation.

7.3 ICT Adoption

In recent years, Trinidad and Tobago has seen a significant increase in the adoption of information and communication technology (ICT), driven by comprehensive strategic efforts and cultural shifts towards a digitally enabled society. According to the 2021 National Digital Inclusion Survey[19], over half of the population regularly uses digital devices like desktops, laptops, tablets, along with internet and mobile phones. This broad uptake has integrated a large segment of the population into the digital domain, altering everyday interactions and business operations.

The Digital Readiness Assessment of 2022, conducted by the UNDP, highlights the substantial strides being made by Trinidad and Tobago in its digital transformation journey. Notable progress has been achieved in priority areas including the adoption of digital products and services. The COVID-19 pandemic played a significant role in this shift, accelerating the public's engagement with digital technologies and enhancing the overall digital culture. This has resulted in an increased demand for and consumption of digital products and services across various sectors.

The government has made advances in digitalising public services. Most government entities now maintain a digital presence and the government also maintains its portal — *ttconnect*, which offers informational and transactional services to the public, including some government e-payments. This digital interface has streamlined interactions between the government and citizens, making services more accessible and efficient.

Despite these advancements, challenges remain, including bridging the digital divide. Vulnerable groups including people with disabilities, senior citizens, and under-served communities often find themselves at a disadvantage due to varying levels of access to technology and connectivity. To

18 Digital Readiness Assessment (DRA) 2022: https://mdt.gov.tt/wp-content/uploads/2023/03/Trinidad-and-Tobago-Digital-Readiness-Analysis-VF-for-Sharing.pdf
19 National Digital Inclusion Survey 2021: https://cso.gov.tt/wp-content/uploads/2022/06/National-Digital-Inclusion-Survey-DIS-2021-Final-Report.pdf

address these gaps the government is pursuing targeted initiatives aimed at ensuring equitable access to digital tools and resources, which is fundamental for achieving inclusive digital transformation.

Key interventions include:

- **Developers' Hub (D'Hub)** — This initiative is designed to empower local developers with the tools, resources and support needed to drive innovation and to develop digital solutions for the advancement of the country's digital transformation agenda. These digital tools can then be shared globally, benefiting from the international digital marketplace. It provides an ecosystem of services, technology and support to encourage innovation, strengthen entrepreneurship, expand domestic software development and contribute to economic growth. D'Hub was awarded the Inter-American Development Bank's President's Award for Innovation in the Public Sector in December 2023.
- **ICT Access Centres** — These centres are part of a broader government initiative to enhance digital inclusion by providing essential services such as internet access, computer use and digital literacy training to rural and under-served communities. The Access Centres are also used as contact points for other community-based learning initiatives. One such example is the partnership with the Adult Literacy Tutors Association (ALTA) to offer its online courses.
- **WeLearnTT Digital Skills Development Programme** — This is a comprehensive program, launched to increase digital literacy at the national level, promote inclusion and build a capable, tech-savvy workforce equipped to meet the demands of the digital economy. The program offers a diverse array of courses ranging from basic digital literacy to advanced ICT skills, catering to different demographic groups, including the youth, senior citizens and people with disabilities and those seeking to advance their existing ICT skills. .
- **TTWiFi** — This programme provides free Wi-Fi access in public spaces such as schools, libraries, and transportation hubs. It is designed to increase digital participation by improving public access to the internet, supporting e-governance, e-learning, and enhancing overall community productivity.

7.4 Leadership and responsibility

The Ministry of Digital Transformation (MDT) is responsible for advancing the Government's digital transformation agenda. While embracing this leadership role, MDT recognises that it must work collaboratively with other ministries, departments and agencies given the cross-cutting nature of digital technology. As such, partnerships and stakeholder engagement are identified as critical factors for successful project execution and implementation.

Supporting the MDT in this endeavour is its implementation arm, the National Information and Communication Technology Company Limited (iGovTT). This company is instrumental in providing ICT consulting and support services to MDAs for the execution of digital projects. Its role ranges from technical support to strategic implementation of ICT initiatives, ensuring seamless and beneficial transition to digital government services for stakeholders. Together, MDT and iGovTT work to advance the digital agenda, enhance technological capabilities, and promote the use of digital solutions across Trinidad and Tobago.

7.4.1 Governance

The governance framework for digital transformation in Trinidad and Tobago reflects the country's commitment to a democratic and just approach, integrating principles of distributive justice to ensure that the benefits of digital advancements are shared equitably among all segments of society. This framework is characterised by a participatory governance model that was founded on inclusion and collective decision-making.

Decisions regarding the direction and scope of digital initiatives are deliberated upon and approved by the Cabinet, ensuring there is governmental oversight and accountability at the highest level. This process facilitates a transparent and fair governance structure, wherein the various interests within the national community are represented and considered.

The development of the National Digital Transformation Strategy showcases this governance model in action. Engagement is both consultative and collaborative, aiming for the co-creation of solutions and strategies. The approach fosters deeper collaboration and builds consensus across different sectors, ensuring adaptability to the changing technological landscape and alignment of digital transformation with broader national interests.

Key principles underpinning this governance framework include:

- Ethics and fairness — ensuring that all actions are just and benefit the community;
- Transparency — fostering trust and openness in government proceedings;
- Agility — flexibility and swift adaptation to new challenges and opportunities;
- Creativity and Innovation — creating solutions that are fit-for-purpose and can meet the specific needs of Trinidad and Tobago's diverse population.

7.5 Stakeholder engagement

Effective communication is crucial for advancing the country's digital transformation agenda. The government uses multiple channels to share information on its digital initiatives and activities. Traditional media channels such as newspapers, radio, and television are used to reach a wide audience, particularly those with limited access to the internet or those who rely on more traditional information sources.

The MDT also leverages the high levels of mobile usage in Trinidad and Tobago by maintaining an active presence on various social media platforms, including Facebook, LinkedIn, X (formerly Twitter), and Instagram. Social media allows the Ministry to share information on its projects and programs and to interact with the public creating a direct line of communication and obtaining feedback from the public in real time. These help to inform any changes needed to programmes and approaches.

Other Government ministries, departments and agencies are also involved in communicating the progress of digital transformation. The Office of the Prime Minister Communications Division plays a significant role in this regard by providing regular updates on service changes and improvements across various MDAs. This unified approach ensures that citizens are well-informed about the government's digital transformation efforts and has the opportunity to participate actively.

Trinidad and Tobago's approach to public engagement and stakeholder involvement in its digital transformation journey is designed to be inclusive, ensuring that a broad spectrum of perspectives is considered in the development and implementation of digital policies and initiatives.

The government actively fosters participation through structured consultations with a wide array of stakeholders, including the public, business leaders, government officials, academics, civil

society and the diaspora. Key inputs into the National Digital Transformation Strategy have been obtained, allowing for the development of a comprehensive and inclusive policy framework that addresses the needs and interests of all segments of society.

In addition to this, development of the strategy has involved the adoption of, a multistakeholder approach in which four technical working groups were established. The Working Groups were comprised of experts from business, the public sector, academia, civil society and regional and international intergovernmental agencies. They provided specialised insights for enhancing the strategic direction of national digital transformation efforts.

The MDT also offers extensive online feedback mechanisms for citizens to communicate their suggestions and concerns via email, social media, and dedicated online feedback forms. This not only helps in gathering valuable input from a wider audience but also underscores the government's commitment to transparency, responsiveness and helps to foster the trust of its citizens.

7.6 Resources

Significant financial resources have been dedicated to supporting digital transformation, including funding from the Public Sector Investment Programme (PSIP) and loans from international development banks such as CAF- the Andean Development Bank and the Inter- American Development Bank (IDB). These financial resources are complemented by strategic partnerships with other development partners that provide technical assistance and expertise. An example is the south-south collaboration between Trinidad and Tobago and India for the sharing of digital solutions and developing human capital. A Memorandum of Understanding between the two countries was signed in August 2023. These collaborations are instrumental in building robust digital infrastructure and developi9ng local content, ensuring the sustainability and success of Trinidad and Tobago's digital transformation efforts.

7.7 Successes and opportunities

Trinidad and Tobago's digital transformation efforts have advanced beyond just technological implementation, encompassing a more holistic approach that included several key elements, such as cultural shifts, as the government recognised that citizens must adopt a "digital-first" mindset. This required promoting digital literacy and ensuring widespread acceptance and adoption of new digital technologies and services. The establishment of a dedicated Ministry of Digital Transformation demonstrated the government's commitment to advancing the country's digital agenda. This high-level leadership has been critical for advancing digital transformation initiatives.

Another critical element for success is the revision of existing policies and regulations along with the development of new ones to effectively address the challenges and opportunities presented by the digital era. A comprehensive ICT Metrics Framework is being developed to accompany the National Digital Transformation Strategy. The use of such empirical data will inform policy development and decision-making and provide accountability and transparency—some of the foundational success factors for the sustainable transition to a digital-first society.

Trinidad and Tobago actively monitors various international ICT metrics to gauge the success of its digital transformation initiatives. These rankings and ratings help guide the country's efforts and project prioritisation. Some of the key metrics utilised include:

- International ICT Metrics

- ITU ICT Development Index
- Portulans Institute Network Readiness Index
- United Nations e-Government Development Index

The ICT Metrics Framework mentioned above will measure progress across the three digital transformation pillars:

- Digital Society: Tracking progress in areas such as digital literacy, internet access, and technology adoption among citizens.
- Digital Economy: Monitoring the growth of the digital economy, including e-commerce, digital entrepreneurship, and the use of digital technologies by businesses.
- Digital Government: Evaluating the digitisation of government services, the use of digital tools in public administration and the overall e-government maturity.

MDT will regularly publish information on the country's progress under the 3 pillars.

The evolving digital landscape in Trinidad and Tobago offers numerous opportunities for socio-economic growth. Enhancing the digital economy through initiatives such as e-commerce and tech entrepreneurship promises significant economic development and diversification. In addition to this, the development of comprehensive digital government services is set to transform public administration, making it more efficient and accessible to all citizens.

7.8 Insights and lessons for the Commonwealth

Trinidad and Tobago's experience with digital transformation offers valuable insights for other Commonwealth countries considering similar journeys. These include:

- **Start Now:** Waiting for perfect conditions before embarking on digital initiatives is less effective than starting with what you have and learning along the way. Embrace progress over perfection, understanding that mistakes are inevitable and are valuable learning opportunities.
- **Adaptability and Agility:** In a rapidly changing digital landscape, adaptability and agility are crucial. Implementing agile methodologies may challenge traditional bureaucratic systems, but they are essential for timely and effective adaptation to new technologies and processes.
- **Local Adaptation:** While learning from the experiences of others is invaluable, it is important to tailor solutions to fit local contexts. Case studies from other territories can offer guidance and may help to avoid repeating mistakes, but every strategy must be adjusted to meet local needs and conditions.
- **Collaboration is Key:** Successful digital transformation is not a solo venture but requires extensive collaboration with various government agencies and stakeholders at the national, regional and international level. This collaborative approach ensures a more comprehensive and inclusive transformation process.
- **Change Management:** Effective digital transformation extends beyond just technological upgrades. It involves substantial organisational and cultural change, the management of which requires proactively addressing resistance to change by securing stakeholder support.

An important lesson from the Trinidad and Tobago case study is to avoid focusing solely on technology when embarking on a digital transformation journey. Change management and collaboration/partnerships must be integrated within all elements of the digital transformation process. The exchange of information and expertise, adaptation to the local context, and managing change through inclusive processes can facilitate a smoother transition to new methodologies and assist in overcoming resistance to change. It also ensures that the digital transformation efforts are closely aligned with the nation's vision and goals.

CHAPTER 8

Case study of Bangladesh

8.1 Introduction

Bangladesh, officially known as the People's Republic of Bangladesh, is situated in South Asia and located at the confluence of the Ganges, Brahmaputra, and Meghna rivers. The nation shares land borders with India to the north, west, and east, and with Myanmar to the southeast. Bangladesh gained her independence in 1971 and today, it is a democratic country with a population of over 169.8 million people. Bangladesh has made significant strides in recent years, improving health and education, and embracing digital transformation. The country is leveraging its youthful, innovative, and entrepreneurial population to drive economic growth, particularly in garment manufacturing, information technology, and renewable energy.[20]

8.2 Digital transformation approach

Bangladesh's approach for digital transformation focuses on four key areas that steer the nation's digital journey. It started with a clear vision 'Digital Bangladesh' which was first articulated in 2009 and aimed to transform the country into a digital economy by 2021. This vision recognises the power of Information and Communication Technology in driving development and improving citizens' lives. The goal is not solely about technological advancement but also about creating a transparent, responsive, and accountable government, enhancing social equity, and ensuring cost-effective delivery of citizen services through public-private partnerships. This initial vision was then followed by defining a new vision 'Smart Bangladesh 2041'. A further key component for Bangladesh is the focus on Digital Public Infrastructure (DPI) which encompasses critical digital capabilities that underpin modern society including digital identity, digital payments infrastructure, and data exchange platforms. In addition to the DPI, Bangladesh implemented the 'Phygital Public Infrastructure' characterised by two key elements:

Identifying Services as the Entry Point: Recognising services as the gateway to DPI, making the digital transformation vision relatable to policymakers and citizens.

Expanding DPI with an Additional 'Access Layer': This includes physical locations (such as digital centres) and call centres, enhancing DPI accessibility for people with disabilities and disadvantaged individuals residing in remote rural areas.[21]

8.2.1 Vision and goals

Bangladesh aims to capitalise on the digital revolution by implementing a "big push" digitalisation strategy known as the "Digital Bangladesh Vision." The digital Bangladesh vision was launched in 2009 with the goal of transforming the economy into a digital economy by 2021, the country's 50th anniversary year. According to the National ICT Policy-2009, short-term, mid-term and long-term plans consisting of 306 action plans have been identified to turn Vision 2021 into a reality.

Bangladesh has a National Digital Transformation Strategy (NDTS) aimed at leveraging digital technologies to drive economic growth, improve

20 Bangladesh country profile — BBC News
21 Bangladesh's "phygital public infrastructure" https://govinsider.asia/intl-en/article/bangladeshs-phygital-public-infrastructure-bridges-dpi-theory-and-practice

service delivery, and enhance governance. The primary goals include promoting digital inclusion, accelerating economic development through digital innovation, enhancing digital skills and ensuring efficient and transparent public services. The government selected 'Vision 2041' as a continuation of 'Vision 2021' to provide momentum to the nation's dream of becoming a "Smart Bangladesh" that maximises the possibilities of the Fourth Industrial Revolution (4IR). In the election manifesto, the prime minister stated that Bangladesh will be a dignified middle-income "Digital Bangladesh" when it celebrates its 50th anniversary of independence.[22] The Digital Bangladesh vision aimed to foster coordinated, inclusive and sustainable digitalisation so that society benefits from it, even beyond mobile and internet technologies.

8.2.2 Strategic policy

The government's approach emphasises public-private partnerships, citizen engagement, and a whole-of-society transformation to achieve the "Digital Bangladesh" and "Smart Bangladesh" visions by 2041. Human capital development, digital government services, robust infrastructure, and a thriving ICT industry are the key pillars driving Bangladesh's digital transformation journey.

Key elements of Bangladesh's Digital Transformation Strategy:

Human Resource Development

- Making ICT education compulsory for grades 6–12 to build a tech-savvy workforce.
- Establishing 13,000 Sheikh Russel Digital Labs across the country to provide digital skills training.
- Engaging the Bangladeshi diaspora to leverage their expertise and talent.

Digital Government

- Digitising government services and processes to improve efficiency, transparency and accessibility.
- Implementing a "Digital Service Accelerator" initiative to rapidly design and deploy digital services across ministries.
- Enabling the prime minister to lead over 1,600 virtual meetings during the COVID-19 pandemic.

Connectivity and infrastructure

- Building 109 high-tech parks and digital hubs to support the ICT industry.
- Expanding broadband internet access and connectivity nationwide.

ICT Industry Promotion

- Providing support and incentives to grow the local technology sector and promote innovation.
- Positioning Bangladesh as a global leader in digital technologies and services.

22 Digital Bangladesh: A story of transformation, resilience, and sustainability https://www.thedailystar.net/opinion/views/news/digital-bangladesh-story-transformation-resilience-and-sustainability-3222626

8.2.3 International influence

Bangladesh aligned its digital development efforts with the United Nations SDGs which provides a comprehensive global framework for achieving sustainable development across economic, social, and environmental sectors by 2030. This meant Bangladesh was committed to a shared global agenda and able to access technical and financial support available through the UN. Additionally, Bangladesh looked to international bodies like the ITU, CTO, UNDP and World Bank for guidance on digital regulation frameworks. As Bangladesh works to advance its "Digital Bangladesh" agenda, it draws on best practices and standards developed by global institutions to ensure its digital transformation is aligned with international norms and principles. Beyond these global frameworks, Bangladesh is also actively collaborating with international development partners as well as participating in global forums. This allows Bangladesh to share knowledge, learn from the experiences of others and build the capacity of its own institutions and workforce. The partnerships and exchanges facilitated through these global engagements are crucial for Bangladesh as it works to address complex development challenges and achieve its long-term vision of becoming an upper-middle income country by 2031 and a high-income country by 2041.

8.3 ICT adoption

The adoption of technology in Bangladesh has expanded rapidly, largely driven by government policies, private sector investment, and increasing internet penetration. This has led to digital transformation across various sectors, including governance, commerce, finance, education and healthcare, positioning Bangladesh for further growth and development in the digital age. This has been driven by the government's "Digital Bangladesh" agenda and collaboration with international partners.

Some key achievements of the 'Digital Bangladesh' initiative include:

Digitisation of Government Services

- The government has digitised over 1212 public services, allowing citizens to access them online. This includes services like tax filing, passport applications, and utility bill payments.
- The government has established over 5,000 Union Digital Centres across the country to provide digital services at the local level.
- Bangladesh has issued over 100 million digital IDs to its citizens, one of the highest in the world.

Developing ICT Infrastructure

The government has worked to expand broadband internet access, especially in rural areas, through various government funded projects. Examples and outcomes of such Initiatives are given below:

- At present the country has 58,313 BTSs, 27,416 NodeBs and 57,624 eNodeBs. These technologies require spectrum which is a finite resource and are costly. The newer technologies like 4G and 5G are more "spectrum-efficient", allowing for higher data speeds and capacity compared to 2G and 3G. For this reason, BTRC took the initiative to shut down 3G sites across the country and upgraded them to 4G. The country is also planning to shutdown 2G by 2030.
- Due to early adoption of mobile technology, Bangladesh has seen a rapid increase in mobile and internet penetration, the number of mobile phone users is around 191 million, mobile internet users around 117 million and mobile internet user density is around 65.24%.
- Due to lack of infrastructure and services, the number of fixed broadband users stands at around 13 million. The Government has laid 172,495 KM of optical fibre across the country.

- The Government deployed VSATs and high-capacity microwave links to connect remote areas where deployment of optical fibre cable is still not cost effective.
- In 2023, Bangladesh auctioned 70 MHz Spectrum from 2.3 GHz Band & 120 MHz Spectrum from 2.6 GHz Band to the mobile phone operators. These bands were compatible with both 4G and 5G, offering higher performance and improved efficiency, empowering users and connecting new industries.
- Passive infrastructure sharing is allowed in Bangladesh with "Tower Sharing Guideline" issued back 2018. The Government is considering the introduction of "Active Infrastructure Sharing" for spectrum sharing to support the implementation of 5G and other advanced technologies.

Promoting the ICT Industry

- Bangladesh's software and digital services industry is a billion-dollar market and is expected to grow to $5 billion by end of 2024.
- The government has implemented policies and regulations to support the growth of the ICT sector, including the Digital Security Act and Intellectual Property Rights laws.
- In 2017 BTRC issued "Instructions for Establishment of Mobile Phone Handset Assembling and Manufacturing Plant in Bangladesh". At present there are 15 Mobile Phone Manufacturing Companies in Bangladesh including global manufacturers such as Samsung, Nokia, Xiaomi etc. In the month of January 2024 1.9 million mobile phones were manufactured in these factories. 4G device penetration is approximately 65% in Bangladesh.

8.4 Leadership and responsibility

The responsibility of leading digital transformation in Bangladesh primarily falls under the Ministry of Posts, Telecommunications, and Information Technology (MoPTIT) and its affiliated agencies such as the Bangladesh Telecommunication Regulatory Commission, Aspire to Innovate (a2i) Program under the ICTD. Other ministries and government agencies play significant roles in implementing digital initiatives in their respective domains.

Bangladesh has been pursuing a 'Digital Bangladesh' vision since 2008, led by the Honourable Prime Minister Sheikh Hasina and ICT Advisor, the Honourable Sajeeb Wazed Joy. The goal is to transform Bangladesh into a middle-income, technology-driven, and knowledge-based economy by 2041.

Bangladesh's digital transformation has been a significant national priority, and the country has made impressive strides in digitising government services, developing ICT infrastructure, and promoting the growth of its technology sector.

8.4.1 Governance

The governance framework for digital transformation in Bangladesh involves a multi-layered approach, with the Ministry of Posts, Telecommunications, and Information Technology (MoPTIT) playing a central role in policy formulation, coordination, and implementation oversight.

Policy Formulation and Coordination

- MoPTIT is responsible for developing and implementing the overarching policies and strategies that guide the country's digital transformation efforts.
- This includes the formulation of the "Digital Bangladesh" vision, the National Telecommunication Policy, National Broadband Policy, National ICT Policy, and other relevant regulations and guidelines.
- The ministry coordinates with other government agencies, the private sector, and civil society to ensure a cohesive and aligned approach to digital development.

Implementation Oversight

- Under the guidance of MoPTIT, BTRC oversees the progress of digital infrastructure development which is the backbone for various digital transformation initiatives across various sectors, such as e-government.
- The ministry monitors progress, addresses challenges, and ensures that the digital transformation programs are aligned with the national vision and objectives.
- It also plays a key role in allocating resources, setting targets, and evaluating the impact of digital initiatives.

Empowering Digital Governance

- The a2i (Access to Innovate) Program, established under the Prime Minister's Office, acts as a catalyst for driving digital initiatives and ensuring effective governance across various sectors.
- The a2i Program serves as a coordination and implementation mechanism, working closely with the MoPTIT and other government agencies to:
  - Identify and prioritise digital transformation opportunities
  - Develop and pilot innovative digital solutions
  - Provide technical assistance and capacity-building support
  - Facilitate stakeholder engagement and collaboration

Collaborative Governance

- The governance framework also involves the participation of other stakeholders, including the private sector, civil society and international development partners.
- Multi-stakeholder committees and working groups are established to ensure collaborative decision-making, resource mobilisation, and knowledge sharing.
- This collaborative approach helps to align the interests and priorities of various stakeholders, fostering a sense of shared ownership and commitment to the success of the digital transformation programs.

Leveraging the expertise and resources of the MoPTIT and the a2i Program, along with a collaborative governance model, Bangladesh has been able to drive its digital transformation agenda effectively and ensure coordinated implementation across different sectors and stakeholders.

8.5 Stakeholder engagement

The government of Bangladesh uses a combination of digital service delivery, centralised platforms including official websites and social media platforms, citizen identification, policy statements, public outreach, and mobile-based communication to effectively communicate its digital transformation programs to the citizens of Bangladesh.

- National Portal: The government has developed the National Portal, which now houses over 45,000 websites and services of different government offices, serving as a centralised platform to communicate digital initiatives.
- Policy Announcements: The government's "Digital Bangladesh" initiative was launched in 2009 as part of the Vision 2021 plan, and the Prime Minister's manifesto for the 2018 election reiterated the commitment to "broader use of digital technology for overall" development. These policy announcements help communicate the government's digital transformation agenda.
- Media and Public Outreach: The government uses media channels, public events, social media and other communication platforms to raise awareness about its digital initiatives and engage with citizens on the progress of the "Digital Bangladesh" program.

The government of Bangladesh took a comprehensive approach to ensure public engagement and stakeholder involvement in its digital transformation journey. This is achieved through the following key initiatives:

Consultative Processes

- The government conducts regular consultations with various stakeholders, including the private sector, civil society organisations, academia, and citizens, to gather feedback and input on digital transformation initiatives.
- These consultative processes help the government understand the needs and concerns of different stakeholder groups, ensuring that the digital transformation programs are responsive to the needs of the people.

Stakeholder Forums

- The government has established various stakeholder forums and platforms to facilitate dialogue and collaboration on digital transformation.
- Brings together representatives from the government, private sector, civil society, and international partners to discuss challenges, share best practices, and explore opportunities for collaboration.
- Examples is the Digital Bangladesh Task Force which was convert to the now Smart Bangladesh Task Force.

Multi-Stakeholder Committees

- The government has formed multi-stakeholder committees and working groups to oversee the implementation and monitoring of digital transformation initiatives.
- These committees include representatives from different government agencies, the private sector, academia, and civil society, ensuring a collaborative and inclusive approach to digital development.
- Helps to align the interests and priorities of various stakeholders, fostering a sense of shared ownership and commitment to the success of digital transformation programs.

Collaboration with Partners

- The government of Bangladesh actively collaborates with the private sector, civil society organisations, academia, and international development partners to leverage their expertise, resources, and networks.
- This collaboration enables the government to access cutting-edge technologies, innovative solutions, and best practices from around the world, further enhancing the effectiveness of its digital transformation efforts.
- Examples of such partnerships include collaborations with tech companies, international development agencies and research institutions.

By adopting a multi-stakeholder approach, the government of Bangladesh ensured that its digital transformation journey was inclusive, responsive, and aligned with the needs and aspirations of the people.

8.6 Resources

Resources allocated to digital transformation initiatives include budgetary allocations, international development assistance, private sector investments, and in-kind contributions from various stakeholders. The Bangladeshi government has made significant financial investments to fund the necessary digital infrastructure and capacity building programs for its "Digital Bangladesh" vision. The government is focused on building a robust digital infrastructure and adopting appropriate technologies to enable the digitisation of government services and operations.

Bangladesh is actively seeking partnerships with private sector technology companies and non-profit organisations to leverage their expertise, fill skills gaps, and spur innovation in the country's digital transformation efforts. A multi-pronged approach to allocate these key resources such as financial, technological, human and through collaborative partnerships to drive the successful implementation of its "Digital Bangladesh" vision.

International development organisations have provided significant financial support to help drive Bangladesh's digital transformation efforts. The donor partners have played a crucial role in providing the necessary funding, technical, and collaborative resources to support Bangladesh's ambitious vision of becoming a digital economy and society.

8.7 Successes and opportunities

Examples of successes in digital transformation include the digitisation of government services through platforms such as Digital Bangladesh, the introduction of mobile financial services, the expansion of internet connectivity, and the growth of the outsourcing industry. The following are some of Bangladesh's most notable achievements in their digital transformation journey:

- Development of the National Portal, which now houses over 45,000 websites and services of different government offices, serving as a centralised platform for digital government services.
- Establishment of over 5,000 Union Digital Centres across the country to provide digital services at the local level, including tax filing, passport applications and utility bill payments.
- Issuance of over 100 million digital IDs to its citizens, one of the highest in the region, facilitating access to digital government services.
- Bangladesh has seen a rapid increase in mobile and internet penetration which has enabled the growth of mobile financial services, allowing citizens to access banking, payments, and other financial services through their mobile devices, even in remote areas.
- Bangladesh's software and digital services industry is a billion-dollar market and is expected to grow to $5 billion by end of 2024.
- The government has implemented policies and regulations to support the growth of the ICT sector, such as the Digital Security Act and Intellectual Property Rights laws. This has helped Bangladesh emerge as a hub for ICT and business process outsourcing, creating employment opportunities and driving economic growth.

Successes of digital initiatives were measured through indicators such as internet penetration rates, mobile phone subscriptions, e-government service usage, digital skills acquisition, e-commerce transactions, and improvements in service delivery efficiency and transparency. Success factors for achieving digital transformation included strong political commitment, strategic leadership, effective policy formulation and implementation, public-private collaboration, investment in digital infrastructure, capacity building and fostering an enabling environment for innovation and entrepreneurship.

Bangladesh offers numerous opportunities for digital transformation, including expanding access to digital infrastructure, promoting e-commerce and digital entrepreneurship, enhancing digital literacy and skills development, modernising governance and public service delivery, and leveraging technology for sustainable development.

8.8 Insights and lessons for the Commonwealth

The Commonwealth countries can benefit from the following insights, learning from Bangladesh's success in its digital transformation journey:

- Prioritise digital inclusion, invest in digital infrastructure, foster public-private partnerships, enact enabling policies, promote digital literacy and skills development and leverage international cooperation for knowledge sharing and capacity building.
- Currently the priorities for digital transformation in Bangladesh include expanding internet access, promoting digital entrepreneurship, enhancing cybersecurity measures, strengthening e-governance, advancing digital healthcare and education, and leveraging emerging technologies for sustainable development.
- Sustainability and scalability of digital initiatives are ensured through institutionalisation of policies and programs, mainstreaming digital technologies across sectors, fostering innovation ecosystems, and continuous monitoring and evaluation to adapt to changing needs and circumstances.
- Bangladesh's approach to digital transformation emphasises the importance of addressing the needs of marginalised and vulnerable populations, promoting inclusive growth, and harnessing the potential of digital technologies for sustainable development and poverty reduction.

The most significant lesson learned in digital transformation is the importance of inclusive and participatory approaches, where stakeholders are engaged from the very outset to ensure relevance, ownership, and sustainability of initiatives. Challenges identified in the Bangladesh case study include infrastructure gaps, digital divide, cybersecurity threats, regulatory bottlenecks, and capacity constraints. The proposed solutions involve investments in infrastructure, promoting digital literacy, strengthening cybersecurity measures, enacting enabling policies, and fostering innovation ecosystems.

CHAPTER 9

Approaches for successful digital transformation

Adopting digital technologies is key to achieving an enhanced public service and fostering economic growth. However, achieving successful digital transformation involves adopting a holistic approach that integrates technology with strategic planning and effective implementation. It entails the alignment of digital initiatives with the overarching vision and goals of the government in a way that ensures that technology serves as a catalyst for achieving broader objectives rather than merely adopting technology as the end goal. The Commonwealth countries case studies also show that the convergence of factors such as technology, leadership, strategy and vision, digital skills and funding are critical for achieving successful digital transformation outcomes. These predominant factors are discussed further below.

9.1 Comprehensive national plans and a vision for digital transformation

Case studies from the selected Commonwealth countries show that a clear vision and comprehensive national plan are critical elements for achieving successful digital transformation outcomes. These elements act as the blueprint for a country's journey towards fully integrating digital technologies into its economic, social, and governance structures. Whilst a well-articulated vision provides a clear direction and sets the overarching goals for digital transformation, encapsulating the aspirations to enhance efficiency, inclusivity, innovation on a national scale, the development of the national plan for digital transformation provides a detailed roadmap that outlines specific strategies, initiatives, and milestones. These strategies also outline mechanisms for monitoring and evaluation of digital transformation initiatives at various stages of implementation such that the specific initiatives can be modified were necessary to adapt to changes and the needs of citizens.

The Digital Government Transformation Strategy (DGTS) and the Digital Mauritius 2030 developed by Mauritius, set the strategic direction for digital transformation across its public sector. Similarly, Ghana's National Digital Transformation Policy was developed to govern and direct the implementation of its digital transformation agenda. Ghana's National ICT for Accelerated Development Policy also seeks to promote the use of ICTs and enhance sectoral services. The 'Digital Bangladesh' vision was launched with the aim of transforming Bangladesh's economy into a digital economy by 2021. Bangladesh then progressed to 'Vision 2041' as a continuation of 'Vision 2021' providing momentum to the nation's development dream — a 'Smart Bangladesh' plan. Trinidad and Tobago's vision for digital transformation is articulated through its National ICT Blueprint 2018-2022 and the country is currently finalising the updated National Digital Transformation Strategy roadmap.

National digital transformation plans ensure coordinated action and resource allocation, facilitating the identification of priority areas and the implementation of targeted interventions. They also facilitate the monitoring of progress and evaluation of the impact of digital transformation initiatives of the government.

9.2 Political will and leadership

Leadership from the political class is much more than merely implementation of new technologies, it is about steering efforts towards meaningful outcomes. It involves advocacy, aligning digital strategies with national development goals, securing adequate resources, fostering conditions that encourage the adoption of the new technologies and engaging with a broad range of stakeholders to ensure the success of digital transformation initiatives.

In Mauritius, the Ministry of Information Technology, Communication, and Innovation (MITCI) is responsible for ICT policy and digital transformation initiatives and its Central Informatics Bureau (CIB), within MITCI assists line Ministries/ Departments in the implementation of digital government projects. In Ghana, its Ministry of Communications and Digitalisation has been tasked with championing the development of the National Digital Transformation Policy as well as facilitating adoption by other sectors. It is also responsible for enabling the infrastructure for other sectors to deploy digital technologies.

Ghana echo's that leadership at the highest level including the president and vice president of Ghana have played a crucial role in enthusing, championing, and selling the digital transformation vision to the nation at large. This included the legislative assembly/parliament, local government, and the National house of chiefs which was tasked with obtaining buy-in from communities at tribal level. This is in recognition of the fact that political buy-in is also of importance as they are responsible for enacting the enabling laws and legislation that ensure the success of national digital transformation.

In Trinidad and Tobago, the Ministry of Digital Transformation provides leadership with support for key decisions regarding the direction and scope of digital initiatives deliberated upon and approved by the Cabinet, ensuring that there is governmental oversight and accountability at the highest levels.

In the case of Bangladesh digital transformation is a significant national priority articulated at the highest level of government with the 'Digital Bangladesh' vision being championed by Honourable Prime Minister Sheikh Hasina. The Ministry of Posts, Telecommunications, and Information Technology (MoPTIT) is responsible for the oversight of digital initiatives.

9.3 Stakeholder engagement

Effective communication and stakeholder engagement are critical for navigating the complexities of digital transformation. They ensure that the vision, goals, and benefits of digital transformation initiatives are clearly articulated and understood by all stakeholders. It also ensures that all stakeholders who are impacted by or can impact digital transformation initiatives are actively involved to ensure success. This strategic approach also recognises the value of diverse perspectives and harnesses the collective expertise and resources of various stakeholders. This also fosters a sense of ownership and commitment among stakeholders, thereby increasing the likelihood of successful adoption and implementation of digital initiatives. Furthermore, engaging stakeholders early and continuously throughout the digital transformation process helps in identifying potential challenges, opportunities, and needs that may not be apparent from the perspective of the entity leading the transformation.

Effective communication and stakeholder engagement strategies guarantee: Transparency- openly sharing information about digital transformation goals, strategies, progress, and challenges builds trust and credibility; Multi-channel communication leveraging a variety of communication channels from traditional media to digital platforms to ensure that messages reach a broad audience; Participatory Decision Making- involving stakeholders in decision-making processes, where feasible, empowers them and enhances the relevance and acceptability of digital transformation efforts; and establishing mechanisms for stakeholders to provide feedback, ask questions, and voice concerns is crucial as it can facilitate the re-alignment of digital transformation strategies and address gaps and stakeholders concerns.

All the Commonwealth countries in this study make use of national e-Government portals and websites of government Ministries to publish information to stakeholders. They also maintain official government social media accounts to regularly disseminate communication on digital initiatives. Ghana views such communication as an effective tool for promoting its digital transformation vision and for creating awareness. As such, it engaged in effective structured communication and extensive dialogue with stakeholders at different levels including its parliament and political parties to gain political commitment. Recognising the influence media agencies wield, the Ghanaian approach was to engage with them from the onset to educate them on the benefits of digital transformation, thereby enabling them to promote the vision to the entire country. The president of Ghana was also involved in the media campaigns and used radio stations and television channels to communicate Ghana's digital transformation vision and the benefits to the citizens. Other communication methods mentioned in the case studies are focus groups, formal meetings, seminars and workshops which provide a platform for stakeholders to share their views, expectations, opinions and fears regarding digital transformation.

9.4 Resourcing

Effective sourcing, allocation, management, and optimisation of resources including funding from government and donors, technological assets, and human capital is critical to the success of digital transformation initiatives as they significantly impact the government's ability to implement innovative solutions and enhance efficiency through digital transformation.

Financial resources are fundamental for achieving successful digital transformation outcomes. It is needed for the acquisition of advanced technologies, the development of digital infrastructure, the development of a digitally skilled government workforce and the execution of the digital transformation initiatives. Given the substantial investments required for comprehensive digital transformation, identifying sustainable and strategic funding sources is critical for governments aiming to realise the full potential of digitalisation of public services. Funding sources include government direct funding through budget allocation, public-private partnerships (PPPs) which can leverage private sector funds and expertise and international aid and grants which often support specific projects. Mauritius' digital transformation is funded through its national budget and funding from development partners like UNDP that support digital projects. Ghana also funds its digital transformation through its national budget and funding from donors such as the World Bank's $200 Million funding of the Ghana Digital Acceleration Project. Trinidad and Tobago dedicated significant financial resources to supporting digital transformation, including funding from the Public Sector Investment Programme and international loans from the Andean Development Bank. These financial resources are complemented by strategic partnerships for technical assistance and expertise. Bangladesh's resources allocated to digital transformation initiatives included budgetary allocations, international development assistance, private sector investments and in-kind contributions from various stakeholders.

Digital skills and upskilling of human resources are an essential catalyst for national digital transformation as they determine the pace and breadth of adoption and utilisation of digital technologies. As digital transformation redefines citizen-government interactions, the demand for a digitally literate workforce and population is becoming increasingly important. The ability of the workforce and the wider population to adapt and thrive within a digital landscape determines the overall effectiveness and sustainability of digital transformation efforts. Furthermore, the scope of digital skills required extends from basic digital literacy such as using the internet, managing digital identities, and understanding digital safety and security, to more advanced skills such as data analysis, software development, and digital content creation. It is therefore essential that measures to address digital skills gaps are embedded as a key component of national digital transformation strategies. The Commonwealth countries in this study recognised this and are addressing the issues of digital skills in their broader digital transformation goals

CHAPTER 10

Challenges and pitfalls

10

Digital transformation results in improved efficiency, and effective delivery of digital government services. However, successful digital transformation in the Commonwealth faces various challenges that need to be navigated carefully. Some of the key challenges include:

Incoherent Strategy Approach

As previously established, digital transformation requires a clear vision, strategic planning and leadership to ensure success. The challenge lies in government agencies working in silos to deliver digital transformation initiatives resulting in disjointed initiatives across government agencies. To address this, countries should designate a specific agency to lead the holistic government digital transformation agenda. This agency should also be responsible for monitoring and evaluating milestones and key performance indicators of digital transformation initiatives.

Lack of Inter-Agency Collaboration

Public services are delivered by different government agencies and achieving a holistic digital transformation requires these agencies to work collaboratively rather than delivering digital transformation initiatives independently without synergy. The lack of inter-agency collaboration presents challenges to a country achieving its digital transformation goals and vision. This can be addressed through strategic leadership and decisive action by a government to drive this synergy and collaboration. In Ghana the National Planning and Development Commission is designated with coordination efforts across the Ministries.

Financial Constraints

Implementing successful digital transformation requires significant funding and investment in digital technologies, infrastructure, platforms, cybersecurity, as well as training and upskilling the government workforce in the new digital service delivery processes. Many countries, however, are faced with conflicting demands for the limited resources available. Addressing the funding challenge therefore requires adopting innovative financing strategies that may include leveraging international aid, forming public-private partnerships, and exploring new revenue models to fund digital transformation initiatives.

Digital Access and Skills not addressed

Regardless of the intentions of any government to deliver digital services, if internet connectivity and access issues are not addressed, citizens will not be able to benefit from the digital transformation. Bridging the digital divide and achieving digital inclusion entails addressing numerous issues. These include providing a pervasive connectivity infrastructure, deploying services nationally and ensuring the cost of devices and internet access is affordable. This will enable Commonwealth citizens to easily access the digital services offered by the governments. Obstacles to digital inclusion include the need for affordable, reliable, and easy-to-use devices, as well as internet connectivity. Additionally, digital literacy skills are essential for the effective use of digital technologies. Digital skills gaps can hinder the implementation of digital transformation and limit the country's ability to innovate and adopt increasingly efficient public service delivery processes. Addressing this challenge requires investing in training and development programs to upskill the existing workforce including the citizens who will ultimately use these digital government services.

Poor design of Citizen-Centric Services

Governments are faced with the heightened expectations of citizens for digital public services, often making comparisons with digital tools in the private sector. Such expectations include ease of use, seamless interactions, personalised communications, and information presented through preferred channels. In summary, there are various challenges to overcome in designing citizen-centric services that protect personal data, provide services that meets citizen expectations and offer a personalised, efficient and transparent digital experience.

Interoperability Issues

Government agencies working in silos hinder data exchange, collaboration and ultimately, successful digital transformation. Achieving interoperability is therefore crucial for delivering integrated and efficient public services, enabling data sharing across various government agencies. Standardisation of data formats, protocols, interfaces and the adoption of common platforms is required. In the case of Ghana, issues of interoperability and the move from siloed systems to fully integrated systems were a major challenge. Ghana overcame these challenges by encouraging Ministries to prioritise and champion integrated digital systems.

Legislative challenges with Emerging Technology

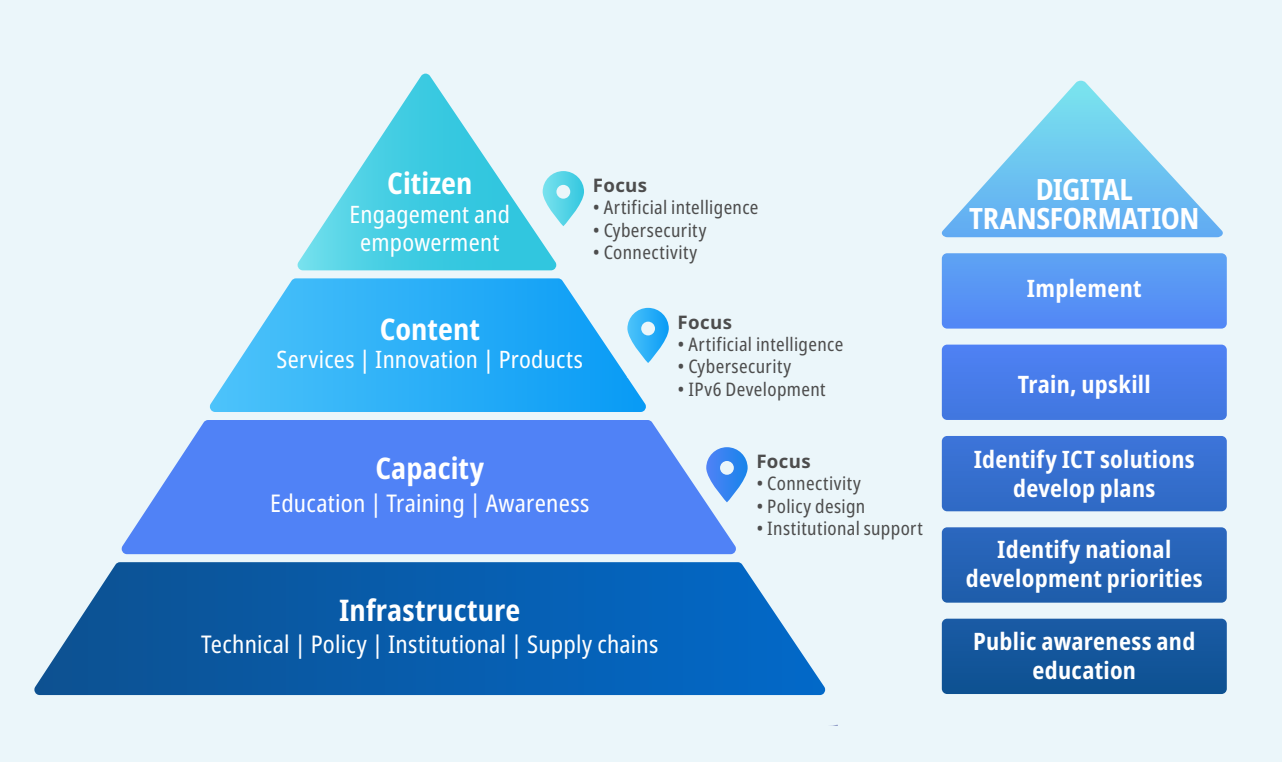
Legislation of emerging technology is a potential challenge to digital transformation in the Commonwealth, requiring careful consideration of regulatory frameworks and standards. Many developing nations are still implementing the regulatory frameworks of new technology. Small states within the Commonwealth face unique challenges in deploying innovative technologies, requiring tailored approaches to regulation and policymaking. While emerging technologies hold great potential for digital transformation, their legislation and regulation require careful planning to ensure they align with democratic principles, human rights and global standards.

These challenges highlight the need for a more strategic, adaptive, and integrated approach to digital transformation, addressing not only technological aspects but also organisational and cultural factors.

CHAPTER 11

The CTO Framework

The CTO recognises digitalisation as one of the foremost transformative opportunities of our time. It has already produced a plethora of benefits that have transformed our world in ways that would have been unimaginable just a few decades ago. The CTO's new strategic direction seeks to assist its members in accelerating their digital transformation journeys. The CTO's Commonwealth Digital Transformation Framework represents a systematic approach for supporting digital transformation throughout the Commonwealth. The Framework addresses the following aspects of digital transformation.



i. Citizens

Citizen engagement and empowerment is the focus of the CTO's work, in keeping with members' governmental mandate to serve citizens.

ii. Content

Relevant content, products and services are an essential part of the digital transformation process. Not only is compelling, quality content important for engaging, educating and serving citizens but it is also key to building trust.

iii. Capacity

Digital transformation requires public awareness and an educated workforce with understanding, insight and skill for effectively adopting ICT and maximising its potential. The CTO supports such capacity building.

iv. Infrastructure

The CTO supports the establishment of infrastructure for unifying government networks and fostering affordable universal broadband connectivity for citizens, wherever they may be.

v. Enabling Environment:

The CTO supports members in creating an enabling environment of policies, legislation and regulations that encourages the appropriate use and development of technology while considering local legislative environments.

These critical areas contribute to enhancing governmental efficiency and empowering citizens, enabling them to participate in the global digital economy. The framework guides the assessment, planning and implementation of digital initiatives. Through this framework, the CTO can provide customised support for each Commonwealth country.

The Citizen and Government

Under the Commonwealth's democratic precepts, citizens have a unique relationship with their government — it is the only institution with which a citizen must regularly engage. The paper-based processes of traditional governments are anachronistic to the digital age.

A twenty-first century government must effectively employ ICT to provide services for its citizens. Digital technologies enable governments to be citizen-centric, secure, resilient, open, interactive and efficient at significantly reduced costs.

Digital Identities are a fundamental component of 21st century government providing verifiable and trusted IDs that allow citizens to access public services through single access to Government portals.

Figure 12: Citizens and the 21st Century Government

Governments have been working towards digital transformation for decades through e-government initiatives but there are few compelling examples of real transformation. These initiatives were implemented as independent activities in a ministry without any reference to, or integration with the rest of the government. This "siloed" approach negates the principles of digital transformation.

The CTO is committed to helping members make effective use of ICT to transform Government and serve citizens better.

Data and Information

Relevant digital content is a foundational aspect that must be considered early in the planning stages for the digital transformation process. Consistent and appropriate information is vital for communicating with, informing and engaging citizens, and for providing the services they need. Information must be presented in the appropriate language and in formats that make it accessible and comprehensible to all citizens. Accurate and timely information appropriately packaged positions the government as a trustworthy authority.

Governments possess huge data repositories in a variety of formats that are often difficult to manage and extract meaningful insight from. It is important for governments to have a comprehensive data management strategy. The strategy should consider for example, open data for public consumption.

Infrastructure

The CTO believes that Governments will benefit as early ICT adopters if they use ICT to effectively deliver services to its citizens. Affordable universal broadband access is pivotal to the introduction of not just online government services, but an array of services and programmes across society. A pre-requisite for a digitally transformed 21st century Government, is an IP-based network that securely unifies all Ministries and Departments responsible for sharing information across government. This is essential for efficient and effective service delivery.

In addition to this, affordable, accessible connectivity that provides citizens with secure access to relevant services is also essential. The vision of the United Nations is for widespread digital connectivity by 2030. These goals put price, technology, and universality first to guarantee that everyone can take full

advantage of connectivity.[23] The CTO understands that the process of digital transformation is a collective responsibility that governments cannot achieve alone. The private sector has an integral role to play in the process, and collaboration and innovation are imperative for achieving affordable, universal and meaningful connectivity.

Capacity

Establishing a 21st century government relies on leadership, public awareness, education and training along with widespread commitment to the vision of a digital nation. It is important to build the capacity of CTO members to enable them to articulate challenges within government, identify appropriate solutions, develop plans and implement them successfully. Policymakers, legislators, regulators and law enforcement officers and the judiciary must acquire a new set of skills and competencies to serve citizens while navigating the many risks and challenges they can bring. Upskilling the government workforce is paramount to the success of e-government digital transformations.

UNESCO defines the following areas as important in digital capacity building in government:

- Digital planning and design to enable civil servants to understand the complexity of today's problems, recognise strategic opportunities to use digital solutions, and envision and design inclusive digital transformation projects.
- Data use and governance equips civil servants to understand and use data. It also supports civil servants to address governance challenges and use data effectively, ethically, and responsibly.
- Digital management and execution to empower civil servants to understand new and innovative project management and collaboration practices to enhance the success of digital transformation initiatives.[24]
- A country's digital transformation aspirations can only be fully realised when all citizens, regardless of their gender, location, wealth, age, socio-economic status possess the ability to use digital technology. The required competencies range from specialist skills including programming, or data visualisation to fundamental digital skills in using computers and mobile phones for daily activities.
- Despite the importance of digital skills in leveraging ICTs for economic prosperity and social well-being, most citizens in the Commonwealth still lack the necessary skills to participate in the digital ecosystem. The CTO has identified a strong demand for initiatives to strengthen capacities of government officials to leverage digital technologies across its membership.

23 New UN targets chart path to universal meaningful connectivity—ITU Hub
24 UNESCO Digital Capacity building for Governments https://www.unesco.org/en/digital-competency-framework

Figure 13: Enabling of policy and regulatory environments

The UK government has developed an Essential Digital Skills Framework that outlines five categories of essential digital skills for life and work: communicating, handling information and content, transacting, problem-solving, and being safe and legal online. The framework seeks to guarantee that all individuals possess the digital competencies required to engage completely in both society and the economy.[25]

The CTO's approach to capacity-building is based on customisation and training with a view to implementation.

Environment

An enabling environment of relevant policies, legislation and regulations is crucial for the successful adoption and implementation of digital technologies and digital transformation.

Commonwealth countries have an independent ICT regulator, established in accordance with the 1997 WTO Reference paper and focussed on liberalising the telecommunications market. The policy, legislative and regulatory frameworks established to address liberalisation of 20th century telecommunications markets are not fit for purpose in the 21st Century. They are inadequate for meeting the needs of consumers and supporting their governments' goals for digital transformation.

Continuing rapid technological innovation has propelled the world into the 4th Industrial Revolution where the physical, digital and biological realms coalesce. These phenomenal developments are precipitating fundamental changes in network topologies, use cases, service delivery and challenging notions of ethics and privacy. In light of this rapidly changing landscape, new policies and a new evolving regulatory and legislative philosophy is needed if programmes for digital transformation are to be enabled and supported. These must ensure an environment that safeguards and protect citizens, information and infrastructure whilst encouraging innovation and investment.

Strong leadership, political will and innovation are essential for any nation to transform digitally. Cultural attitudes also play a key role in digital transformation. Encouraging and supporting local talent assists in cultivating an environment that is conducive to digital transformation by applying digital technologies to local contexts to stimulate economic growth and innovation, fostering a digital economy that is inclusive and sustainable.

25 United Kingdom Framework for essential digital skills https://www.gov.uk/government/publications/essential-digital-skills-framework

Role of the CTO

The CTO is committed to assisting member countries in leveraging the potential of ICT for development and achieving the United Nations Sustainable Development Goals.

The CTO is also committed to delivering work that results in tangible benefits with a measurable positive impact on the operation of national governments. The work of the CTO is focussed on transforming the everyday lives of each Commonwealth citizen. The CTO performs the following:

- Arranges public awareness activities to educate all citizens on the transformative potential of ICT.
- Guides and supports in-country consultations to determine the national development priorities.
- Conducts desk-based reviews and carries out research on appropriate ICT solutions, working with Members to formulate plans and training needs for implementation.
- Arranges training programmes to equip public servants in implementing digital transformation plans.
- Coordinates implementations and impact measurement.

The CTO also engages in the following activities:

- Engages its trusted strategic partners to support the journey.
- Harnesses the expertise of its network of experts throughout the process.
- Encourages collaboration between CTO Members.
- Solicits funding for digital transformation programmes.

The CTO recognises that digital transformation is not a one-size-fits-all process. Each member state needs to adapt these frameworks to their own unique circumstances and challenges. The goal is to create a digital society that benefits all citizens, promoting inclusivity, accessibility, and sustainable economic growth. As it encourages its members to adopt digital technologies and connect its citizens, the CTO is also committed to warning them of the societal, technical, financial and personal risks. The CTO actively promotes digital security, wellbeing and trust in technology combined with the principles of human rights in a digital hyper-connected Commonwealth.

CHAPTER 12

Conclusion

12

This report aims to shed light on the imperative for digital transformation in today's rapidly evolving digital landscape. By exploring digital transformation frameworks, case studies and insights from key stakeholders, several crucial findings have emerged. The research has highlighted the significance of effective leadership, comprehensive national plans, stakeholder engagement, and sufficient resourcing as essential elements for successful digital transformation outcomes. By examining the successes, opportunities, and resources in Mauritius, Ghana, Tanzania, Trinidad and Tobago and Bangladesh valuable lessons have been gleaned for the broader Commonwealth community.

Furthermore, the report has identified key challenges and pitfalls to avoid in the digital transformation journey, emphasising the importance of addressing issues such as data security, digital literacy, and organisational culture. By leveraging frameworks such as the GovTech Maturity Index, United Nations E-Government Survey, and Digital Impact Alliance, Commonwealth countries can benchmark their progress and drive continuous improvement in their digital initiatives.

As Commonwealth nations embark on their digital transformation journeys, it is crucial to prioritise sustainability and scalability, allocate resources effectively, and learn from the experiences of others in the global community. By sharing best practices, offering advice, and fostering collaboration, Commonwealth countries can collectively advance their digital agendas and harness the full potential of digital technologies for the benefit of their citizens.

The future of digital transformation in the Commonwealth lies in embracing innovation, adapting to technological advancements, and staying agile in the face of evolving challenges. By remaining committed to their digital transformation goals, leveraging the insights and tools provided in this report, and fostering a culture of continuous learning and improvement, Commonwealth countries can position themselves at the forefront of the digital revolution.

In closing, this report serves as a valuable resource for policymakers, government officials, and industry leaders, offering guidance, inspiration, and practical strategies for navigating the complexities of digital transformation and unlocking new opportunities for growth and development in the digital age.

References

Bonnet, D., & Westerman, G. (2021). The new elements of digital transformation. *MIT Sloan Management Review, 62(2).*

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital Business Strategy: Toward a Next Generation of Insights. *MIS Quarterly, 37(2), 471-482.*

Brynjolfsson, E., & McAfee, A. (2016). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. *W. W. Norton & Company.*

Commonwealth Telecommunications Organisation. (2023). *Digital Transformation Centre Stage: Samoa — Event report*. CTO

Cordella, A., & Bonina, C. M. (2012). A Public Value Perspective for ICT Enabled Public Sector Reforms: A Theoretical Reflection. *Government Information Quarterly, 29(4), 512-520.*

Digital Impact Alliance (DIAL). (2023). GovStack. Retrieved from GovStack — Digital Impact Alliance (dial.global)

Dener, C., Nii-Aponsah, H., Ghunney, L., Johns, K., & World Bank. (2022). *GovTech Maturity Index.* https://openknowledge.worldbank.org/server/api/core/bitstreams/5e157ee3-e97a-5e42-bfc0-f1416f3de4de/content

International Telecommunications Union. (n.d.). Digital Transformation. Retrieved from https://www.itu.int/itu-d/sites/priorities/digital-transformation/

International Telecommunications Union. (2019). Digital Transformation and the Role of Enterprise Architecture. *ITU*

International Telecommunications Union. (n.d.). The BDT Digital Transformation Wheel. Retrieved from https://www.itu.int/en/ITU-D/Regulatory-Market/Pages/digital-transformation-wheel.aspx

Kane, G. C., Phillips, A. N., Copulsky, J. R., & Andrus, G. R. (2022). The Technology Fallacy: How People Are the Real Key to Digital Transformation. *MIT Press.*

Margetts, H., & Dunleavy, P. (2013). The Second Wave of Digital Era Governance. *American Political Science Association.*

Matt, C., Hess, T., & Benlian, A. (2015). Digital Transformation Strategies. Business & Information Systems Engineering, 57(5), 339-343.

Mergel, I., Edelmann, N., & Haug, N. (2019). Defining Digital Transformation in the Public Sector. *Government Information Quarterly,* 36(4), 101385.

OECD (2016). Digital Government Strategies for Transforming Public Services in the Welfare Areas.

OECD. (n.d.). Going Digital Toolkit. Retrieved from http://goingdigital.oecd.org

Ross, J. W., Beath, C. M., & Mocker, M. (2020). Designed for Digital: How to Architect Your Business for Sustained Success. *MIT Press.*

Schwab, K. (2017). The Fourth Industrial Revolution. *Crown Publishing Group.*

The Commonwealth. (2020). The State of the Digital Economy in the Commonwealth. *Commonwealth Secretariat*

United Nations. (2023). "Our Common Agenda Policy Brief 5: A Global Digital Compact — An Open Free and Secure Digital Future for All".

United Nations Department of Economic and Social Affairs. (2022). E-Government Survey 2022. *United Nations.*

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., & Haenlein, M. (2021). Digital Transformation: A Multidisciplinary Reflection and Research Agenda. *Journal of Business Research,* 122, 889-901.

Wang, H., Feng, J., Zhang, H., & Li, X. (2020). The Effect of Digital Transformation Strategy on Performance: The Moderating Role of Cognitive Conflict. *International Journal of Conflict Management,* 31(3), 441-462. https://doi.org/10.1108/IJCMA-09-2019-0166

Westerman, G., Bonnet, D., & McAfee, A. (2014). Leading Digital: Turning Technology into Business Transformation. Harvard Business Review Press.

Wirtz, B. W., & Birkmeyer, S. (2015). Open Government: Origin, Development, and Conceptual Perspectives. *International Journal of Public Administration,* 38(5), 381-396.

World Bank. (2023). From Connectivity to Services; Digital Transformation in Africa. *World Bank*. https://www.worldbank.org/en/results/2023/06/27/from-connectivity-to-services-digital-transformation-in-africa

World Bank. (2022). GovTech Maturity Index 2022 Update: Trends in Public Sector Digital Transformation. *World Bank Group.* https://www.worldbank.org/en/programs/govtech/2022-gtmi

APPENDIX 1

Commonwealth countries E-Government Development Index (EGDI)

Table A1.1 Global EGDI ranking of Commonwealth countries

Commonwealth countries	EGDI 2022	EGDI group	Ranking
Antigua and Barbuda	0.6113	High	99
Australia	0.9405	Very High	7
Bahamas, The	0.7277	High	66
Bangladesh	0.563	High	111
Barbados	0.7117	High	79
Belize	0.5005	High	133
Botswana	0.5495	High	118
Brunei Darussalam	0.727	High	68
Cameroon	0.4498	Middle	141
Canada	0.8511	Very High	32
Cyprus	0.866	Very High	27
Dominica	0.5789	High	109
Fiji	0.6235	High	97
Gabon	0.5521	High	116
Gambia, The	0.3088	Middle	174
Ghana	0.5824	High	106
Grenada	0.7277	High	66
Guyana	0.5233	High	123
India	0.5883	High	105
Jamaica	0.5906	High	102
Kenya	0.5589	High	113
Kingdom of Eswatini	0.4498	Middle	141
Kiribati	0.4334	Middle	148
Lesotho	0.4414	Middle	145
Malawi	0.3435	Middle	167
Malaysia	0.774	Very High	53
Maldives	0.5885	High	104
Malta	0.8943	Very High	15
Mauritius	0.7201	High	75
Mozambique	0.313	Middle	173
Namibia	0.5322	High	121
Nauru	0.4548	Middle	139
New Zealand	0.9432	Very High	4
Nigeria	0.4525	Middle	140
Pakistan	0.4238	Middle	150

Commonwealth countries	EGDI 2022	EGDI group	Ranking
Papua New Guinea	0.323	Middle	170
Rwanda	0.5489	High	87
Saint Lucia	0.558	High	114
Samoa	0.4207	Middle	152
Seychelles	0.6793	High	85
Sierra Leone	0.2633	Middle	185
Singapore	0.9133	Very High	12
Solomon Islands	0.353	Middle	164
South Africa	0.7357	High	65
Sri Lanka	0.6285	High	95
St Kitts and Nevis	0.6775	High	87
St Vincent and the Grenadines	0.5811	High	107
Togo	0.4231	Middle	151
Tonga	0.5155	High	124
Trinidad and Tobago	0.6339	High	93
Tuvalu	0.3788	Middle	158
Uganda	0.4424	Middle	144
United Kingdom	0.9138	Very High	11
United Republic of Tanzania	0.4169	Middle	153
Vanuatu	0.4988	Middle	135
Zambia	0.5022	High	131

Source: *United Nations E-Government 2022 Survey Report*

Table A1.2 Ranking of Commonwealth countries EDGI

Commonwealth countries	Overall EDGI ranking	Commonwealth ranking
New Zealand	4	1
Australia	7	2
United Kingdom	11	3
Singapore	12	4
Malta	15	5
Cyprus	27	6
Canada	32	7
Malaysia	53	8
South Africa	65	9
Bahamas, The	66	10
Grenada	66	10
Brunei Darussalam	68	12
Mauritius	75	13
Barbados	79	14
Seychelles	85	15
Rwanda	87	16
St Kitts and Nevis	87	16
Trinidad and Tobago	93	18
Sri Lanka	95	19
Fiji	97	20
Antigua and Barbuda	99	21
Jamaica	102	22
Maldives	104	23
India	105	24
Ghana	106	25
St Vincent and the Grenadines	107	26
Dominica	109	27
Bangladesh	111	28
Kenya	113	29
Saint Lucia	114	30
Gabon	116	31
Botswana	118	32
Namibia	121	33

Commonwealth countries	Overall EDGI ranking	Commonwealth ranking
Guyana	123	34
Tonga	124	35
Zambia	131	36
Belize	133	37
Vanuatu	135	38
Nauru	139	39
Nigeria	140	40
Kingdom of Eswatini	141	41
Cameroon	141	41
Uganda	144	43
Lesotho	145	44
Kiribati	148	45
Pakistan	150	46
Togo	151	47
Samoa	152	48
United Republic of Tanzania	153	49
Tuvalu	158	50
Solomon Islands	164	51
Malawi	167	52
Papua New Guinea	170	53
Mozambique	173	54
Gambia, The	174	55
Sierra Leone	185	56

Source: *United Nations E-Government 2022 Survey Report (Commonwealth Ranking Extracted from Overall EGDI 2022 Ranking)*

APPENDIX 2

Challenges, opportunities and success factors from global frameworks

GovTech Maturity Index 2022

Table A2.1 Challenges, opportunities and success factors — GTMI 2022

Challenges	Opportunities	Success factors
Digital Divide: This was a recurring issue as digital divide prevents the citizens especially those from the low-income group from reaping the intended benefits of digital transformation.	*Shared Digital Platforms:* Investing in interoperable platforms, governments can improve the integration and efficiency of core government systems.	*Strong Leadership Commitment:* Political and administrative leaders need to demonstrate a strong commitment to digital transformation.
Limitation with Measuring Progress at Subnational Levels: The index may not adequately capture progress and good practice at subnational levels since the index was designed to measure the maturity of GovTech initiatives at the national/central government level.	*One-Stop-Shop Services:* Enhancing user experience by creating integrated service delivery models that provide a one-stop-shop experience.	*Clear Strategies and Policies:* Governments need well-defined strategies and policies that support digital transformation efforts.
Integration of Core Systems: Many governments struggle to integrate financial management, tax and customs, HR management, and social insurance systems, limiting their efficiency and effectiveness.	*Enhanced Digital Engagement:* Developing more capable e-participation platforms, governments can improve citizen engagement and increase transparency and accountability.	*Sufficient Funding:* Investing in technology and human capital is crucial, which means that sufficient funding is required for GovTech initiatives to succeed.
User-Centric Services: While many governments have established online portals and e-services, these often lack user-centricity and are not integrated into a seamless one-stop-shop experience for users.	*Institutional Frameworks:* Establishing strong institutional frameworks for GovTech can support a coordinated approach and foster innovation.	*Building Digital Skills:* The public sector workforce must possess the necessary digital skills to implement and sustain digital transformation.
Digital Engagement: There is limited functionality in e-participation and e-feedback platforms, which impacts the ability of citizens to engage meaningfully with the government.	*Ecosystem for Start-ups:* Encouraging a start-up ecosystem with a focus on GovTech can lead to innovative solutions and partnerships that enhance public sector services.	*Collaborative Ecosystem:* Collaboration between government, the private sector, academia, and civil society is key to fostering innovation and ensuring successful digital transformation.
Institutionalisation: The adoption of a whole-of-government approach to GovTech initiatives is often lacking, leading to siloed efforts and a fragmented digital landscape.	*Advanced Data Practices:* Developing advanced data governance frameworks can lead to better decision-making and service delivery.	*Regulatory Environment:* A supportive regulatory environment that addresses issues such as data protection and cybersecurity is vital for the success of digital initiatives.
Innovation and Support for Start-ups: Governments may lack clear strategies for supporting GovTech start-ups and are often slow to adopt or incorporate disruptive technologies like AI and blockchain.		*Monitoring and Evaluation:* Implementing robust monitoring and evaluation mechanisms can help track progress, identify issues, and inform continuous improvement.

United Nations E-Government (E-GOV) Survey 2022

Table A2.2 Challenges, opportunities and success factors — E-GOV 2022

Challenges	Opportunities	Success factors
Digital Divide: there is a significant gap between different regions and populations in terms of access to ICT, which creates an uneven playing field for e-government services adoption.	*Technological Advances:* new technologies like AI, blockchain, and cloud computing offer opportunities for innovative e-government services and improved efficiency.	*Leadership Commitment:* strong and sustained commitment from leadership is crucial to drive the e-government agenda forward.
Cybersecurity Risks: as more services move online, governments must address increasing security concerns, such as data breaches and cyberattacks.	*Increased Participation:* E-Government platforms can facilitate greater civic engagement and participatory decision-making processes.	*Clear Strategy and Vision:* a clear and strategic vision for e-government, with defined goals and objectives, helps guide successful implementation.
Sustainable Development Integration: E-Government services need to be aligned with sustainable development goals, which requires substantial planning and resources.	*Cross-Border Collaboration:* countries can benefit from shared experiences and solutions, fostering international cooperation in E-Government practices.	*Investment in Infrastructure:* robust ICT infrastructure is a foundational element for the success of e-government services.
Legal and Regulatory Frameworks: outdated or lack of legal frameworks can hinder the implementation of effective e-government strategies.	*Private Sector Engagement:* public-private partnerships can accelerate the development and implementation of e-government services.	*Capacity Building:* developing the skills and competencies of public servants and users is key to the uptake and sustainability of e-government services.
Institutional Readiness: many countries face challenges with the necessary institutional changes to implement e-government, including resistance to change and lack of expertise.	*Inclusive Services:* there is an opportunity to design e-government services that are accessible to all, including marginalised and vulnerable groups.	*User-Centric Services:* services designed around user needs and feedback tend to be more successful and have higher adoption rates.
		Interoperability: services that can interact with each other reduce duplication and promote efficiency.
		Legal Frameworks: up-to-date laws that address e-commerce, data protection, and electronic transactions create an environment conducive to e-government.

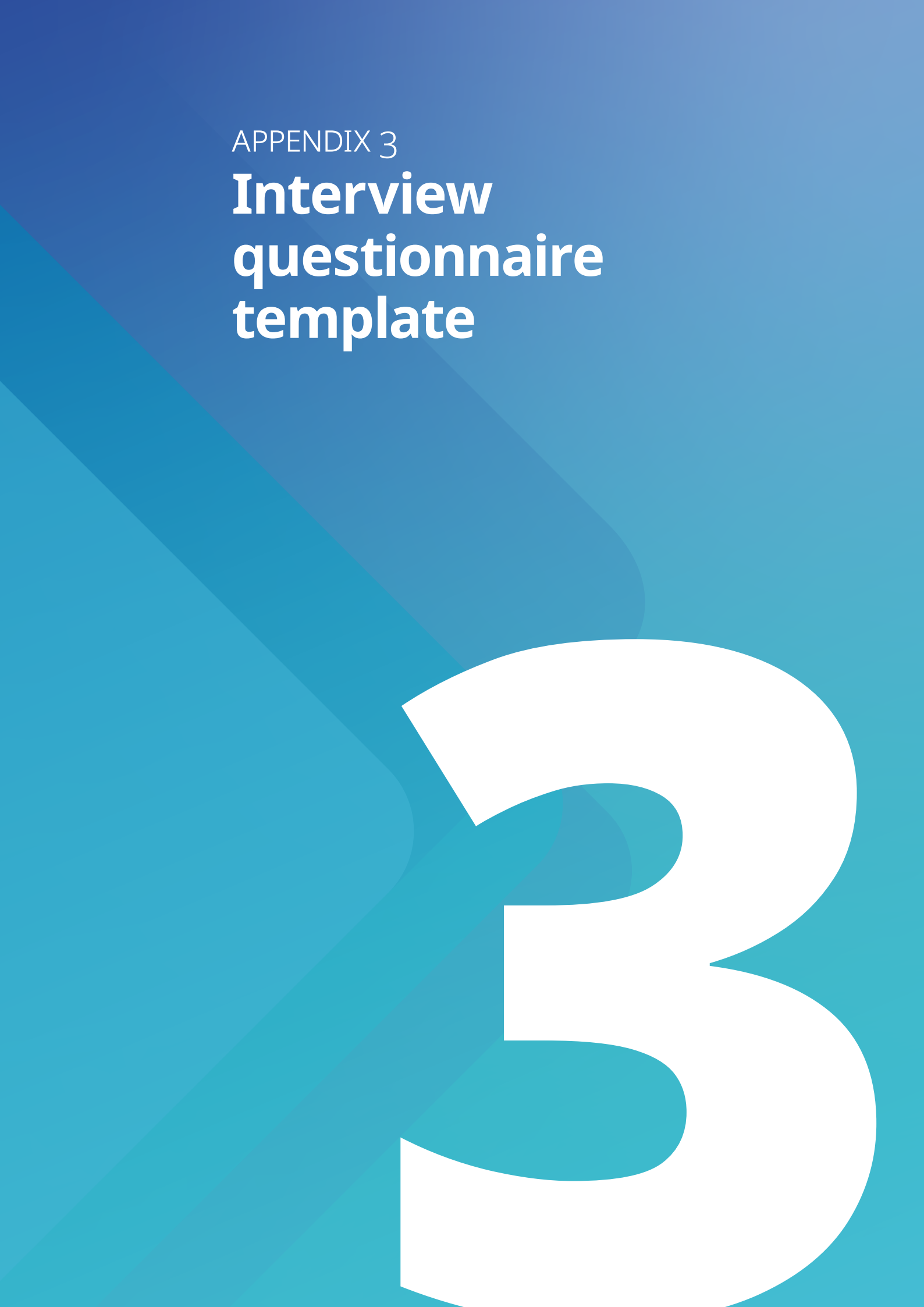
Digital Impact Alliance (DIAL 2023)

Table A2.3 Challenges, opportunities and success factors — DIAL 2023

Challenges	Opportunities	Success factors
Digital Inclusivity: ensuring that digital transformation programs are inclusive and that they bridge rather than widen the digital divide.	*Collaborative Platforms:* Using platforms like GovStack and the Digital Impact Exchange to foster collaboration and knowledge sharing.	*Leadership and Governance:* Strong leadership and clear governance structures that guide digital transformation efforts.
*Interoperability: a*chieving interoperability between diverse digital systems and services.	*Scaling Successful Models:* Replicating and scaling successful digital transformation models across different regions.	*User-Centric Design:* Designing digital services that are centred around the needs of the end-user.
Sustainability: developing digital solutions that are economically sustainable in the long term.	*Digital Public Goods:* Leveraging and contributing to digital public goods to build robust digital ecosystems.	*Partnerships:* Building partnerships across public and private sectors and civil society.
Data Privacy and Security: protecting the privacy and security of data within digital systems.	*Policy Advocacy:* Influencing policy to create environments conducive to digital transformation.	*Technology and Infrastructure:* Investing in the necessary technology and infrastructure to support digital services.
Fragmentation: Dealing with fragmented efforts and the lack of coordination among digital transformation stakeholders.		*Monitoring and Evaluation:* Implementing strong monitoring and evaluation mechanisms to track progress and impact.
Capacity Building: Strengthening the capacity of local institutions and communities to lead and sustain digital initiatives.		

APPENDIX 3

Interview questionnaire template



Interview questions for CTO study — Digital transformation: Critical success factors and challenges in the Commonwealth

Introductory questions

Name

Position

Organisation

Role in organisation: Describe your role in your organisation.

Country

State of ICT adoption: Give a brief overview of the state of ICT adoption and the resulting effects in your country.

Overview and national strategy

Vision and goals national plan for digital transformation: Is there a National Plan for or relating to Digital Transformation? If Yes, what are the primary goals of your country's digital transformation strategy?

Leadership and responsibility: Are there ministries, government agencies, or organisations with the responsibility of leading/championing digital transformation in your country?

Communication to citizens: How does the government communicate its digital transformation programs to citizens?

Public engagement and involvement of various stakeholders: How does the government ensure public engagement and inclusion in the digital transformation journey? And how are different stakeholders (e.g., private sector, civil society) involved in the digital transformation process?

Governance framework: Describe the governance framework for digital transformation in your country.

Opportunities, strategies, and international influence

Opportunities for digital transformation: What opportunities are there for digital transformation in your country?

Strategies employed: What strategies are being employed for advancing digital transformation?

International frameworks and influence: Have any international frameworks or models guided you? What was helpful?

Challenges, successes, and resources

Challenges and solutions: What challenges do you face regarding digital transformation and how are you overcoming them?

Success stories: Please describe some of the successes you have achieved in digital transformation.

Measuring success: How do you measure the success of digital initiatives in your country?

Success factors: What are the success factors for achieving digital transformation?

Resources allocation: What resources are you putting behind digital transformation?

Advice, lessons, and future outlook

Advice to other Commonwealth countries: What approaches, suggestions, and advice would you give to other Commonwealth countries?

Significant lessons learned: What is the most significant lesson learned for achieving success in digital transformation?

Additional insights

Future plans and priorities: What are the future plans and priorities for digital transformation in your country?

Sustainability and scalability: How are you ensuring the sustainability and scalability of digital initiatives?

Additional insights: Is there anything else you would like to add that we have not covered, particularly any unique aspects of your country's approach to digital transformation?

Notes

Notes

Graphic design: petemccormack.co.uk

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