POSITIONING THE LAO PDR FOR A DIGITAL FUTURE

PRIORITY MEASURES TO ACCELERATE DIGITAL ECONOMY DEVELOPMENT

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Foreword

Digital transformation underpins strong economic growth, especially in this post-pandemic world. Digital transformation in the Lao PDR will enable better cross-border trade, cashless payments, and more efficient and effective public services delivery. Digital technologies will also open new economic opportunities, through which Laos can achieve its growth aspirations. Hence, the Lao government is committed to driving economic growth through the acceleration of the digital economy. The Digital Economy Strategy (2021-2030) and the National Digital Economy Development Plan (2021-2025) promote productivity improvements through digital transformation in both public administration and the private sector.

Laos has already embarked on the journey towards a digital future: more than 98 percent of the population have access to telecom infrastructures, around one million Lao people subscribe to mobile banking users, and digital startups are emerging in the capital, including food delivery, e-commerce, ride-hailing, and so on. To accelerate digital adoption and transform government processes, a number of e-government applications and platforms have been developed at all levels of administration, including video conferencing, messaging and chat applications. During the pandemic, the government introduced the LaoKYC (Lao Susu) application to manage digital vaccination certificates and passports. The Khang Panya Lao digital educational platform enabled the government to minimize learning disruption for 90,000 primary and pre-primary pupils during COVID-19. The government has also adopted laws and regulations to support the digital economy and is investing in data centers and cloud infrastructure.

Our ambition for a prosperous Laos in the digital era is aligned with the objectives of the 9th National Socioeconomic Development Plan 2021-2025 and the National Agenda on Addressing Economic and Financial Difficulties. This includes achieving poverty alleviation, human resource development, and export diversification. Digital transformation will enhance the overall quality of life of our citizens and the competitiveness of enterprises in the country, but it requires forward-looking policies and safeguards to ensure that all Lao people can benefit from digital transformation. The World Bank's "Positioning the Lao PDR for a Digital Future" report provides an assessment of our progress so far and identifies gaps that need a whole-of-government approach to build a robust digital economy. In line with the report's findings and recommendations, the Lao government will continue pursuing its efforts to maximize the benefits of digital technologies for all citizens of the country.

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Abbreviations

ASEAN	Association of Southeast Asian Nations
AWPEC	ASEAN Work Programme on Electronic Commerce
BCEL	Banque Pour Le Commerce Exterieur Lao
CBDC	Central Bank Digital Currencies
CERT	Computer Emergency Response Team
CPF	Country Partnership Framework
DGF	Data Governance Framework
DGRA	Digital Government Readiness Assessment
FTTH	Fiber to the Home
GEA	Government-Wide Enterprise Architecture
GFIS	Government Financial Information System
GGMP	Digital Government Master Plan
IFMIS	Integrated Financial Management Information System
IXP	Internet Exchange Point
LANIC	Lao National Internet Center
LaPASS	Lao Payment Settlement System
LAPNet	Lao National Payment
LAPS	Lao ATM Pool Switching
LTE	Long-Term Evolution
MLSW	Ministry of Labor and Social Welfare
MOES	Ministry of Education and Sport
MoIC	Ministry of Industry and Commerce
MoHA	Ministry of Home Affairs
MPT	Ministry of Posts and Telecommunications
MSME	Micro, Small and Medium Enterprises
MST	Ministry of Science and Technology
MTC	Ministry of Technology and Communication
NSEDP	National Socioeconomic Development Plan
ODSC	One Door Service Center
PIMS	Personnel Information Management System
PSD	Payment System Department
RTGS	Real-Time Gross Settlement
TRA	Telecommunications Regulatory Authority
USO	Universal Service Obligation
WTO	World Trade Organization

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Executive Summary

The Vision

1. The Government of the Lao PDR has articulated a vision for the digital economy to grow from the current level of 3 percent to 10 percent of GDP by 2040[1]. Its 10-year Digital Economy Strategy (2021-2030) and the 5-year National Digital Economy Development Plan (2021-2025) elaborate on the government's ambition. The government is aware that the digital economy is expanding at an unprecedented rate throughout Southeast Asia and that Laos will need to keep pace. Several neighboring governments have highlighted digital transformation as a key recovery measure in the post-COVID-19 era. For example, Vietnam issued two key digital transformation documents—National Digital Transformation Program to 2025, Orientation to 2030, and the National Strategy on the Fourth Industrial Revolution to 2030—in 2020.

2. To realize this vision, Laos' digital transformation will need to permeate all sectors of the economy. Enabling more widespread access to high-speed internet for the population will allow the use of data-intensive applications to unleash the benefits of the digital economy. E-commerce platforms will help to generate inclusive growth in rural areas by lowering barriers to entry for micro-, small and medium enterprises (MSME), and businesses owned by underrepresented groups. Widely available, reliable, and secure digital payments will be necessary for the development of the platform economy. Digital payment services are starting to emerge; a digital transformation will promote broader access and universal adoption.

3. Laos' digital transformation will require a strong policy and regulatory foundation as well as progressive digitalization of government services. This includes regulations that facilitate digital transactions and protect users of online services, a strong institutional framework that helps make necessary reforms in a timely and effective manner, and crucially, strengthening the digital skills of citizens, businesses, and government. Equitable access to high-quality digital skills will be a prerequisite for equitable and sustainable development and will be positively correlated with GDP per capita.

Challenges and Opportunities

4. Before the COVID-19 pandemic Laos had one of the fastest growing economies in the world, averaging growth rates of 7.3 percent from 2009-2019. Despite pandemic related disruptions Laos still has significant potential for digital transformation. It is a young nation with a large proportion of digital natives. Digital solutions such as mobile banking and platforms such as LOCA[2] and GoTeddy[3] are gaining popularity in urban areas and among younger residents. The government has started to modernize outdated laws; new laws such as the Law on Electronic Data Protection (2017) and Law on Digital Signature (2018) reflect the growth of digital services. The government has also committed to the ASEAN Work Programme on Electronic Commerce (AWPEC) 2017-2025, which will facilitate cross-border e-commerce in the region and connect Laos to larger markets.

5. But Laos has been behind the curve in many aspects of the digital economy. Less than half of the population has a mobile broadband subscription, cash rather than digital payments are the norm, paper archives in government offices are yet to be digitized. The lack of a government-wide digitalization strategy has created siloed systems and processes, and the legal and regulatory framework for the digital economy requires further strengthening particularly in areas of data protection.

[1] Lao PDR National Digital Economy Development Vision 2040 (2021-2040)
[2] LOCA is the largest ride-hailing and taxi services platform in Laos.
[3] This application platform provides a wide range of services including food delivery, online shopping, and parcel delivery.

6. This report highlights steps that the Government of the Lao PDR can take to expand the digital economy. Overall recommendations of this report will help the Ministry of Planning and Investment and Ministry of Technology and Communication (MTC) prioritize and deepen actions outlined in the 10-year Digital Economy Strategy (2021-2030) and the 5-year National Digital Economy Development Plan (2021-2025). Establishing a steering committee presided by a ministry such as MTC, in a whole-of-government approach, will be a critical factor to coordinating national strategic objectives across different line ministries and government agencies. As follows, each chapter of the report addresses a particular topic in the digital economy and is intended to support different line ministries in achieving the national vision. Key findings and recommendations of the report include:

Area	Key Findings and Recommendations	Responsible entity
Chapter 3. Governance and institutional setting, legal and regulatory framework	• For Laos to streamline the development of the digital economy it needs to establish better coordination mechanisms such as creating an intergovernmental steering committee at the highest level possible. • With digital skills becoming more relevant, the Ministry of Education and Sport (MOES) and Ministry of Technology and Communication (MTC) should establish a working group with a mandate to develop a masterplan for digital skills. • Laos can strengthen its existing legal framework that reflects digital maturity and is aligned with international good practice, especially in areas such as telecommunications and internet, cybercrime and cybersecurity, data protection and consumer protection.	MTC, MoES
Chapter 4.1 Connectivity	• High-speed, high-quality broadband is a pre-requisite for digital transformation and improving access to high-speed internet in Laos will require a combination of regulatory incentives and investments. • Upgrades of existing cell sites and large-scale deployments in fiber to the home (FTTH) can increase the coverage of 4G/LTE population. • Regulations that encourage competition among a broader mix of market players and facilitate passive infrastructure sharing, including "dig once" policy can be instrumental in improving citizens' access to mobile and fixed network services.	MTC

Area	Key Findings and Recommendations	Responsible entity
Chapter 4.2 **Digital Payments**	• Bank of Lao PDR (BoL) can leverage the momentum from emerging international trends such as increased adoption of fast payments, central bank digital currencies (CBDC), and integration of payment systems across borders, to accelerate the adoption of digital payments. • Promotion of innovation and competition in the market through schemes such as regulatory sandbox will not only support the development of the market but also support capacity development of BoL staff. • Upgrading of the Law on Payment System can support the development of the market and entry of new players.	BoL
Chapter 4.3 **Digital Skills**	• Laos can ensure digital leadership in government by conducting an in-depth assessment of digital skills and learning needs of government ministries, starting with a pilot ministry. • Digital skills training in Technical and Vocational Education and Training (TVET) and Non-formal education (NFE) will need to become a key part of the curricula. • Encouraging the development of channels and platforms using existing technologies such as Khang Panya Lao will be beneficial.	MoES, Ministry of Labor and Social Welfare (MLSW), MTC
Chapter 4.4 **Platform Economy**	• Laos should refine its regulatory approach to platform-based businesses by referencing the different approaches being taken by US, China and Europe. • A nationwide assessment of the challenges and opportunities of platforms could guide policymakers in formulating policies that can catalyze the growth of digital firms and digital entrepreneurship. • Tailored and innovative assistance programs should be made available to support digital entrepreneurs and locally grown platforms.	MTC, Ministry of Industry and Commerce (MoIC)

Area	Key Findings and Recommendations	Responsible entity
Chapter 5 **Digital Government**	• Strengthening governance and coordination mechanisms through an intergovernmental steering committee as well as a government enterprise architecture, government-wide data governance framework and capacity building and change management plan will be crucial in the near term. • While LaoCERT is responsible for managing cybersecurity incidents, the lack of a government-wide cybersecurity strategy needs to be addressed. • In the long-run, Laos can consider implementing user-centric design and incentivizing citizen engagement in public services.	MTC

7. These recommendations set the foundation for an innovative, sustainable, and more competitive economy as the government seizes the opportunities and momentum from regional growth and integration.

ບົດສະຫຼຸບຫຍໍ້

ວິໄສທັດ

1. ລັດຖະບານ ສປປ ລາວ ໄດ້ກຳນົດວິໄສທັດ ໃຫ້ເສດຖະກິດດິຈິຕອນ ຂະຫຍາຍຕົວຈາກລະດັບປັດຈຸບັນທີ່ 3 ສ່ວນຮ້ອຍ ເປັນ 10 ສ່ວນຮ້ອຍ ຂອງ GDP ພາຍໃນປີ 2040[1]. ແຜນຍຸດທະສາດເສດຖະກິດດິຈິຕອນ ໄລຍະ 10 ປີ (2021-2030) ແລະ ແຜນພັດທະນາເສດຖະກິດດິຈິຕອນ ແຫ່ງຊາດ ໄລຍະ 5 ປີ (2021-2025) ໄດ້ອະທິບາຍລະອຽດກ່ຽວກັບ ເປົ້າໝາຍສູ້ຊົນຂອງລັດຖະບານ. ລັດຖະບານ ຮັບຮູ້ວ່າ ເສດຖະກິດດິຈິຕອນ ກຳລັງຂະຫຍາຍຕົວ ໃນອັດຕາທີ່ບໍ່ເຄີຍເກີດຂຶ້ນມາກ່ອນ ໃນທົ່ວອາຊີຕາເວັນອອກສຽງໃຕ້ ແລະ ສປປ ລາວ ກໍ່ຕ້ອງກ້າວນຳໃຫ້ທັນກັບຈັ່ງຫວະດັ່ງກ່າວ. ລັດຖະບານຂອງປະເທດໃກ້ຄຽງຫຼາຍປະເທດ ໄດ້ຍົກໃຫ້ ການຫັນເປັນດິຈິຕອນ ເປັນມາດຕະການຟື້ນຟູຫຼັງ ໂຄວິດ-19 ອັນສຳຄັນ. ຕົວຢ່າງ, ໃນປີ 2020 ສສ ຫວຽດນາມ ອອກເອກະສານສຳຄັນ ກ່ຽວກັບການຫັນເປັນດິຈິຕອນ ແຜນງານການຫັນເປັນດິຈິຕອນ ແຫ່ງຊາດ ຮອດປີ 2025, ວິໄສທັດຮອດປີ 2030, ແລະ ຍຸດທະສາດແຫ່ງຊາດ ກ່ຽວກັບ ການປະຕິວັດອຸດສາຫະກຳ ຄັ້ງທີ IV ຮອດປີ 2030.

2. ເພື່ອບັນລຸວິໄສທັດດັ່ງກ່າວ, ການຫັນປ່ຽນເປັນດິຈິຕອນຂອງ ສປປ ລາວ ຈະຕ້ອງກວມລວມທຸກ ຂະແໜງການຂອງ ເສດຖະກິດ. ການເອື້ອອຳນວຍໃຫ້ປະຊາຊົນເຂົ້າເຖິງອິນເຕີເນັດຄວາມໄວສູງຢ່າງກວ້າງຂວາງຈະ ຊ່ວຍການນຳໃຊ້ແອັບພລິເຄຊັ່ນທີ່ມີການນຳໃຊ້ຂໍ້ມູນຂັບເຄື່ອນ (Data-intensive applications) ໃນການປົດລັອກ ຜົນປະໂຫຍດຂອງ ເສດຖະກິດດິຈິຕອນ. ແພັ້ດຟອມ (Platform) ການຄ້າເອເລັກໂຕຣນິກ ຈະຊ່ວຍສ້າງ ການຂະຫຍາຍຕົວ ແບບກວມລວມທົ່ວເຖິງ ທຸກຄົນໃນເຂດຊົນນະບົດ ໂດຍຫຼຸດຜ່ອນອຸປະສັກໃນການເຂົ້າຮ່ວມ ຂອງຈຸລະວິສາຫະກິດ, ວິສາຫະກິດຂະໜາດນ້ອຍ ແລະ ຂະໜາດກາງ (MSME) ແລະ ທຸລະກິດທີ່ກຸ່ມ ຜູ້ດ້ອຍໂອກາດເປັນເຈົ້າຂອງ. ການຊຳລະເງິນ ແບບດິຈິຕອນ ທີ່ນຳໃຊ້ໄດ້ຢ່າງກວ້າງຂວາງ, ທີ່ໜ້າເຊື່ອຖືໄດ້ ແລະ ປອດໄພ ຈະຈຳເປັນ ສຳລັບ ການພັດທະນາ ເສດຖະກິດແບບແພັ້ດຟອມ (Platform economy). ການບໍລິການຊຳລະເງິນແບບດິຈິຕອນ ກຳລັງເລີ່ມມີໜໍ່ແໜງ; ການຫັນເປັນດິຈິຕອນ ຈະສົ່ງເສີມການເຂົ້າເຖິງຢ່າງກວ້າງຂວາງ ແລະ ມີການຍອມຮັບໃນລະດັບສາກົນ.

3. ການຫັນປ່ຽນເປັນດິຈິຕອນ ຂອງ ສປປ ລາວ ຈະຕ້ອງມີນະໂຍບາຍ ແລະ ພື້ນຖານລະບຽບການ ທີ່ເຂັ້ມແຂງພ້ອມທັງການຫັນຂໍ້ມູນທົ່ວໄປຂອງບໍລິການລັດຖະບານໃຫ້ເປັນຂໍ້ມູນດິຈິຕອນຢ່າງຕໍ່ເນື່ອງ. ໃນນີ້ ລວມໄປເຖິງລະບຽບການທີ່ ອຳນວຍຄວາມສະດວກໃຫ້ແກ່ການເຮັດທຸລະກຳດິຈິຕອນ ແລະ ປົກປ້ອງຜູ້ໃຊ້ບໍລິການອອນລາຍ, ຂອບລະບຽບນິຕິກຳທີ່ແຂງແຮງ ທີ່ຊ່ວຍສ້າງການປະຕິຮູບທີ່ຈຳເປັນ ໃນລັກສະນະທີ່ທັນການ ແລະ ມີປະສິດທິຜົນ, ແລະ ທີ່ສຳຄັນ ກໍແມ່ນການເສີມສ້າງທັກສະທາງດ້ານດິຈິຕອນຂອງ ບັນດາພົນລະເມືອງ, ທຸລະກິດ, ແລະ ລັດຖະບານ. ການເຂົ້າ ເຖິງທັກສະດ້ານດິຈິຕອນທີ່ມີຄຸນນະພາບສູງ ຢ່າງເທົ່າທຽມກັນ ຈະເປັນເງື່ອນໄຂເບື້ອງຕົ້ນສຳລັບ ການພັດທະນາຢ່າງເທົ່າທຽມ ແລະ ຍືນຍົງ ເຊິ່ງ ຈະມີຄວາມສຳພັນທາງດ້ານບວກກັບ GDP ສະເລ່ຍຕໍ່ຫົວຄົນ.

ສິ່ງທ້າທາຍ ແລະ ໂອກາດ

4. ກ່ອນການແຜ່ລະບາດຂອງ ພະຍາດ ໂຄວິດ-19 ສປປ ລາວ ເປັນໜຶ່ງໃນປະເທດທີ່ມີເສດຖະກິດ ຂະຫຍາຍຕົວໄວທີ່ສຸດໃນໂລກ, ໂດຍມີອັດຕາການຂະຫຍາຍຕົວ 7,3 ສ່ວນຮ້ອຍ ແຕ່ປີ 2009-2019. ເຖິງວ່າ ຈະມີການຢຸດຊະງັກທີ່ກ່ຽວຂ້ອງກັບການແຜ່ລະບາດຂອງ ພະຍາດ ໂຄວິດ-19, ສປປ ລາວ ກໍຍັງມີທ່າແຮງທີ່ສຳຄັນໃນການ ຫັນເປັນດິຈິຕອນ ເຊິ່ງ ເປັນປະເທດຍັງໃໝ່ທີ່ມີສັດສ່ວນປະຊາກອນເປັນຄົນທີ່ເກີດມາກັບຍຸກດິຈິຕອນ (digital natives) ເປັນຈຳນວນຫຼາຍ. ທຸລະກິດດິຈິຕອນ ເປັນຕົ້ນແມ່ນ ທະນາຄານໃນມືຖື (Mobile Banking) ແລະ ທຸລະກິດແພັ້ດຟອມ ເຊັ່ນ LOCA[2] ແລະ GoTeddy[3] ກຳລັງໄດ້ຮັບຄວາມນິຍົມ ໃນເຂດຕົວເມືອງ ແລະ ໃນກຸ່ມໄວໜຸ່ມ. ລັດຖະບານ ໄດ້ລິເລີ່ມ ປັບປຸງໂດຍການຫັນກົດໝາຍທີ່ສ້າງໃນເມື່ອກ່ອນໃຫ້ທັນສະໄໝຫຼາຍຂຶ້ນ; ກົດໝາຍໃໝ່ ເຊັ່ນ ກົດໝາຍວ່າດ້ວຍເຕັກໂນໂລຊີ ລະດັບສູງ (2021), ກົດໝາຍວ່າດ້ວຍການໂທລະຄົມມະນາຄົມສະບັບປັບປຸງ (2021), ກົດໝາຍວ່າດ້ວຍການປົກປ້ອງຂໍ້ມູນ ເອເລັກໂຕຣນິກ (2017) ແລະ ກົດໝາຍວ່າດ້ວຍ ລາຍເຊັນເອເລັກໂຕຣນິກ (2018) ສະທ້ອນໃຫ້ເຫັນເຖິງການຂະຫຍາຍຕົວ ຂອງ ບໍລິການດິຈິຕອນ. ພ້ອມດຽວກັນນັ້ນ ລັດຖະບານກໍໄດ້ໃຫ້ຄຳໝາຍໝັ້ນຕໍ່ ແຜນງານອາຊຽນວ່າດ້ວຍການຄ້າເອເລັກໂຕຣ ນິກ (AWPEC) 2017-2025, ເຊິ່ງຈະຊ່ວຍອຳນວຍຄວາມສະດວກຕໍ່ການຄ້າເອເລັກໂຕຣນິກຂ້າມແດນ ໃນພາກພື້ນ ແລະ ເຊື່ອມໂຍງ ສປປ ລາວ ໄປສູ່ຕະຫຼາດສາກົນທີ່ໃຫຍ່ຂຶ້ນ.

[1] ວິໄສທັດແຫ່ງຊາດ ການພັດທະນາ ເສດຖະກິດດິຈິຕອນ 2040 (2021-2040)

[2] LOCA ແມ່ນແພັ້ດຟອມໃຫຍ່ທີ່ສຸດທີ່ໃຫ້ບໍລິການແທັກຊີ ແລະ ບໍລິການແບ່ງປັນການເດີນທາງຮ່ວມກັນ.

[3] ແພັ້ດຟອມແອັບໂທລະສັບນີ້ໃຫ້ບໍລິການຫຼາຍຢ່າງເຊິ່ງລວມມີ ບໍລິການສົ່ງອາຫານ, ບໍລິການຮ້ານຄ້າອອນລາຍ, ແລະ ການນຳສົ່ງພັດສະດຸພັນ.

5. ແຕ່ ສປປ ລາວ ກໍ່ຍັງຢູ່ນຳຫຼັງໝູ່ຢູ່ໃນຫຼາຍໆດ້ານ ຂອງເສດຖະກິດດິຈິຕອນ. ສປປ ລາວ ຍັງຂາດເຂີນ ຊັບພະຍາກອນມະນຸດທີ່ມີຄວາມຮູ້ຄວາມສາມາດດ້ານດິຈິຕອນ, ທ່າແຮງດ້ານເຕັກໂນໂລຊີ ຍັງບໍ່ເຂັ້ມແຂງ, ໜ້ອຍກວ່າ ເຄິ່ງໜຶ່ງຂອງປະຊາກອນ ມີການສະໝັກອິນເຕີເນັດຄວາມໄວສູງເທິງມືຖື, ການໃຊ້ເງິນສົດແທນການຊຳລະດິຈິຕອນຍັງເປັນ ບັນຖັດຖານຂອງສັງຄົມ, ສຳເນົາເອກະສານໃນຫ້ອງການ ຂອງລັດຖະບານ ແມ່ນຍັງບໍ່ທັນເປັນດິຈິຕອນເທື່ອ. ຍຸດທະສາດການ ປ່ຽນຂໍ້ມູນເປັນດິຈິຕອນທົ່ວລັດຖະບານ ຍັງບໍ່ມີ ຈຶ່ງເຮັດໃຫ້ເກີດລະບົບ ແລະ ຂະບວນການ ທີ່ມີລັກສະນະເຮັດໃຜເຮັດລາວ. ພ້ອມນີ້ ຍັງມີຄວາມຮຽກຮ້ອງໃຫ້ມີການສ້າງຄວາມເຂັ້ມແຂງຕື່ມອີກ ໃນດ້ານຂອບກົດໝາຍ ແລະ ລະບຽບນິຕິກຳ ສຳລັບ ເສດຖະກິດດິຈິຕອນ ໂດຍສະເພາະໃນຂົງເຂດ ການປົກປ້ອງຂໍ້ມູນ ແລະ ຄວາມປອດໄພດ້ານຂໍ້ມູນຂ່າວສານ.

6. ບົດລາຍງານສະບັບນີ້ ໄດ້ເນັ້ນໜັກໃຫ້ເຫັນບັນດາຂາດຕ້າວຕ່າງໆທີ່ ລັດຖະບານ ສປປ ລາວ ສາມາດ ປະຕິບັດໄດ້ເພື່ອຂະຫຍາຍ ເສດຖະກິດດິຈິຕອນ. ຄຳແນະນຳໂດຍລວມຂອງ ບົດລາຍງານສະບັບນີ້ ຈະຊ່ວຍ ໃຫ້ລັດຖະບານ ກໍຄື ກະຊວງແຜນການ ແລະ ການລົງທຶນ ແລະ ກະຊວງ ເຕັກໂນໂລຊີ ແລະ ການສື່ສານ (ກຕສ) ຈັດບຸລິມະສິດ ແລະ ລົງເລິກການດຳເນີນການ ຕາມທີ່ໄດ້ລະບຸໄວ້ໃນ ຍຸດທະສາດ ເສດຖະກິດດິຈິຕອນ ໄລຍະ 10 ປີ (2021-2030) ແລະ ແຜນພັດທະນາເສດຖະກິດດິຈິຕອນ ໄລຍະ 5 ປີ (2021-2025). ການສ້າງຕັ້ງຄະນະກຳມະການຊີ້ນຳ ທີ່ເປັນປະທານໂດຍ ທ້ອງວ່າການລັດຖະບານ ແລະ ມີ ກຕສ ເປັນຈຸດປະສານງານຫຼັກ ເພື່ອວາງແຜນການມີສ່ວນຮ່ວມ ແລະ ແນວທາງ ເຮັດວຽກແບບທົ່ວພາກລັດທັງໝົດ ຈະເປັນປັດໄຈສຳຄັນ ໃນການປະສານງານຈຸດປະສົງດ້ານ ຍຸດທະສາດທົ່ວປະເທດໃຫ້ ເຊື່ອມສານເຂົ້າໃນ ທົ່ວກະຊວງຂະແໜງການທີ່ກ່ຽວຂ້ອງ ແລະ ອົງການຈັດຕັ້ງອື່ນໆຂອງລັດຖະບານ. ການຈັດຕັ້ງປະຕິບັດ ແຜນພັດທະນາເສດຖະກິດດິຕິຕອນ ບໍ່ແມ່ນວຽກສະເພາະຂອງຂະແໜງ ການໃດໜຶ່ງ ແຕ່ຫາກເປັນວຽກລວມ ຂອງທຸກ ຂະແໜງການ ທັງສູນກາງ ແລະ ທ້ອງຖິ່ນ , ເປັນວຽກທົ່ວສັງຄົມ ທັງພາກລັດ ແລະ ເອກະຊົນ ຕ້ອງລິເລີ່ມ ໂດຍການຫັນ ວິທີການເຮັດວຽກ, ການພັດທະນາຊັບພະຍາກອນມະນຸດ, ແລະ ການສ້າງການລະໂອກາດ ໃນການນຳໃຊ້ ເຕັກໂນໂລຊີດິຈິຕອນ ໃນການຜະລິດ, ການຄຸ້ມຄອງ ແລະ ການບໍລິການ ເພື່ອຍົກສູງຄຸນນະພາບຊີວິດ ແລະ ການເປັນຢູ່ ແລະ ການສ້າງລາຍຮັບໃໝ່. ແຕ່ລະພາກ ຂອງ ບົດລາຍງານ ໃນທາງລຸ່ມນີ້ ໄດ້ກ່າວເຖິງຫົວຂໍ້ສະເພາະ ໃນເສດຖະກິດດິຈິຕອນ ແລະ ມີຈຸດປະສົງ ຊ່ວຍກະຊວງຂະແໜງການທີ່ກ່ຽວຂ້ອງ ໃຫ້ບັນລຸວິໄສທັດແຫ່ງຊາດ ກໍຄື ແຜນພັດທະນາເສດຖະກິດ ສັງຄົມຄັ້ງທີ IX. ສິ່ງຄົ້ນພົບ ແລະ ຄຳແນະນຳຕົ້ນຕໍ ຂອງ ບົດລາຍງານນີ້ ປະກອບມີ:

ຂົງເຂດ	ສິ່ງຄົ້ນພົບ ແລະ ຄຳແນະນຳຕົ້ນຕໍ	ໜ່ວຍງານ ທີ່ຮັບຜິດຊອບ
ພາກທີ 3. ເງື່ອນໄຂ ດ້ານການຄຸ້ມຄອງ ແລະ ການຈັດຕັ້ງ, ໂຄງປະກອບ ກົດໝາຍ-ລະບຽບການ	• ເພື່ອໃຫ້ ສປປ ລາວ ເຊື່ອມສານການພັດທະນາເສດຖະກິດ ດິຈິຕອນ ຈຳເປັນຕ້ອງໄດ້ສ້າງກົນໄກການປະສານງານໃຫ້ດີຂຶ້ນ ເຊັ່ນ ການສ້າງ ຄະນະກຳມະການຊີ້ນຳລະຫວ່າງລັດຖະບານ ໃນຂັ້ນສູງສຸດ. • ຍ້ອນທັກສະດ້ານດິຈິຕອນທີ່ມີຄວາມສອດຄ່ອງຫຼາຍຂຶ້ນ, ກະຊວງ ສຶກສາທິການ ແລະ ກິລາ (ສສກ) ແລະ ກະຊວງເຕັກໂນໂລຊີ ແລະ ການສື່ສານ (ກຕສ) ຄວນສ້າງຕັ້ງ ຄະນະກຳມະການວິຊາການ ທີ່ມີໜ້າທີ່ພັດທະນາແຜນແມ່ບົດ ສຳລັບ ທັກສະດ້ານດິຈິຕອນ. • ສປປ ລາວ ສາມາດສ້າງຄວາມເຂັ້ມແຂງໃຫ້ໂຄງປະກອບ ລະບຽບ ກົດໝາຍທີ່ມີຢູ່ ໃຫ້ສະທ້ອນເຖິງ ການຂະຫຍາຍຕົວທາງດ້ານ ດິຈິຕອນ ແລະ ມີຄວາມສອດຄ່ອງກັບ ແນວທາງປະຕິບັດທີ່ດີ ຈາກສາກົນ ໂດຍສະເພາະ ໃນຂົງເຂດໂທລະຄົມມະນາຄົມ ແລະ ອິນເຕີເນັດ, ອາຊະຍາກຳໄຊເບີ ແລະ ຄວາມປອດໄພທາງໄຊເບີ, ການປົກປ້ອງຂໍ້ມູນ ແລະ ການປົກປ້ອງຜູ້ບໍລິໂພກ.	ກຕສ, ສສກ

ຂົງເຂດ	ສິ່ງຄົ້ນພົບ ແລະ ຄຳແນະນຳຕົ້ນຕໍ	ໜ່ວຍງານທີ່ຮັບຜິດຊອບ
ພາກທີ 4.1 **ການເຊື່ອມຈອດ**	• ບຣອດແບຣນ (Broadband) ຄວາມໄວສູງ ແລະ ມີຄຸນນະພາບສູງ ເປັນເງື່ອນໄຂເບື້ອງຕົ້ນສຳລັບການຫັນເປັນດິຈິຕອນ; ແລະ ການປັບປຸງການເຂົ້າເຖິງອິນເຕີເນັດຄວາມໄວສູງໃນ ສປປ ລາວ ມັນຮຽກຮ້ອງໃຫ້ຕ້ອງມີການນຳໃຊ້ທັງນະໂຍບາຍສິ່ງເສີມ ແລະ ການລົງທຶນ • ການຍົກລະດັບເສົາສັນຍານໂທລະສັບ ແລະ ຕິດຕັ້ງໂຄງລ່າງພື້ນຖານສາຍໄຍແກ້ວຣອດເຮືອນ (FTTH) ຂະໜານໃຫຍ່ ສາມາດເພີ່ມການປົກຄຸມ ຂອງປະຊາກອນທີ່ນຳໃຊ້ 4G/LTE ໄດ້. • ລະບຽບການທີ່ຊຸກຍູ້ໃຫ້ມີການແຂ່ງຂັນ ລະຫວ່າງ ຜູ້ມີບົດບາດໃນຕະຫຼາດທີ່ຫຼາກຫຼາຍ ແລະ ເງື່ອນໄຂສິ່ງເສີມການຮ່ວມໃຊ້ໂຄງລ່າງພື້ນຖານຄົງທີ່ (Passive Infrastructure), ລວມທັງນະໂຍບາຍຊຸດເທື່ອດຽວແລ້ວ ຈະສາມາດເປັນເຄື່ອງມື ໃນການປັບປຸງການເຂົ້າເຖິງການບໍລິການເຄືອຂ່າຍມືຖື ແລະ ເຄືອຂ່າຍຄົງທີ່ຂອງປະຊາຊົນໄດ້.	ກຕສ
ພາກທີ 4.2 **ການຊຳລະທາງດິຈິຕອນ**	• ທະນາຄານແຫ່ງ ສປປ ລາວ (ທຫລ) ສາມາດໃຊ້ປະໂຫຍດຈາກຈັງຫວະຂອງທ່າອ່ຽງສາກົນທີ່ເກີດຂຶ້ນໃໝ່ ເຊັ່ນ: ການຮັບຮອງການຊຳລະເງິນທີ່ວ່ອງໄວທີ່ເພີ່ມຂຶ້ນ, ສະກຸນເງິນດິຈິຕອນຂອງທະນາຄານກາງ (CBDC), ແລະ ການເຊື່ອມໂຍງລະບົບການຊຳລະຂ້າມແດນ ເພື່ອເລັ່ງການນຳໃຊ້ການຊຳລະແບບດິຈິຕອນ. • ການສົ່ງເສີມນະວັດຕະກຳ ແລະ ການແຂ່ງຂັນໃນຕະຫຼາດ ຜ່ານຮູບແບບຕ່າງໆ ເຊັ່ນ: ການອະນຸຍາດໃຫ້ທົດລອງໂດຍມີການຄຸ້ມຄອງ (Regulatory Sandbox) ຈະບໍ່ພຽງແຕ່ຊ່ວຍໃນການພັດທະນາຕະຫຼາດເທົ່ານັ້ນ ແຕ່ຍັງຊ່ວຍໃນການພັດທະນາຂີດຄວາມສາມາດຂອງພະນັກງານ ທຫລ ອີກດ້ວຍ. • ການຍົກລະດັບ ກົດໝາຍ ວ່າດ້ວຍ ລະບົບການຊຳລະສະສາງ ສາມາດຊ່ວຍໃນການພັດທະນາຕະຫຼາດ ແລະ ການເຂົ້າມາຂອງຜູ້ມີບົດບາດໃໝ່.	ທຫລ
ພາກທີ 4.3 **ທັກສະດ້ານດິຈິຕອນ**	• ສປປ ລາວ ສາມາດຮັບປະກັນຄວາມເປັນຜູ້ນຳດ້ານດິຈິຕອນໃນລັດຖະບານ ໂດຍການດຳເນີນການປະເມີນທັກສະທາງດິຈິຕອນແບບເລິກເຊິ່ງ ແລະ ຄວາມຕ້ອງການດ້ານການຮຽນຮູ້ ຂອງ ບັນດາກະຊວງ ໂດຍເລີ່ມຈາກກະຊວງທົດລອງກ່ອນ. • ການເຝິກອົບຮົມທັກສະ ທາງດ້ານດິຈິຕອນ ໃນອາຊີວະສຶກສາ (TVET) ແລະ ການສຶກສານອກລະບົບ (NFE) ຄວນຕ້ອງກາຍເປັນສ່ວນສຳຄັນຂອງຫຼັກສູດ. • ການຊຸກຍູ້ການພັດທະນາຊ່ອງທາງ ແລະ ແພັດຟອມ (Platform) ໂດຍໃຊ້ເຕັກໂນໂລຊີທີ່ມີຢູ່ ເຊັ່ນ ຄັງປັນຍາລາວ (Khang Panya Lao) ຈະເປັນປະໂຫຍດໄດ້.	ສສກ, ກະຊວງ ແຮງງານ ແລະ ສະຫວັດດີການ ສັງຄົມ, ກຕສ

ຂົງເຂດ	ສິ່ງຄົ້ນພົບ ແລະ ຄຳແນະນຳຕົ້ນຕໍ	ໜ່ວຍງານທີ່ຮັບຜິດຊອບ
ພາກທີ 4.4 ເສດຖະກິດແພັດຟອມ	• ສປປ ລາວ ຄວນປັບປຸງວິທີການອອກລະບຽບຄຸ້ມຄອງຂອງຕົນຕໍ່ກັບທຸລະກິດທີ່ອີງໃສ່ແພັດຟອມ ໂດຍການອ້າງອີງວິທີການຕ່າງໆທີ່ສະຫະລັດອາເມລິກາ, ຈີນ ແລະ ເອີຣົບ ກຳລັງດຳເນີນການຢູ່. • ການປະເມີນສິ່ງທ້າທາຍ ແລະ ໂອກາດ ຂອງບັນດາແພັດຟອມຕ່າງໆ ໝົດທົ່ວປະເທດ ສາມາດແນະນຳ ຜູ້ສ້າງນະໂຍບາຍໃນການກຳນົດນະໂຍບາຍທີ່ສາມາດກະຕຸ້ນການຂະຫຍາຍຕົວ ຂອງບໍລິສັດດິຈິຕອນ ແລະ ຜູ້ປະກອບການດິຈິຕອນ ໄດ້. • ຄວນສ້າງແຜນງານຊ່ວຍເຫຼືອ ທີ່ອອກແບບມາສະເພາະ ແລະ ມີລັກສະນະ ນະວັດຕະກຳຂຶ້ນມາ ເພື່ອຊ່ວຍ ຜູ້ປະກອບການດ້ານດິຈິຕອນ ແລະ ແພັດຟອມທີ່ຂະຫຍາຍຕົວພາຍໃນປະເທດ.	ກຕສ, ກະຊວງ ອຸດສາຫະກຳ ແລະ ການຄ້າ
ພາກທີ 5 ລັດຖະບານດິຈິຕອນ	• ເສີມສ້າງຄວາມເຂັ້ມແຂງ ຂອງກົນໄກການຄຸ້ມຄອງ ແລະ ການປະສານງານ ຜ່ານຄະນະຊີ້ນຳລະຫວ່າງລັດຖະບານ ຕະຫຼອດເຖິງ ສະຖາປັດຕະຍະກຳ ຂອງທົ່ວລັດຖະບານ (Government enterprise architecture), ຂອບການຄຸ້ມຄອງ ຂໍ້ມູນຂອງລັດຖະບານ ແລະ ການສ້າງຂີດ ຄວາມສາມາດ ແລະ ແຜນການຄຸ້ມຄອງການປ່ຽນແປງ ຈະມີຄວາມສຳຄັນ ໃນໄລຍະໃກ້ໆນີ້. • ເຖິງແມ່ນວ່າ LaoCERT ຮັບຜິດຊອບໃນການຄຸ້ມຄອງເຫດການຄວາມປອດໄພທາງໄຊເບີ, ການຂາດກົນລະຍຸດການຮັກສາຄວາມປອດໄພທາງໄຊເບີທົ່ວທັງລັດຖະບານຈຳເປັນຕ້ອງໄດ້ຮັບການແກ້ໄຂ. • ໃນໄລຍະຍາວ, ສປປ ລາວ ສາມາດພິຈາລະນາຈັດຕັ້ງປະຕິບັດການອອກແບບທີ່ເນັ້ນຜູ້ໃຊ້ເປັນໃຈກາງ ແລະ ຊຸກຍູ້ສິ່ງເສີມໃຫ້ປະຊາຊົນມີສ່ວນຮ່ວມໃນບໍລິການສາທາລະນະ.	ກຕສ

7. ຄຳແນະນຳເຫຼົ່ານີ້ ເປັນການວາງພື້ນຖານສຳລັບ ເສດຖະກິດທີ່ມີລັກສະນະນະວັດຕະກຳ, ຍືນຍົງ, ແລະ ມີການແຂ່ງຂັນຫຼາຍກວ່າເກົ່າ ໃນຂະນະທີ່ ລັດຖະບານ ກຳລັງນຳໃຊ້ໂອກາດ ແລະ ທ່າແຮງ ຈາກການຂະຫຍາຍຕົວ ຂອງການຫັນເປັນທັນສະໄໝ ແລະ ການເຊື່ອມຕໍ່ລະດັບພາກພື້ນ ແລະ ສາກົນ.

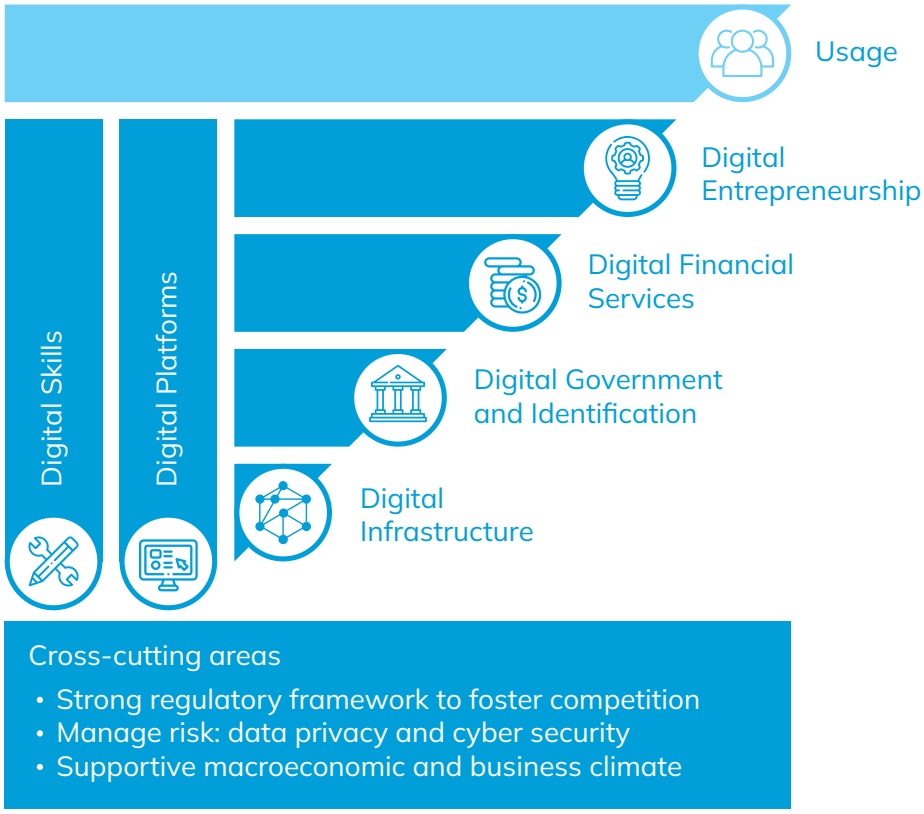
2

Digital Economy Snapshot of Laos

8. **The analytical framework for the digital economy underpinning this report has been developed** by the World Bank Group and validated by client countries in several regions including East Asia, South Asia, Africa, and Middle East/North Africa. It focuses on the key building blocks for the digital economy, viz.

- **Digital infrastructure:** Access and usage of fixed and mobile broadband and fiber-optic cables. Access to digital connectivity should be universal and affordable.
- **Digital financial services, digital government and identification systems** that allow individuals, businesses, and governments to interact and conduct transactions.
- **Digital entrepreneurship:** a supportive ecosystem of government regulations and access to financing.
- **Digital platforms,** including e-commerce and e-government, to drive usage and foster economic activity.
- **Digital skills:** creating a pool of digitally skilled workforce will be key to increasing usage and economic activity.
- **Cross-cutting enablers:** strong regulatory frameworks that foster competition, a supportive macroeconomic and business environment, including appropriate tax policies, and a robust regulatory environment for data protection and cybersecurity to manage risks.

FRAMEWORK - The Foundational Elements of the Digital Economy



Source: World Bank, various Digital Economy Assessments

9. The digital economy in Laos is estimated at around 3% of GDP[4], with the expectation that the digital economy will grow to 10% of GDP by 2040. Compared with the industries that make up the GDP, the digital economy of Laos is close to the size of other manufacturing sectors and is slightly larger than financial (4.4 percent of GDP in 2020) and insurance (3.0 percent) activities.[5] This section provides a snapshot of the digital economy in Laos and examines various aspects that fuel the digital economy—such as social media use, mobile and fiber connectivity, quality of connections, the digital startup ecosystem as well as its enabling environment.

[4] Approximately 3% of GDP when calculated by the tax revenues from telecom companies. The actual figure may be slightly higher considering tax revenues from direct and indirect investments in ecommerce, fintech, software development, fiber and smart city developments. The World Bank is currently reviewing the legal framework on digital taxation in Lao PDR, upon request of the Tax Department, and will be providing technical assistance to the Tax Department on this topic. Hence, this topic is not covered in this report.

[5] Share of GDP by Industrial Origin at Current Price. Department of Economic Statistics, LSB, MPI.

DIGITAL ECONOMY SNAPSHOT

The digital economy in Lao PDR is estimated at around 3% of the GDP, with the expectation that the digital economy will grow to 10% of the GDP by 2040.

51.1% of the total population in Laos use the internet.

Facebook

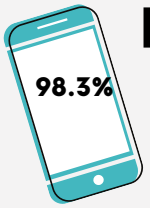
has the largest user base in Laos among social media platforms.

- 3.5 million users
- 3.4% of internet user base
- 613,600 users

26% (2017) → **51.5% (2022)**

Social media usage increased dramatically in the past 5 years.

Mobile-first



Around 98.3% of population have mobile access whereas only **8.8%** of households have fixed broadband.

Comparators

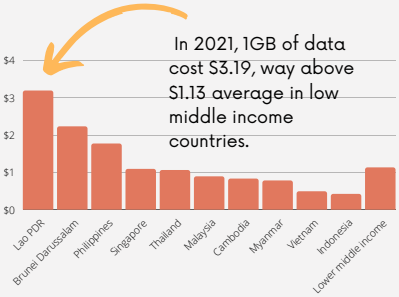
Mobile penetration
Vietnam: 124.9%
Cambodia: 117.4%

Fixed broadband household penetration
Vietnam: 69.7%
Cambodia: 8.5%

Fewer than 1 out of 7 households own a computer

Only **13.5%** of households in Laos owned a computer in 2019, compared to 25.8% of households in Vietnam.

Laos has one of the most expensive internet in the region

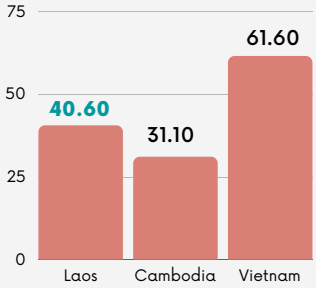


In 2021, 1GB of data cost S3.19, way above S1.13 average in low middle income countries.

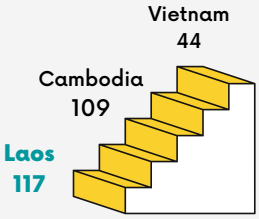
Yet, internet is slower in Laos than in the region

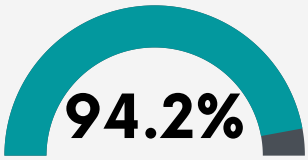
Laos 24.29Mbps | Thailand 32.08Mbps | Vietnam 35.2 Mbps

UNCTAD B2C e-commerce Index (out of 100)



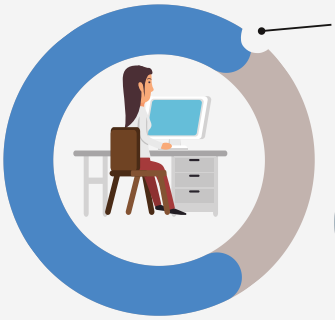
World Intellectual Property Organization (WIPO) Global Innovation Index (out of 132 economies)





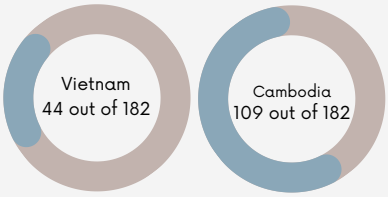
Majority of enterprises in Laos are microbusinesses with low levels of digitalization.

LaoKYC is the country's first digital ID service that was developed to curb the spread of COVID-19. The application provides online authentication and government e-services. The app has close to 1 million downloads.



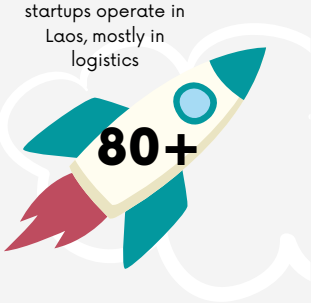
131 out of 182

Laos ranks 131 out of 182 countries in the ITU Cybersecurity Index 2020



Emerging domestic e-commerce platforms

More than 80 startups operate in Laos, mostly in logistics



LOCA — Laos' first ride-hailing service and the first company to be listed in **Forbes Asia 100 To Watch** in 2021.

167 out of 193

Laos ranks 167 out of 193 in UN e-Government Development Index (2020).

Vietnam ranks 86 and Cambodia ranks 124

3

Enabling Digital Transformation

3.1 Governance and Institutional Setting for Digital Transformation

10. Effective and transparent governance arrangements are essential if Laos is to realize the socioeconomic benefits of digital transformation. Digital transformation requires legal, institutional, technological, and cultural changes across government and the wider ecosystem. This in turn needs high-level political commitment with effective institutional leadership and coordination. There is no single way to accomplish this. Singapore, a regional leader, set up the Smart Nation and Digital Government Office[6] (SNDGO) under the Prime Minister's office; Malaysia set up the National E-Commerce Council[7] (NeCC) comprising various ministries and agencies; and Vietnam set up the E-Commerce and Digital Economy Agency under the Ministry of Industry. These arrangements have advantages and disadvantages that need to be considered in the context of a country's particular goals, development stage and political economy.

Current State Assessment

11. In Laos, the Ministry of Technology and Communications (MTC) leads the country's digital transformation. MTC was created in October 2021 from the merger of the Ministry of Science and Technology (MST) and Ministry of Posts and Telecommunications (MPT). It is composed of 15 departments and has oversight functions over key areas including connectivity, telecommunications, cyber-security, digital government, and innovation. The Digital Government Center, which is currently part of MTC, started as an e-government project in 2006 with the goal of increasing the government's effectiveness and service delivery through ICT. It has since evolved to offer several digital government services, including:

- centralization of government computing services,
- management and development of administration and service software,
- management and provision of services on centralization of government information,
- training and promotion of e-government.

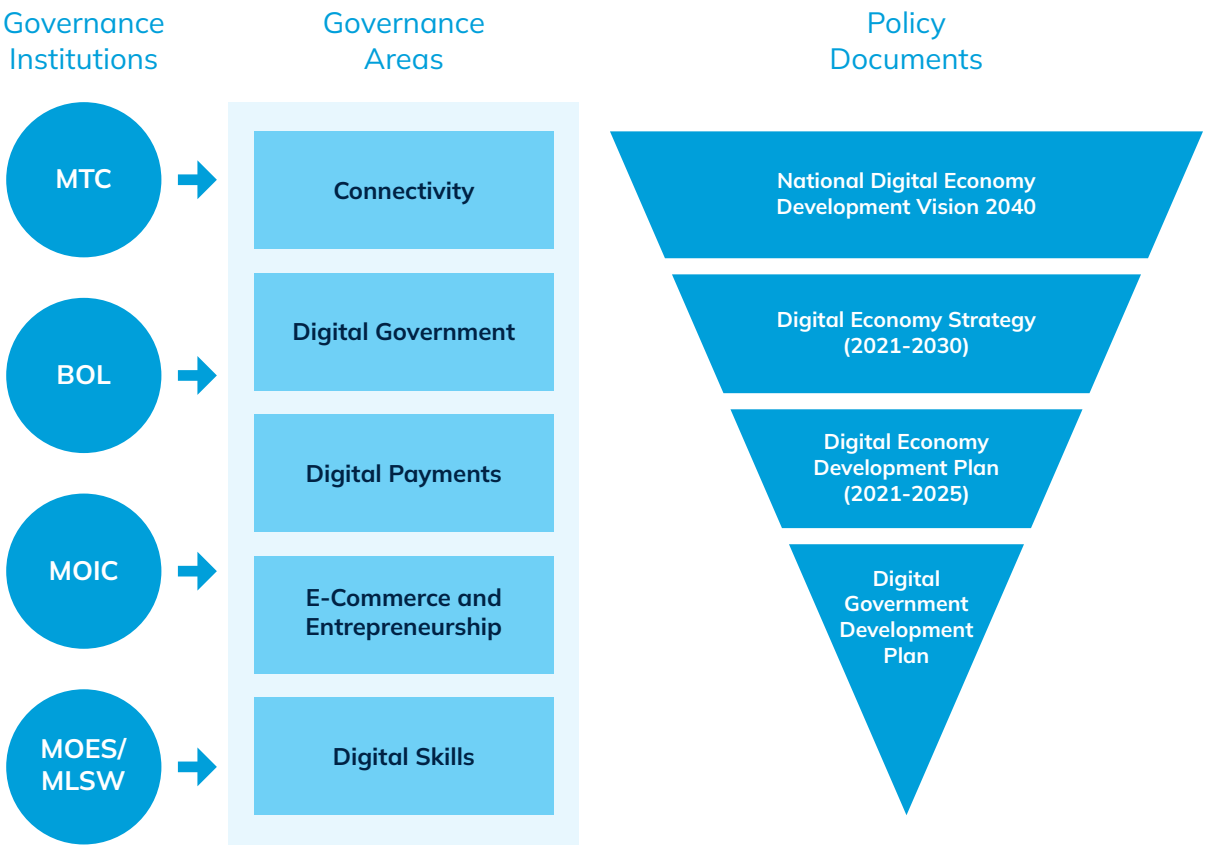
12. The Lao National Internet Center (LANIC), also under MTC, was established in 2010. Originally it was founded to be an internet exchange point[8] (IXP) but it has evolved to take on additional functions such as operating data centers, the government cloud, and managing the ".la" country code top-level domain (ccTLD). LaoCERT was established in 2012 and is responsible for handling cybersecurity incidents. Due to their recent consolidation under MTC there is still overlap between the different entities, which now have become departments of MTC. Efforts to streamline functions are ongoing. Figure 3.1 summarizes the current institutional structure, the principal government institutions involved, the governance areas they oversee, and the main policy documents.

[6] https://www.smartnation.gov.sg/

[7] The Digital Economy in Southeast Asia Strengthening the foundation for future growth, World Bank 2019.

[8] An IXP is essential technical infrastructure where networks come together to connect and exchange Internet traffic.

Figure 3.1. Laos Digital Transformation As-Is Governance and Policy Framework. Source: authors.



13. BoL has oversight of the national payment system. The Law on Payment Systems was adopted in 2017. It put forward a strategic approach to payment system reforms, explicitly including the increased adoption of non-cash payment instruments as one of the strategic priorities of the country. BoL's Payment System Department (PSD) was formed in 2018. The mandate of the PSD is broad, spanning from day-to-day payments oversight and supervision to a proactive role in promoting innovation. Currently the PSD does not have sufficient capacity to effectively perform the many tasks assigned to it.

14. The Ministry of Industry and Commerce (MoIC) and MTC provide oversight of domestic e-commerce. These entities are actively facilitating the emergence of digital trade and entrepreneurship, for example through promoting the Decree on E-Commerce adopted in April 2021. The Decree sets out the regulatory framework for businesses engaged in e-commerce operations, the procedure and requirements for e-commerce contracts, and the management of e-commerce activities by the different government ministries. The Laos ICT Commerce Association (LICA)[9], under the purview of MoIC is an umbrella association that groups IT professionals, IT software and hardware companies as well as ISP and IT-related Human Resource Development companies. LICA was established in 2005, it currently has more than 40 members, including some banks and all the telcos.

[9] https://lica.la/en/

15. MTC, the Ministry of Education and Sports (MoES), and the Ministry of Labor and Social Welfare (MLSW) are the key institutions responsible for the development of digital skills of the workforce. The 9th National Socio-Economic Development Plan (NSEDP, 2021-2025) stipulates ICT must be used in teaching and learning for secondary and tertiary education. MoES is currently developing its own ICT policy under the national ICT policy, and the Education and Sports Sector Development Plan 2021 to 2025 stipulates that ICT should be used in teaching and learning processes to improve the quality of education and meet the need of the labor market. MLSW is set to establish an ICT Center, with support from the Republic of Korea to train workers in IT skills. MTC operates an ICT training institute and recently signed an agreement with China Railway Construction Group Co. Ltd to construct a new building for the ICT training institute. The building will be equipped with the necessary teaching and learning materials, laboratory equipment and examination facilities.

16. The key policy documents guiding digital transformation in Laos are the National Digital Economy Development Vision 2040 (2021-2040), the 10-year Digital Economy Strategy (2021-2030) and the 5-year National Digital Economy Development Plan (2021-2025). The National Digital Economy Development Plan defines digital transformation as one of seven pillars of the national agenda and foresees the digital economy growing from 3 percent[10] to 10 percent of GDP by 2040. It addresses several key policy areas, including:

- The Digital Government Plan,
- Digital Payment System Plan,
- Human resource digital development plan,
- MSME business promotion and start up development plan,
- Digital Security Plan.

17. Existing building blocks of the digital governance framework need to be further strengthened to drive the development of the digital economy. The digital economy institutional setup demonstrates an acceptable level of development but is fragmented and uncoordinated operationally. MTC, line ministries and other organizations in the digital economy ecosystem report are not always informed of each other's plans and actions. Not all ministries and provinces have a clear vision for their digital transformation. Several digital transformation initiatives have been undertaken by central government—but implementation is slow, primarily due to limited availability of budget and funding. There is frequent duplication, and actions that are not aligned with the overall strategic approach. The recent consolidation of functions in MTC for both planning and implementing the digital strategy provides a basis for strengthening its position as the central driver of digital transformation.

[10] Approximately 3 percent of GDP when calculated by the tax revenues from telecom companies. The actual figure may be slightly higher if considering tax revenues from direct and indirect investments in ecommerce, fintech, software development, optical fiber, and smart city developments.

Future State and Goals by 2027

18. As Laos progresses in its digital transformation, the governance structure needs to be further consolidated. Effective implementation of the digital strategy requires an appropriate institutional framework, helping institutions to break with the traditional culture of working in isolation. MTC's position as the lead institution of the ecosystem is key, but better coordination is necessary. Giving priority to co-ordination of planning and implementation with other entities would be beneficial. Priority areas that should be addressed include:

- strengthening coordination mechanisms, providing a formal institutional forum to facilitate and promote dialogue among stakeholders, and
- strengthening key enablers such as digital payments, digital skills, and cyber security.

Recommendations

- **Establish better coordination mechanisms.** The ambitious targets set out in the in the 20-year Vision on Digital Economy Development (2021-2040) can only be met if the digital economy ecosystem and its co-ordination mechanisms are strengthened. The government should establish co-ordination mechanisms within two levels, strategic and operational, to guarantee the appropriate level of performance and coherent use of digital technologies throughout the economy. Country-wide strategic decisions should continue to be led by MTC, but it may be useful to create an intergovernmental steering committee at the highest level possible that involves all the relevant parties to co-ordinate digital economy initiatives. At the operational level, better coordination between actors is also necessary. MTC should look for ways to empower government IT managers to design and implement coordinated ICT policies.
- **Establish formal spaces for structured co-ordination with stakeholders in the digital economy ecosystem.** Until now, most links with other stakeholders have been established in an ad hoc way. The current architecture lacks a formal institutional forum (an advisory council, for example) to act as an intersectoral forum that facilitates and promote dialogue with these groups, including private sector, academia, and civil society, as well as local governments (provincial and district level), and the legislative and judicial branches. This forum is essential to ensure a citizen- and demand-driven, inclusive, and participatory approach to development and implementation of the digital strategy. It would also cement the role of the government as a platform. Sub-commissions could be created for areas of interest such as digital government, e-commerce, and electronic payments.
- **MTC should strengthen the role of LaoCERT[11] to develop a country-wide Cyber Security Strategy.** LaoCERT, in collaboration with other government entities and stakeholders from the private sector and academia, should develop a national cyber security strategy that implements a whole-of-society approach to cybersecurity prevention, detection and response. The strategy should lay out how to improve understanding of cyber risk, how this can drive more effective action on cyber security and resilience, seek ways to enhance and expand the nation's cyber skills at every level, and how to secure critical infrastructure and technologies. National cybersecurity strategies are used in many countries, including the United Kingdom.[12]

[11] https://www.laocert.gov.la/
[12] https://www.gov.uk/government/publications/national-cyber-strategy-2022/national-cyber-security-strategy-2022

- **BoL should further strengthen payment system oversight and the PSD should be adequately staffed.** Staff capacity should be increased and diversified through hiring different profiles, providing training to staff, ensuring their exposure to international events, and practice on-the-job learning. BoL should develop and publish a payment system oversight framework and could consider adopting an oversight manual.
- **MoES and MTC should establish a working group, meeting quarterly, with a mandate to develop a masterplan for digital skills.** It should include representatives from all relevant public stakeholders and development partners. They should also establish an annual event for sharing updates on the work of the group on digital skill development. This event should include all relevant ministries and development partners, as well as concerned institutions, including National University of Laos, teacher training colleges, Non-Formal Education Development Center, and ICT Center.

3.2 Legal and Regulatory Framework for Trust, Security and Usage of Digital Transactions[13]

Current State Assessment

Telecommunications/Internet Regulation

19. Legal and regulatory enabling measures are needed to support the private sector to roll out new infrastructure more quickly, both mobile and fixed broadband. An initial set of regulations has been enacted in response to obligations under the WTO Reference Paper on Telecommunications. The Law on Telecommunication (Amended) No.09/NA of December 2011 creates the key regulatory elements for licensing, interconnection, infrastructure sharing, the allocation of radio frequency, telephone numbers and Internet domain names, as well as a Telecommunication Development Fund. But the extent and effectiveness of implementation is not clear, and a further detailed assessment is needed.[14]

20. A Telecommunications Regulatory Authority (TRA) has been established in the Ministry of Communications and Technology (Decree No 109/PM) promulgated on March 27, 2017. A Decision establishing the mandate, functions, and responsibilities of TRA has also been approved (No 1684/MPT of April 5, 2017). TRA is an autonomous department of MMTC and has authority to gather fees, budget and make decisions, subject to the overall responsibility of the Minister. The Director General is accountable to the Minister for the performance of the Authority.

[13] *DISCLAIMER: This analysis of the legal and regulatory regime, identification of gaps and recommendations for reform covers regulation of telecommunications and ICT, and the broader enabling legislation needed to enable trusted digital transactions in support of the transition to a digital government and economy. It is an assessment of the existing and available laws against best practice and should not be interpreted as legal advice. While every attempt has been made to provide a comprehensive analysis, the review of the laws and regulatory instruments is limited only to those that could be obtained in English, using official or informal translations, and so is incomplete. Errors in the analysis may also be due to the accuracy of translations provided. The review was not conducted by anyone qualified to practice law in Laos, and no inference should be drawn as to the accuracy, completeness, or enforceability of the analysis. There is no guarantee that addressing all the issues raised in this report will result in a perfect, or even workable, legal and regulatory enabling environment for digital transformation in Laos. The information in this report is current as of March 2022 and will need to be validated through in country consultations. All references to laws in the analysis recognize that these may be reversed, repealed, or amended over time.*

[14] The Government has updated its legal framework for ICT and telecommunications with the Law on Information and Communications Technology (December 2016). In 2021, it revised the 2011 Telecommunications Law. These documents were not available in English.

21. TRA is independent from telecom operators. This is guaranteed in article 7.1 which stipulates that the leadership of the Authority shall not have: "[...] any position or share, not being an Advisor of or being engaged in operations of any telecommunication businesses."

22. TRA is organized into six key departments, with subordinate instruments to support the implementation of the law. The departmental structure largely follows the approach stipulated in the WTO Reference Paper, and covers Licensing, Competition, Universal Service Obligation (USO), Industry Development, and Consumer Protection. Subordinate instruments also largely follow the structure recommended by the WTO, with regulations on licensing, interconnection, competition, tariffs, numbering and radio spectrum.

23. A review of the regulatory framework for telecoms/internet infrastructure has highlighted the following challenges:

- **Licensing.** The relevant document does not set out sufficient detail about the types of service providers that are subject to licensing. The authority also only has a short timeframe to assess and grant a license, and so it is not clear whether the regulation has met with any implementation difficulties.
- **Interconnection.** It is not clear how interconnection rates are set.
- **Competition management.** The definitions of anti-competitive behavior depart from international best practice. The relationship between the sector-specific competition law and the generic competition law (the Law of Business Competition) is not clear.
- **Tariffs.** The Decision on Determination of Telephone and Internet Fees and Principles of Sales Promotions regulates prices in detail. This may limit competition, to the detriment of consumers.
- **Universal Service Obligation (USO).** There is currently no policy or framework to operationalize the USO as a possible mechanism to promote services in underserved or remote areas.
- **Unregulated areas.** No regulations have been developed yet on wholesale access and infrastructure sharing, number portability, roaming, consumer protection, or quality of service.

Intermediary Liability for Digital Platforms

24. Rules limiting the liability of intermediaries for the content that flows over their platforms are fundamental enablers for the growth of these platforms, as well as for the free flow of data. There is, however, a global debate about how responsible intermediaries should be for moderating this content, and about the transparency and accountability of the decision-making processes that support their moderation decisions.

25. Laos does not appear to have a comprehensive legal regime for intermediary liability. Articles 33-35 and 38 of the Law on e-Transactions articles provide for the regulation of intermediaries that provide services for the transmission and storage of electronic documents and data messages, plus related services.[15] Some of these provisions

[15] While Article 33 exempts intermediaries from being subject to liability, provisions in Article 34 restrict these exemptions by imposing "civil or criminal liability depending on each case if it knows the facts or circumstances where a data message would result in damage to individuals, legal entities or other organizations." This is potentially a significant limitation on the exemptions afforded in Article 33.

are broad and may impact the free flow of data.[16] Details on intermediary liability are to be determined through implementing regulations developed by MTC, which have not been reviewed. A Decree on Information Management on the Internet was also passed in 2014[17] but was not available for review.

Digital Transformation of Government and the Economy

26. The digital transformation of government and online service delivery requires a legal and regulatory environment that enables secure, authenticable electronic transactions, and facilitates data exchange and interoperability. At the same time, safeguarding legislation and regulation on data protection, cybercrime and cybersecurity and consumer protection foster trust in digital transactions. The legal and regulatory enabling environment for the digital economy should be principles-based and technology-neutral so that it is sufficiently agile to adapt to technological developments. Implementing and enforcement entities should be resourced and capable so they can undertake their functions effectively.

E-commerce and E-transactions

27. The legal framework for e-transactions provides an overarching framework that helps create trust in both public and private sector online transactions. It does this by defining the principles, rules and processes for the recognition, management, use, and inspection of electronic communications.

28. A first-generation legal framework for e-transactions and e-commerce in Laos has been developed. This comprises the Law on Electronic Transactions ("e-Transactions Law") enacted in 2012, the Law on Electronic Signatures (No. 59/NA of 2018), and secondary legislation including the Decree on Electronic Ecommerce, the Decision on the Electronic Signature Service (No.1101/MPT of 2020), and the Decision on the Certificate Authority[18] that support the implementation of the e-Transactions Law. The e-Transactions Law grants legal equivalence between paper-based and electronic communications, contracts, signatures and records (with limited, reasonable exceptions). It takes a layered approach to the digital authentication of parties to a transaction by acknowledging the validity of both basic and secure electronic signatures and is broadly consistent with the UNCITRAL Model Laws on E-Commerce and E-Signature. A review of this framework has highlighted the following issues:

- **The authentication regime still needs to be operationalized.** Particularly since it does not appear that Laos has implemented a trusted foundational digital identification system to support secure and reliable authentication and verification of parties to an online transaction.[19]
- **The Law on Electronic signature and the Decision on Electronic Signature Service.** These define elements of electronic signature certification services and license and requirements of service issuers and providers in detail. Lao has two levels of electronic signature certification providers.[20] The National Root Certificate Authority, the root certifier, is responsible for providing electronic signature certification services to certificate authorities. Both public and private entities are eligible to issue digital certificates if they are licensed by the Ministry of Technology and Communications

[16] See for example Article 38(3), which prohibits intermediaries from "providing services with regard to data messages and electronic records that give rise to damage to national stability, security and social order."
[17] No. 327 (16 September 2014)
[18] Decision was not available for review.
[19] To be confirmed during stakeholder consultations.
[20] Article 5 of the Decision on Electronic Signature Service.

(MTC) and authorized by the National Root Certificate Authority.[21] While the legal framework provides for the creation of a local certificate ecosystem, it is not clear how many certificate authorities are either registered or operational.

- **The Decision on E-Commerce.** Decision No. 296/GOV was adopted in April 2021. It complements the legal framework for e-commerce by setting out the rules for the registration, operation, and management of activities for businesses engaged in e-commerce activities. It stipulates requirements for business registration and sets out the rights and obligations between parties to an e-commerce agreement conducted on a digital platform, including requirements to provide clear and correct information about the service provider, price, delivery and condition of the goods,[22] and requirements to protect electronic information to prevent their access, usage, modification, destruction and transfer to third parties, pursuant to rules laid out in the Law on Electronic Data Protection and relevant regulations.[23]

29. These provisions are important elements for fostering trust in online transaction by protecting consumer rights and reducing information asymmetries.[24] While the law does improve the certainty of the enabling environment for e-commerce, requirements for businesses to be locally incorporated and a lack of rules on cross-border commerce[25] might impede Laos' "regional and international integration" objectives.[26]

Cybercrime and Cybersecurity

30. Laos has a national cybercrime law that defines principles, regulations and measures aimed at "preventing, combating, curbing and eliminating crime", and protecting computer data and critical infrastructure and information and communications systems through which data flow. This is the Law on Prevention and Combating Cyber Crime No.61 of 2015 ("Cybercrime Law"). A good practice cybercrime framework effectively gives teeth to cybersecurity policies, by criminalizing unauthorized activities targeting ICT and software, including access and misuse of data systems.

31. For typical aspects of cybercrime, the Law aligns with good international practice. The scope of cybercrime is typically understood to include unauthorized access to a computer system, unauthorized monitoring, data alternation or deletion, system interference, theft of computer content, misuse of devices, and offences related to computer content and function. Articles 8-18 provides clear definitions of several "typical" cybercrimes, including unauthorized computer access and interception, computer system interference, data and information forgery, which it criminalizes.

[21] Article 28 of the Law on Electronic Signature; Articles 7, 9-10 of the Decision on Electronic Signature Service. According to Article 20 of the Decision, the National Internet Center (NIC) is responsible for creating, maintaining and developing a public electronic signature certification system. It is unclear to what extent the NIC is operational.

[22] Article 33 on "Content of Provided Information" in the Decision on E-Commerce.

[23] Article 34 on "Protecting Information" in the Decision on E-Commerce and article 42(5), (7) and (8) which respectively prohibit the provision of incorrect or incomplete information about the business; collecting, using or disclosing customer information without permission; and sending advertising messages beyond the "stipulated scope". For effective implementation, these terms should be further specified.

[24] That said, this requires a clear venue for redress. Article 46 of the Decision provides that administrative dispute resolution be resolved by the "electronic commerce managing authority". It is unclear to what extent this entity is currently operational and effectively able to discharge its functions. It is positive, however, that the Decision also provides for a right of redress through the courts (Article 48), as well as international dispute resolution (Article 49).

[25] Aside from international dispute resolution (Article 49).

[26] See Article 1 of the Decision on Electronic Commerce.

32. The Cybercrime Law diverges from good practice in terms of definitions and scope of criminalized activities and procedural elements. It departs from frameworks such as the Budapest Convention on Cybercrime[27] by criminalizing conduct such as "causing damage via online social media" (article 13). In its current form, the article criminalizes conduct such as posting computer data on "slandering, blaspheming, [and] using impolite words", applying "violence, false, misleading and deceptive information, "destroying national security, peace, order in society, national culture and fine tradition of the nation", and "convening, persuading and encouraging people to resist the government or separate the national solidarity". Unlike the provisions referred to above, where the definition of criminal conduct is clear, the broad wording of article 13 risks the provisions being interpreted to grant excessive discretion for prosecution. Similarly, article 14 diverges from good practice by criminalizing the dissemination of all pornography – rather than focusing on the dissemination of child pornography, as in the Budapest framework.[28] A criminal prosecution under this law can result in a three-year prison sentence, and civil liability can lead to fines of up to 30 million Kip. Cybercrime laws are a safeguard to foster trust in a digital economy and society, but these provisions may have a negative effect on that trust.

33. Neither the Cybercrime Law nor the criminal procedure law appear to include specific rules on e-evidence.[29] Combating cybercrime requires that the legal framework includes rules on collecting, accessing and preserving the integrity of electronic data that may be used as evidence. While the Law does require the protection and storage of information "in good condition" by service providers responsible for data management,[30] good practice models mandate specific legislative measures to enable competent authorities to obtain relevant data expeditiously and, for as long as reasonably necessary to seek their disclosure, to ensure its integrity is preserved.[31]

34. Under the Law on Criminal Procedures, to which the Cybercrime Law refers, a warrant for search, seizure and arrest can be issued by either a public prosecutor or a judge,[32] which risks undermining the impartiality of the investigation process. Evidence should be obtained while respecting due process safeguards, including requiring the investigatory authority to obtain a warrant or court order based on reasonable grounds to believe that any computer data would be relevant for the investigation or prosecution of an offense.

35. The Cybercrime Law supports international cooperation, providing for trans-border access to computer data or to obtain evidence from third parties. This is usually done through mechanisms including Mutual Legal Assistance (MLA) treaties or agreements. Articles 35-38 of the Cybercrime Law provide for the applicability of MLA agreements, but the legal framework would benefit from further specifying how MLA is undertaken in practice[33], to enable the government to effectively coordinate and cooperate with other countries in combating cybercrime.

[27] See the Council of Europe's Convention on Cybercrime ("Budapest Convention"), signed in 2001, available at: https://www.europarl.europa.eu/meetdocs/2014_2019/documents/libe/dv/7_conv_budapest_/7_conv_budapest_en.pdf

[28] Ibid.

[29] The criminal procedure law only includes general evidence rules (Articles 20-21).

[30] Article 45.

[31] The Budapest Convention provides that the order for data storage should expire after 90 days, with the possibility of renewal.

[32] Cf Articles 51, 60 and 62 of the Law on Criminal Procedures.

[33] For example, including provisions regarding expediting MLA, spontaneous information, mutual legal assistance regarding stored or real-time computer data, and the existence of a 24/7 multilateral network.

36. The national Computer Emergency Response Team (CERT) is located in MTC. While some of its functions[34], such as developing programs to prevent, monitor and combat cybercrimes, overseeing, tracking and responding to reports of cybercrimes, and undertaking international cooperation are typically undertaken by CERTs, other activities the CERT is legally mandated to undertake, such as the development of strategies and policies and disseminating relevant laws and regulations, may be more appropriately conducted by a different entity within MTC that may be more appropriately resourced to undertake such policy functions. This could also help reduce the overlap in mandates between LaoCERT and the MTC, which already is legally mandated to undertake a policy and regulatory role.[35] Finally, given the overlap between the functions allocated to the Ministry and its satellite offices at the provincial and municipal levels[36], it would be important to establish clear coordination and reporting channels between them.

37. Some provisions regarding fines for conduct are vague.[37] The law seeks implementation through a "carrot and stick" approach combining incentives for performance[38] with disciplinary measures for violations, including not supplying data or information "on defined time or period" to the investigation authorities. The time or period is not defined in the law, which may result in overzealous or discretionary enforcement.

Data Protection

38. The scope of the legal framework for data protection in Laos is broader than typical data protection law. It is determined by the Law on the Protection of Electronic Data No. 117/PO of June 23, 2017 ("the Law") and the Guideline on the Implementation of the Law on Data Protection No.2128 of 2018 ("the Guideline"), which supports the implementation of the Law. This framework covers "electronic data", which includes "general data", which is accessible and disclosable[39], and "specific data" that may not be accessed, used, or disclosed without permission from "data owners". While "specific data" includes personal data, it also includes restricted information pursuant to the government data classification regime.[40]

39. The Law does not create a special category of "sensitive" personal data that would warrant additional safeguards.[41] Given the broader scope, the law applies to both individuals (natural persons) and legal entities, both domestic and international. **While the Law includes several of the rights and obligations that are typically included in a good practice data protection law, such as rights to access, rectification and erasure of data, obligations to protect and secure the data and prevent access of the data by unauthorized third parties, there are several divergences from international good practice.[42]** An issue

[34] Article 32.

[35] See article 49. These overlapping functions include developing strategies, policies, and laws (41(1) and collaborating and cooperating with other countries (49(6)).

[36] Articles 49-51.

[37] Article 60(2), but other provisions in this article are similarly vague, such as 60(1) and 60(4).

[38] Article 56.

[39] According to the Guideline on the implementation of the data protection law (Article 9 and 10), "general data" includes information such as name, job position, address, telephone number, etc. that would be considered "personal data" under most data protection laws. the definition of "specific data" seems closer to what would be considered "sensitive personal data" in data protection laws, but also includes other types of confidential non-personal data, "project plans", "budget plans" and "official confidentiality".

[40] This classification regime has not been reviewed.

[41] Such as for data regarding an individual's religious or political beliefs, health, or biometric data.

[42] For example, it is the responsibility of the "data owner" (data subject) to ensure the accuracy, transparency and completeness of the electronic data that has been provided to the data manager and report on illegal activities, whereas these are typically obligations for the data processor/manager (see Article 28). Similarly, the obligation to notify of a breach is usually towards the data owner/subject, whereas here the notification appears to be to the Ministry.

with practical, as well as legal implications, is the fact that the law relies on consent as the primary lawful basis for processing data. As the number of data transactions increase, and as certain types of data are used or for certain purposes (service delivery, for example), it may not be the most appropriate lawful basis and meaningful consent may either be difficult to obtain in practice. In such instances, relying on safeguarding provisions such as purpose limitation and other limits on use, as well as data minimization, may be more appropriate. These provisions do not exist in the current Law.

40. The Law does not create an independent authority mandated to investigate data breaches, support compliance, and adjudicate disputes. Instead, MTC is responsible for implementing the law, in coordination with other public sector entities. To support implementation, MTC published a Guideline on the implementation of data protection, which provides additional definitions and practical examples to guide application of the rights and obligations laid out in the Electronic Data Protection Law.

Consumer Protection

41. The Law on Consumer Protection (No. 2 of 30 June 2010) defines the principles and measures to organize, administrate and inspect and monitor the activities of consumer protection. Part II sets out the various aspects of Consumer Protection. Part III deals with advertising standards. Part IV deals with the administrative organizations responsible for consumer protection.[43] The law does not make express reference to electronic commerce, though the Decision on Electronic Commerce of 2021, which includes certain key consumer protection provisions, does refer to the Law on Consumer Protection.

42. The Consumer Protection Association has been established as a non-profit organization mandated to provide consultation and advice and protect consumer rights. It is not clear how active it is in resolving disputes related to e-commerce. Since reports of breaches of obligations under the consumer protection law appear to be investigated at a sectoral level, questions around FinTech, digital payments and the obligations of payment providers are primarily being regulated by BoL's Financial Transaction Department.[44]

Future State and Goals by 2027[45]

43. As Laos' digital maturity increases, there are opportunities to strengthen the existing legal framework. The government may wish to consider adopting new elements of the enabling legal/regulatory framework to respond to emerging policy objectives as the data and digital economy matures. Such areas may include:

- Strengthening and updating the legal regime for Intellectual Property Rights to enable access to and sharing of private sector data,
- Improving the competition regime for digital and data markets, and
- Strengthening the legal regime to promote access to information, open data and data portability.

[43] These include the Consumer Protection Association, and Governmental Implementing Organizations for Consumer Protection, which appear to be mandated to resolve disputes on a sectoral basis.
[44] The implementation arrangements would need to be validated during consultations in country.
[45] Stakeholder engagements should be conducted either before or during the next mission to validate and incorporate the client's viewpoints.

Recommendations

Telecommunications/Internet

- **Strengthen the legal framework for promoting public-private sector partnerships.** This will drive new investments and deliver improved outcomes for improving access to connectivity for users, particularly in high-cost areas.

Cybercrime and Cybersecurity

- **Improve alignment of substantive provisions (cybercrimes) with international good practice frameworks.** Alignment with (for example) the Budapest Convention improves robustness of the law and facilitate international cooperation.
- **Clarify evidentiary rules for the admissibility of electronic evidence.** Given the special characteristics of the data and information collected as part of cybercrime investigations, this is necessary to ensure their integrity and other concerns.
- **Improve due process safeguards regarding the obtention of evidence in cybercrime investigations.**
- **Support proactive efforts to strengthen institutional functions and processes.** This will help prevent and respond to cyberattacks and make it possible for Laos to participate more effectively in international efforts to combat cybercrime.

Data Protection

- **Adopt a data protection law of general application.** This should be aligned with international good practice, with specific rules on the rights and obligations for the collection, processing and use of personal data and a clear regime for cross-border data transactions.
- **The lack of data protection legislation beyond the Law on Electronic Data Protection is a critical gap.** It would foster trust in digital government and the economy.

Consumer Protection

- **Update the legal regime for consumer protection.** It should be expressly applicable to e-commerce.
- **Strengthen regulatory capacity and enforcement mechanisms to ensure robust grievance redress mechanisms**

4

Digital Economy Constraints and Enablers

4.1 Digital Connectivity

Current State Assessment

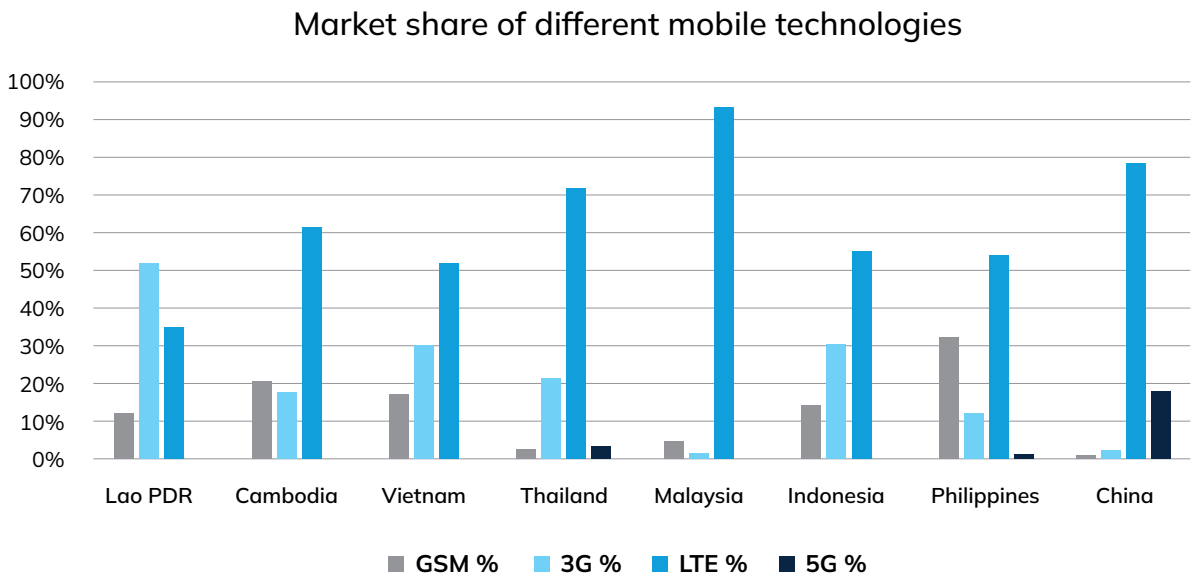
44. This section focuses primarily on supply side constraints and the investment needs and regulatory reforms to address these. Based on stakeholder interviews and analysis of other aspects of the digital economy in Laos, issues of internet access, quality and affordability have significantly limited the update of digital services, including e-commerce and public service services (e.g. online education and health) particularly in smaller towns and rural areas.

45. About 80 percent of the population is now covered by the fastest available mobile broadband networks (4G/LTE). But coverage does not necessarily equate to access. Actual 4G/LTE broadband subscriptions in Laos significantly lag other countries in the region (Figure 4.1). **Quality of mobile broadband is improving but varies significantly within the country.** Based on Ookla Speedtest crowdsourced data (February 2022), mobile broadband performance in Laos is somewhat slower than in Thailand and Vietnam, faster than in Cambodia, Indonesia, and the Philippines and comparable to Malaysia.

46. Affordability of mobile broadband remains challenging for many since the lowest entry-level monthly mobile data package is priced above the ITU-UNESCO affordability threshold of 2 percent of income per capita.

Figure 4.1. Access to mobile communications in the region, by technology.
Source: Telegeography data January 2022, based on September 2021 actuals.

Mobile Technology	Lao PDR	Cambodia	Vietnam	Thailand	Malaysia	Indonesia	Philippines	China
GSM	902,050	4,235,413	21,622,204	2,692,273	2,310,500	52,300,000	51,181,550	18,648,745
GSM%	12%	21%	17%	3%	5%	14%	32%	1%
3G	3,788,200	3,670,000	37,590,000	20,914,553	805,000	112,830,000	18,788,000	36,000,000
3G%	52%	18%	30%	21%	2%	30%	12%	2%
LTE	2,545,000	12,550,000	64,550,000	70,952,899	43,215,000	204,645,000	85,894,200	1,285,000,000
LTE%	35%	61%	52.2%	72%	93%	55%	54%	78%
5G	10,750	0	0	3,700,000	0	190,000	1,879,000	301,270,255
5G%	0.1%	0.0%	0.0%	3.8%	0.0%	0.1%	1.2%	18.4%
Total	**7,246,000**	**20,455,413**	**123,762,204**	**98,259,725**	**46,330,500**	**369,965,000**	**157,742,750**	**1,640,919,000**
Mobile Penetration	**98.50%**	**121.10%**	**126.30%**	**140.50%**	**141.80%**	**134.20%**	**142.50%**	**113.70%**



47. Fixed broadband penetration remains low in Laos, reaching 8.7 percent of households. Crowdsourced throughput data shows locally a median throughput of 30 Mbps. **Fixed broadband penetration lags far behind Vietnam, Thailand, Malaysia, Philippines, and Indonesia and is just slightly higher than in Cambodia.** This particularly impacts larger institutional users including banks, larger businesses but also schools and government offices. Major investments in fixed broadband access infrastructure will be required. A mass-market fiber optic roll-out will take considerable coordination and effort, supported by a robust regulatory regime to promote sharing, and ensure cost based nondiscriminatory access.

48. Quality of fixed broadband service is relatively low. Based on Ookla Speedtest crowdsourced data (February 2022), fixed broadband performance in Laos is about 30 Mbps which is faster than Cambodia and Indonesia but slower than other regional benchmark countries.

49. Affordability of fixed broadband is a concern. Entry-level fixed broadband packages cost around KIP 140,000 (US$12.26), higher than in Vietnam or Thailand for slower speeds. The entry level fixed broadband tariff in Laos is much more expensive than Vietnam and Thailand, but lower than Malaysia, Indonesia, and Philippines. However, the entry level throughput offered is low at 3 Mbps on Lao telecom and ETL. Only the Unitel entry level package is 30 Mbps at the same tariff since they changed their FTTH speeds in September 2021[46]. Higher throughputs, in commonly desirable broadband speeds range of 10-100 Mbps, are very expensive in Laos and likely out of reach for most of the population.

50. International connectivity is well established. There are sufficient fiber optic routes to neighboring countries. IP Transit tariffs available to the main service providers are in line with the general trend in the region and not a major barrier.

51. The national fiber optic backbone totals 92,900km. There is some content localization, with local caches for the main content delivery networks (CDN)s, and a local internet exchange point (IXP). The local IXP could be strengthened further by making sure the CDNs connect to the IXP. This would reduce the requirement for international bandwidth since a large volume of data traffic is transmitted overseas.

[46] https://internetlaos.com/2021/09/unitel-smashes-home-internet-prices-laos.html

52. Based on the market share of the different mobile operators: Unitel (46.7%), Lao Telecom (37.9% + 2.6% from TPlus after take-over), ETL (11.2%), the market structure shows two major mobile operators and one remaining smaller player. These market shares are fairly typical for competitive markets although there seems to be trend towards a duopoly.

Future State and Goals by 2027

53. Mobile broadband access can improve significantly. Upgrades of existing cell sites could bring the 4G/LTE population coverage from 80 percent to more than 95 percent, and additional cell site roll-out would cover more of the remaining rural areas. This would require a further investment in rural cell sites, plus investment in rural fiber optic backhaul to connect more cell sites (towers) to accommodate additional data transmission. Increasing mobile broadband coverage and access can be done in two steps:

- Upgrade of all current GSM and 3G cell sites to include LTE coverage, including backhaul capacity upgrades where necessary.
- Build additional cell sites in the remaining 4-5% of the villages without mobile coverage. These can be small and simple cell sites, potentially powered by solar cells. Backhaul might be challenging but a mix of microwave links and satellite backhaul (for example using new very high capacity geostationary or low earth orbit satellite systems).

54. Fiber to the home (FTTH) fixed broadband investment can reach a much higher number of homes passed (and connected) by FTTH infrastructure. There are several factors which make large-scale FTTH deployment beyond the major cities of Laos still relatively feasible:

- A large number of homes have electricity. That simplifies connection of modems and equipment but also lowers the cost of the homes passed infrastructure since the fiber optic cables can be attached to existing utility poles. The Laos Statistical Information Service[47] reports that by 2020, 94% of households have been electrified and 93% of villages are electrified, of which 90 percent connected to the grid. FTTH deployment along existing utility poles would be possible for up to 90% of the homes.
- Many villages are “clustered” with many homes close to each other (and not widely dispersed);
- Many of the 8,416 villages are along corridors (like valleys) which also have fiber optic backbones, or could benefit from middle mile fiber deployment;
- Cooperation between one of the service providers, Unitel, and the electricity company, Electricité du Laos (EDL), was recently announced including FTTH, use of poles and optical ground wire (OPGW)[48].

55. A more detailed analysis would be required to scope this investment gap. However, if an additional 500,000 homes passed are required at a cost of $200-300/home passed, then this would require $100 – 150 million for the homes passed infrastructure plus some additional middle mile fiber along existing power lines to reach currently unconnected villages. As at least 70-80% of the investment would be in passive infrastructure (e.g. ducts and associated civil works), making a strong case for a regulatory push for passive infrastructure sharing.

[47] https://laosis.lsb.gov.la/tblInfo/TblInfoList.do?rootId=2101000&menuId=2101101&lang=en&keyword=&searchType=undefined
[48] https://www.vientianetimes.org.la/freeContent/FreeConten_Unitel_21.php

Recommendations

- **Allow and facilitate dedicated wholesale passive infrastructure players such as tower-sharing companies and fiber-sharing networks using open access.** Some towers are shared between the existing mobile operators and reportedly there is small-scale activity by China Tower and EdotCo. A large-scale adoption could open substantial additional funding for the sector.
- **Consider "dig once" policies that mandate passive infrastructure sharing in all public works thus lowering the time and cost for telecom providers in installing fiber.** The dig once policy will effectively install an empty conduit in all public works construction for telecom providers to efficiently install fiber optic cables in the future.
- **Enable mobile operators to spin off their tower assets.** This will free up capital for further mobile network rollout and modernization. New sources of national and international funding, with a different risk/return on investment profile, could potentially be attracted to invest in the tower assets.
- **Allow active infrastructure sharing for mobile operators, especially radio access network (RAN) sharing.** This would accelerate cost-efficient rural LTE (and beyond) coverage for the last 20 percent of the population while securing competitive mobile services even in the more rural and remote areas.
- **Consider accelerating the assignment of more mobile spectrum to the mobile network operators.** They need more spectrum to provide cost-efficient high-capacity mobile broadband based on LTE and 5G. Key spectrum bands to consider are 700 MHz (2x45 MHz), 2.3 GHz (100 MHz), 2.6 GHz (190 MHz) and the 3.3–3.8 or 4GHz.
- **Accelerate the permitting process for network rollout.** This covers rights of way, passive infrastructure sharing, and construction permits. Streamlining the permitting process and minimizing any associated fees, taxes, etc. helps to reduce the deployment costs and speeds up actual deployment time. International good practice is to make sure any permit for the construction of internet infrastructure is fully processed within 4 months.
- **Reconsider regulations that make it difficult for type 2 and type 3 internet service providers (ISPs) to compete.** They can provide competition to the major ISPs, especially in the rural and border areas. A review of the mandatory connection of all ISPs to the National Internet Center is also recommended to ensure that this does not create a bottleneck in terms of costs and rural deployment.
- **Encourage a broader mix of market players.** This includes those focused only on providing wholesale passive infrastructure such as towers for cell sites and ducts or poles with fiber optic cables for cell site backhaul and FTTH. This will improve cost-efficiency and attract funding.
- **Review price regulations.** Under the Decision on "Determination of Telephone and Internet Fees and Principles of Sales Promotions", 2744/MPT, 15 September 2016 all tariffs for telecom/internet services are regulated. This potentially restricts competition and leads to higher prices for end users as providers are unable to offer promotions/special price packages. More flexibility in pricing would be desirable given rapid technological developments and to encourage competition.

4.2 Digital Payments

Current State Assessment

Market landscape

56. The market for payments in Laos is largely served by the main commercial banks, while non-bank service providers have only recently started to emerge. Nineteen banks in Laos issue payment cards. Most of the main banks offer mobile banking and internet banking solutions. These are however used mostly by the urban and younger population, while people in rural and remote areas as well as the older population have more difficulty accessing digital channels due to lack of access to internet connections and smartphones, as well as low levels of digital and financial capability. Cash remains the main payment instrument in Laos, also for e-commerce transactions.[49]

57. Banque Pour Le Commerce Exterieur Lao (BCEL) is the largest bank in Laos and plays a critical role in the Lao payments system due to its large number of customers and volume of transactions. BCEL is state-owned, with 70 percent[50] of its shares held by MoF. BCEL has undergone a digital transformation over the last decade and is now offering its customers a popular mobile banking app, BCEL One. The app includes BCEL OnePay, allowing users to pay at more than 20,000 merchants[51] in Laos by scanning a QR code. BCEL One has 1 million subscribers and has a daily average of 1 million transactions and 300,000 active users.[52]

58. There are two active mobile money providers in Laos, U-Money and M-Money. U-Money is the main provider of mobile money. U-Money is a product offered by Star Fintech, a subsidiary of Unitel/Star Telecom Company. There are 1.6 million subscribers of U-Money, which had 10,000 agents in 148 regions, as of December 2020.[53] Transaction volumes are not yet large and are mostly limited to phone top-ups and, to a lesser extent, mobile account-to-account transfers within U-Money, and mobile money to bank account transfers. U-Money offers an app requiring a smartphone but is also available via Unstructured Supplementary Service Data (USSD) (using text-based messages). U-Money has established partnerships with banks and financial service providers such as insurance companies. It aims to extend the reach of financial services to the unserved and underserved population, including in rural and remote areas.

59. The emergence of other Fintech services in Lao is still nascent. There are three fintech firms providing payment services, KiwiPay (offering a payment gateway solution for merchants), and NewPay and LaoPay (which developed a multi-service app also including payment wallets). The Lao ICT Commerce Association (LICA) has 40 members, including some banks and all the telcos, but none of the startups has a specific focus on Fintech as a core business. E-commerce and e-service companies are emerging, including ride hailing, transportation ticketing and travel booking, and food delivery services. Many of

[49] The findings presented in this paragraph are based on the views of the stakeholders interviewed by the World Bank. While the opinions of the interviewees were unanimous, supporting data was not available or outdated at the time of drafting. It is worth noting that the latest available data on financial inclusion date back to the World Bank's Global Findex 2017. At the time, only 29.1 percent of adults 15+ in Lao had a bank account, compared to 70.6 and 57.8 percent for EAP and lower-middle income countries, respectively. 13.3 percent of the population 15+ had made or received digital payments in the past year, compared to 58 percent and 29 percent for EAP and lower middle income, respectively.

[50] https://www.bcel.com.la/bcel/history.html, accessed on March 25, 2022

[51] https://www.bcel.com.la/bcel/product-review.html?prd=e-banking&id=OnePay, accessed on March 25, 2022.

[52] Unless otherwise referenced, information and data in this section was collected by the World Bank through stakeholder interviews.

[53] Digital cash transfers in Lao PDR, World Food Program, 2021, available at https://www.wfp.org/publications/digital-cash-transfers-lao-pdr-2021

these companies report challenges accepting digital payments due to low interoperability among products and channels, and lack of competitive payment gateway services in the market. This is particularly challenging for smaller companies. They face cumbersome processes to integrate bilaterally with multiple banks and payment service providers, and transaction charges they consider too high for the scale of their business.

Supporting infrastructure

60. BoL significantly improved the payment system infrastructure over the last few years. In 2020, the Real-Time Gross Settlement (RTGS) System was upgraded to the current Lao Payment Settlement System (LaPASS), a hybrid system certified with ISO 20022. LaPASS includes the RTGS system, an Automated Clearing House (ACH), and a Cheque Clearinghouse. LaPASS is owned and operated by BoL. LaPASS currently has 43 participants (40 commercial banks, MoF, LAPNet Company, and Lao Securities Exchange). Most participating banks have not yet achieved Straight-Through-Processing and still rely on manual procedures to submit transactions to RTGS.

61. LAPNet is the main retail payment infrastructure. In April 2019, BoL transferred the operations of their own Lao ATM pool switching (LAPS) to the Lao National Payment (LAPNet), newly established for this purpose, and licensed as a payment system operator. LAPNet is owned by BoL—which holds the largest share—and eight commercial banks. LAPNet operates the Lao ATM Pool Switching (LAPS) and the Lao Mobile Payment Switching (LMPS). LAPS allows interoperability of ATMs, while interoperability at the Point-of-Sale is under development and scheduled to be launched with two banks in Q2 2022. LMPS links the mobile banking applications of participant banks, supporting interbank transfers, and it is scheduled to start supporting QR code-initiated payments in Q2 2022. The QR code feature will complement the standardization of payment QR codes to EMVCo QR standard as mandated by BoL in 2021. LAPNet settles daily on T+1 in LaPASS RTGS. Currently, 16 banks participate in LAPNet.

62. Interoperability of ATMs is limited. Only 15 banks connected to LAPNet allow customers of other banks to use their ATMs to check their balance or withdraw cash, and 13 banks allow interbank transfer via LAPNet initiated at their ATMs. The number of ATMs per 100,000 adults grew from 23.95 in 2016 to 27.39 in 2020. At the same time, number of commercial bank branches grew from 3 to 3.21 per 100,000 adults. The number of agents of commercial banks increased from 128 in 2016 to 914 in 2020.

Institutional framework

63. In November 2017, Laos approved the Law on Payment System (n. 32/NA), then revised in 2018 (n. 47/NA). The law formally adopted a strategic approach to payment system reforms, explicitly including increased adoption of non-cash payment instruments as one of the country's strategic priorities. The law defines and sets the requirements for payment system operators and payment service providers, while also establishing the rights of users and dispute resolution mechanisms. Lastly, the law assigns and defines BoL oversight powers over the national payments system.

64. In April 2019, BoL issued a Decision on Retail Payment System (n. 293/BoL). This decision applies principles established in the Law on Payment System to retail payment systems, which include payment card networks. The Decision establishes standards for all relevant stakeholders, including risk management, access, protection of users, and outsourcing. The Decision details oversight activities by BoL.

65. Another BoL decision covers Systemically Important Payment System (n. 29/BoL). This Decision covers the RTGS system, the Cheques Clearing House and the ACH. Standards for Systemically important payment systems (SIPS) are higher than those for retail payment systems.

66. LaPASS is one of the systematic important payment systems, which BoL operates. In 2020, BoL issued a Decision on LaPASS (n. 3271/BoL). This Decision implements standards of BoL Decision n. 29 to LaPASS. It contains operational rules for the working of the system and the participation of its members.

67. In April 2020, BoL also issued the Decision on Payment Services Provision (n. 288/BoL), which defines *inter alia* the process for licensing e-money service providers. This decision categorizes payment service providers into three groups, according to the scale and impact of their operations:

- **Large enterprises.** These have extensive market impacts, both domestically and internationally, and need to apply for an operation license.
- **Enterprises with limited impacts on domestic markets.** These need to apply for a certificate.
- **Enterprises with minor impacts.** These need only to notify BoL of their incorporation and operations.

All payment service providers, irrespective of size and impact need to satisfy requirements for ensuring safety and soundness, as well as user protection. Agents and outsourcing are also covered.

68. In 2020 BoL issued a Decision on Lao Standardized Quick response code (QR code) (n. 74/BoL). This Decision defines principles for management and use of the unified QR Code and contains rules on contents and data of standardized Lao QR Code for payments for all relevant activities and stakeholders.

69. In 2018, BoL formed a Payment Systems Department (PSD), which is tasked with payment systems oversight. The mandate of the PSD is broad and has allowed it to play a significant role in advancing payment system reforms. On the other hand, the PSD is not yet adequately staffed. Its limited capacity challenges its ability to effectively perform its many tasks, from day-to-day payments oversight and supervision to a proactive role in promoting innovation.

70. In April 2021, the government issued the Five-Year Payment System Development Strategy of Banking-Financial System (2021-2025). BoL is tasked with implementing the Strategy in coordination with the stakeholders. The Vision expressed in the Strategy is to:

> *Develop infrastructure, payment systems and payment services of Lao PDR to link domestically and internationally, promote and support growth of the digital economy, contribute to monetary policy and maintain financial stability, aimed at provision of swift, modern, safe and low-cost payment services to the citizens.*

Reduction of cash usage and increased adoption of digital payments to support the digital economy are strong priorities of the strategy.

Future State and Goals by 2027[54]

71. Laos is well positioned to make progress on adoption of digital payments in the next five years. While many challenges exist, there is momentum for payment system reforms. BoL, through the newly formed PSD, is actively pursuing the improvements set forth in the Payment System Development Strategy and stakeholders in the market are determined to increase the reach and adoption of digital payments. These developments are given momentum by emerging international trends, including the increased adoption of fast payments, central bank digital currencies (CBDC), and integration of payment systems across borders.

72. By 2027, Laos will increase competition and diversity in the market for digital payment services. Now, the market is still concentrated around the main commercial banks. Innovative fintech companies are emerging and will introduce new payment products to serve diverse use cases. Increased competitive pressure on incumbents will increase acceptance of digital payments, reduce the cost of services, and lead to development of customer-centric products.

73. Within the next five years, Laos will further develop the national payments system infrastructure to increase interoperability. The payment infrastructure will be up to date, meet the needs of the industry, and observe the relevant international standards. Participation to the infrastructure will be open and access policies will be fair, open, and risk based. Where possible, direct access to the infrastructure will be granted to service providers who need it.

74. The digital and financial capability of end users will be greatly increased by 2027. Both public and private sector stakeholders will contribute to educating consumers and work together to increase the familiarity with and trust of the public in digital payments, including by adopting them for government payments and collections.

75. By 2027, the oversight function of BoL will be strongly established. As it approaches its first decade of activity, the PSD will be properly staffed and trained and will possess an adequate and diverse set of skills.

Recommendations

Market landscape

- **BoL should actively promote innovation and competition in the market for digital payments and the emergence of new products and players.** BoL is considering launching a regulatory sandbox. This would be welcome, as it could allow innovators to test new solutions in a contained environment, minimizing risk. Implemented correctly, the sandbox could help train BoL staff—they would be tasked with monitoring users of the sandbox—as well as educating the providers. This would increase the capacity of the providers on compliance and help them to understand that the regulator is not just a licensing authority, but also has a responsibility for ongoing oversight. On the other hand, it is of utmost importance that the sandbox becomes an enabler, rather than a blocker, of innovation. The process for entering and exiting the sandbox should be well-defined and streamlined, and only actual innovations should be offered the opportunity to go through the sandbox, while

[54] *This subsection is not intended to predict the status of digital payments in Lao in five years from now. Such a prediction would not be possible given the complexity and high number of factors, both endogenous and exogenous, that would inevitably influence the outcomes of the proposed reforms. Instead, this subsection is meant to provide a description of a purely theoretical, ideal yet realistic, scenario to which implementing the proposed recommendations could potentially contribute.*

products that fit the existing typology should continue to be allowed to directly enter the market.

- **BoL could consider outreach activities to establish a dialogue with potential entrepreneurs.** The oversight function of BoL and the overall regulatory framework for digital payments were established recently. Potential market entrants may not have a sufficient understanding of the framework and might find it challenging to approach the regulator, apply for a license, or even understand the expectations of payment systems oversight. To this end, BoL could consider outreach and sensitization activities, including publication on its website of clear and user-friendly dissemination materials, as well as virtual or in-person workshops.

- **BoL should create and implement a strategy to increase financial capability and leverage large volume, recurrent payment streams to advance financial inclusion.**[55] Low levels of digital and financial literacy represent a major hurdle to adoption of digital payments, and so increasing digital and financial capability is a priority. BoL should adopt a strategic approach and demand the active participation and investments of bank and non-bank payment service providers in this effort. BoL—in collaboration with other relevant authorities—should ensure that large volume, recurrent payment streams such as Government to Person payments, are fully leveraged to promote financial literacy and the adoption of digital payments, especially among the low-income population.

Supporting infrastructures

- **Direct access to LAPNet should be granted on a fair and open basis, including to non-bank payment service providers.** BoL should also review the governance of LAPNet. LAPNet is currently controlled by the main banks and developed around their needs. The pricing structure should also be reviewed, as it seems to favor participants with large transaction volumes. As a critical payment infrastructure, LAPNet should be accessed fairly to encourage full interoperability in the retail payment ecosystem.

- **Laos should develop and broaden acceptance of a fast payment scheme for instant digital payment transfers.** This would provide immediate availability of funds to the beneficiaries, at little or no cost for the users, on a 24/7 basis. Following international trends, users should be able to transfer funds instantly from their account to the account of the payee at little or no cost for the users. A high degree of interoperability and/or openness would allow users to transfer funds across different bank and non-bank service providers. The fast payment solution could be built as much as possible using the existing payment infrastructure. Scheme rules, pricing, and access policies should be carefully crafted to ensure broad participation, to quickly scale up acceptance, and to encourage rapid user adoption. BoL should play a leading role in these efforts, in connection with a possible CBDC.

Institutional framework

- **The Law on Payment System should be upgraded to reflect market developments and entry of new players.** The Law on Payment System covers all basic issues concerning payments. However, this law precisely defines instruments and systems to be regulated. Although the Law permits BoL to add further instruments to those listed, the lack of more general definitions and principles undermines flexibility of

[55] For more elaboration on this, please see Payment Aspects of Financial Inclusion, The World Bank – CPMI, 2016 available at http://documents.worldbank.org/curated/en/806481470154477031/Payment-aspects-of-financial-inclusion

regulation. Moreover, the Law does not include provisions on new services such as initiation and aggregation, though this would be essential for the comprehensive regulation of electronic and digital payments.

- **BoL should further strengthen the payment system oversight function.** The PSD should be adequately staffed. Staff capacity should be increased and diversified through hiring, by providing ongoing training opportunities, by ensuring staff exposure to international events, and by on-the-job learning. BoL should develop and publish a payment system oversight framework and could consider adopting an oversight manual. The oversight framework would articulate the scope and tools of the oversight activities and expectation of the overseer from participants. The oversight manual could be a useful tool for staff to refer to in the performance of their activities, as well as a good way to ensure consistency when new staff join. BoL should also regularly collect, analyze, and publish payments system statistics.
- **BoL should establish a National Payments System Forum to promote an active policy dialogue with all stakeholders.** The forum should provide an opportunity for BoL to engage with stakeholders, and to discuss initiatives to strengthen the national payments system and digital payments ecosystem. This would catalyze collaborative efforts to design and implement strategy choices. The role and remit of the forum should be defined by BoL and should be reflected in specific terms of reference. The composition of the forum should be as inclusive as possible, and its participants should represent a broad range of stakeholders (government agencies, bank and non-bank payment service providers, relevant private sector entities, payment service users). BoL should act as secretariat of the forum and commit to advancing initiatives through leadership and action.

4.3 Digital Skills

Current State Assessment

76. Digital skills are interconnected broadly, are complementary, and are foundational to full participation in today's technology-intensive societies. UNESCO defines digital skills as a range of different abilities, many of which are not only skills per se, but a combination of behaviors, expertise, know-how, work habits, dispositions, character traits, and critical understandings.[56] UNESCO's framework for digital skills defines three subsets of digital skills. These are basic, intermediate, and advanced skills[57] (Figure 4.2).

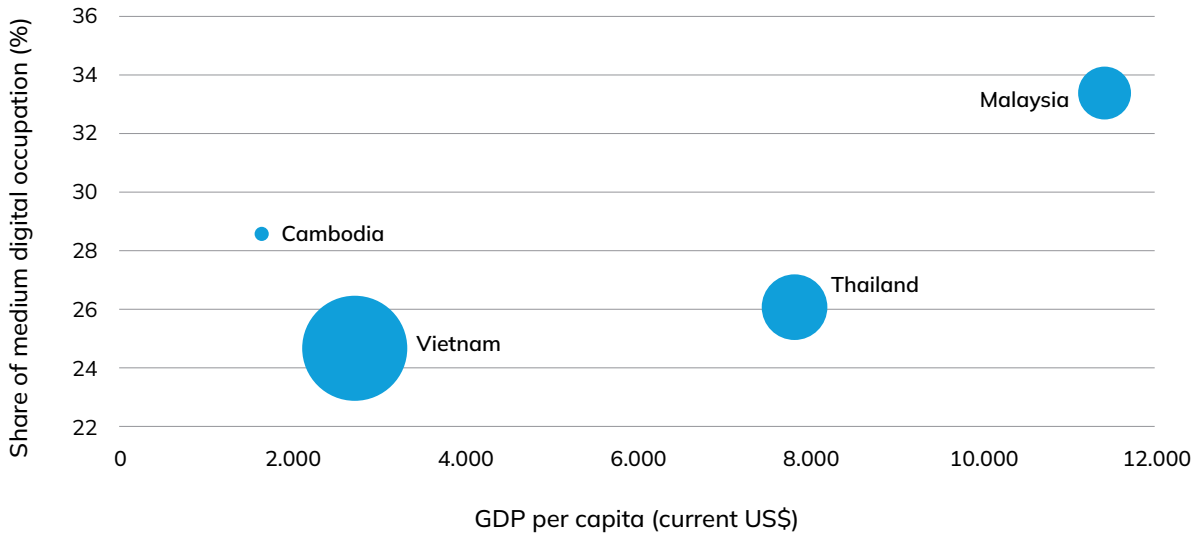
Figure 4.2. Digital skills subsets. Source: UNESCO (2017).

Level	Definition	Examples of skills
Basic	Ability to access and use digital technologies to perform basic tasks	1. Functional use of digital devices 2. Online communication via email 3. Using software for presentations, basic spreadsheet, etc. 4. Finding, managing and storing digital information and content (e.g., social media)
Intermediate	Ability to use professional software for analysis, creation, management, and design	1. Using professional software for analytics, accounting, project management 2. Digital marketing, social media analytics 3. Web design, graphic design
Advanced	Ability to perform specialized ICT tasks	1. Computer programming 2. Cloud computing, network management 3. Artificial intelligence 4. Data science, big data analytics 5. Cyber security 6. Web development, search engine optimization

77. Digital skills are critical for economic development, and they positively correlate with GDP per capita. A comparison of digital skills in Malaysia, Thailand, Cambodia, and Vietnam found that two-thirds of the employed population hold basic digital occupations, one-third are in intermediate digital jobs, and less than 3 percent are in highly digital or advanced occupations (Figure 4.3). There was demand for digital skills in all skill profiles analyzed.[58]

[56] UNESCO (United Nations Educational, Scientific and Cultural Organization) 2017. Digital Skills for Life and Work. Report by the Broadband Commission for Sustainable Development. Paris: UNESCO.
[57] Cunningham, W et al. 2021. The Demand for Digital and Complementary Skills in Southeast Asian Labor Markets. The World Bank.
[58] Ibid

Figure 4.3. Share of intermediate digital occupations by country's GDP per capita. Source: Cunningham et al. 2021, Share of intermediate digital occupations by country's GDP per capita. The size of the bubbles represents the employed population in millions: 9.3 for Cambodia, 14.0 for Malaysia, 36.6 for Thailand, and 52.4 for Vietnam.



78. Digital skills alone are not enough. The same research argues they must be complemented with cognitive and socioemotional skills or self-organization skills. Digital skills further require frequent updating due to constant change brought by technological advancement. Yet many countries experience a widening gap of digital skill inequalities, both within their societies and when compared to their neighbors. Equitable access to high quality digital skill education is increasingly becoming a prerequisite for equitable and sustainable development.

79. There is little information available on the state and training needs of digital skills in Laos and no country-wide assessment of digital skills has been conducted to date. But we know that the country lags its neighbors in digital readiness. The need for rapid digitalization to cope with the challenges of COVID-19 has "exposed the mass digital divide in Southeast Asia".[59] But the World Economic Forum's Network Readiness Index ranked Laos 108 out of 121 countries for ICT readiness in 2020.

80. There is demand for skills training. A feasibility study on the introduction of online teaching and learning in non-formal education that focused on Xiengkhouang and Sekong provinces[60] finds 87 percent of respondents would be interested in online learning but said that they would need support to improve their digital skills. The majority (54 percent) would like to see online vocational skills training. For teachers, 100 percent of non-formal education (NFE) managers and teachers interviewed stated that they would like to receive training in proper use of online teaching programs. UNICEF is working on improving digital skills of current and future teachers through cooperation with BEQUAL and Teacher Training Colleges (TTCs) as well as digital skills courses hosted on Khang Panya Lao covering Microsoft Office and remote teaching techniques.

[59] Runde, D F, Bandura, R & Lee, R 2022. Digitalizing Lao PDR. Improving Government Transparency, the Business Environment, and Human Capital. Center for Strategic & International Studies (CSIS): CSIS Briefs. https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/220216_Runde_Digitizing_Lao

[60] LGDC (Lao-German Development Consulting) 2021. Report: Feasibility Study on the Potential of Online Teaching and Learning in Non-Formal Education in Lao.

81. The labor market needs more quantity, quality, and training. A 2019 study analyzed online job advertisements posted online on Laos' biggest job site, 108Jobs. The study identified a mismatch in the quantity and quality of labor supplied and demanded; the failure of technical and vocational education and training to produce workers of the demanded quality level; and only 7 percent of firms offered professional development opportunities to their staff.[61]

82. There is low employment in ICT and few ICT occupations, though demand is increasing. The World Bank's Skills Towards Employability and Productivity (STEP) household survey in 2016 showed less than 0.5 percent of employment in the ICT sector. But there is an increased demand for these skills according to the UNDP.[62]

83. The education system offers a traditional approach to pedagogy and its delivery methods. Prior to COVID-19, digitalization and digital skills played a minor role in all levels of education.[63] A recent survey by UNESCO on ICT readiness of the Laos education system found that 78 percent of teachers had never received ICT training. Teachers agreed that ICT plays a significant role in education, but most had not been encouraged to use ICT in the classroom.[64] A regional UNICEF survey on digital literacy[65] in education showed 60 percent saying that they were not learning digital skills in school. Not having access to technological devices is the biggest challenge of youth in gaining digital literacy throughout the region.

84. The public sector lacks digital maturity in skills. A regional study of national and provincial bodies' digital maturity in late 2021 and early 2022[66] rated Laos' country-wide maturity level on a scale from "digitally nascent" (1) to "innovative" (5). Its average score was 1.7, with skills and capacity building the lowest scoring of six pillars. The Ministry of Foreign Affairs and the Ministry of Finance performed better than others.

Future State and Goals by 2027

85. The COVID-19 pandemic kickstarted a move to digitalized teaching and learning methods. In response to long-lasting school closures, the Ministry of Education and Sports (MoES) cooperated with UNICEF, the European Union (EU), and the Global Partnership for Education (GPE) to launch the country's first digital education platform, Khang Panya Lao ("treasure chest of wisdom")[67]. It offers digital learning content, including but not limited to the official curriculum for pre-primary to the completion of upper secondary school (Grade 12). More than 80,000 users in all 18 provinces have registered. According to UNICEF, this is likely more than 80,000 students as households tend to share one mobile device amongst several family members.

86. Khang Panya Lao aims to become a digital knowledge management tool for MoES. It plans to host teaching and learning materials for Technical and Vocational Education and Training (TVET), digital literacy, and teacher training courses.

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61 LADLF (Lao PDRs-Australia Development Learning Facility) 2019. Study on Education and Skills Demand in the Private Sector in Lao PDR. First draft.

62 UNDP (2021). Youth Unemployment Issues in Lao. Report.

63 Runde et al. 2022

64 UNESCO (United Nations Educational, Scientific and Cultural Organization) 2021. ICT Final Survey Report.

65 UNICEF (United Nations Children's Fund) 2021. Digital Literacy in Education Systems across ASEAN: Key insights and opinions of young people. https://www.unicef.org/eap/media/7766/file/Digital%20Literacy%20in%20Education%20Systems%20Across%20ASEAN%20Cover.pdf. Accessed 28 March 2022.

66 UNDP (United Nations Development Program) 2021a. Digital Government Transformation Project (RFF) Project Kickoff and Digital Maturity Assessment Introduction. https://www.la.undp.org/content/Lao

67 https://www.unicef.org/Lao PDR/khang-panya-Lao

87. The 9th National Socio-Economic Development Plan, (NSEDP, 2021-2025) mandates the usage of ICT in teaching and learning for secondary and tertiary education and mentions the development of digital learning. The NSEDP also includes references to including teaching and learning of cognitive and socioemotional skills in primary and higher education. However, the existing policy framework does not clearly outline a pathway towards improved digital skills of all. There is no ICT or digital education masterplan in place, and as mentioned above, the new NQF does not include references to digital skill development. The Ministry of Labor and Social Welfare (MLSW) plans to assess the existing ICT-related education programs as well as the current and future demand for digitally skilled occupations in the country (UNDP DMA). This initiative could complement various donor agencies' programs on increasing digital skills within the workforce, working with basic, tertiary, and vocational education providers.

Recommendations

88. Assess ICT-related education programs to match digitally skilled labor demands. The MoES and the MLSW will need to ensure that digital skills training in TVET and NFE are a key part of their curricula. Digital skills training will need to be complemented with modules on cognitive and socioemotional skills.

89. Continue to strengthen digital learning technologies such as Khang Panya Lao. Encourage development of channels and platforms for multiple education sub-sectors rather than the creation of separate systems.

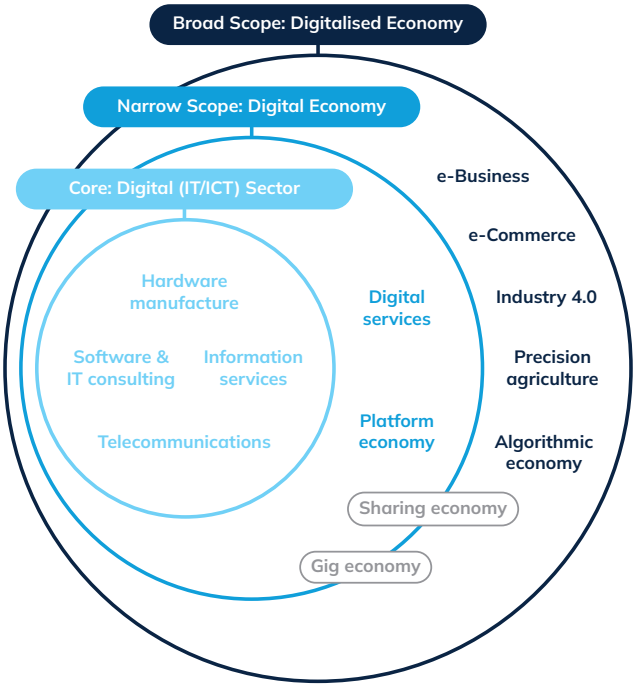
90. Invest in educational institutions. Support the creation of online teaching and learning materials in Lao and ethnic minority languages as well as pictorial and audio materials for illiterate and vision impaired learners. Assess existing ICT inventory (PCs, mobile devices) and budget for fixed broadband or mobile data costs in educational institutions and assess gaps. Support supply of materials, where possible. Develop a digital skills framework to guide the representation of digital skills in the NQF, while ensuring that basic digital skills are part of the overall government strategy (universalization of basic digital skills). Ensure that there is sufficient investment in digital skill trainings and certifications of educators and administrators.

91. Conduct an in-depth assessment of the digital skills and learning needs of government ministries, starting with a pilot ministry. Design professional development opportunities and certifications in digital skills for public servants and strengthen the establishment of IT departments in ministries, departments, and provincial agencies.

4.4 Platform Economy

92. There is no consensus on how best to define the platform economy. The platform economy is encompassed within the broad digital economy scoping[68] (Figure 4.4). It can be defined as a set of online digital arrangements that facilitate interactions between two or more distinct but interdependent sets of users, businesses, or individuals, using the Internet, with data as fuel.[69] The major strength of a platform is its ability to mediate peer-to-peer services while eliminating intermediaries or trade barriers in the digital space to facilitate transactions in goods, services, or data. These valuable network effects distinguish platforms from other business models.

Figure 4.4. Scoping the digital economy.
Source: Statista. 2021. "Share of digital markets in Laos." Accessed April 23, 2022.



93. Digital platforms are complicated and there are many typologies used in classifying platforms, such as those based on the type of interactions, revenue source, business scope, or profit motive. Digital platforms are complicated mixtures of software, hardware, operations, and networks and there are many typologies used in classifying platforms. Given that some platforms, especially superplatforms, are multipurpose, they could belong to several categories at the same time. UNCTAD sorts the platforms into different layers: (1) a first classification based on the profit orientation (profit- or non-profit-oriented) and business purpose: e-payment (e.g. PayPal, Alipay), social media (e.g. Facebook, WeChat), crowdfunding (e.g. Kickstarter) and so on; (2) a second categorization based on a breakdown of e-commerce platforms: online marketplace (e.g. Alibaba, Shopee, YesPls), transport & food (e.g. Grab, LOCA, Foodpanda), entertainment (e.g. TikTok, CH3 Plus), search engines (e.g. Google, Baidu), digital labor (e.g. 108Jobs, LinkedIn) and so on. (UNCTAD 2018)

[68] The digital economy has core, narrow, and broad scopes. Following Bukht and Heeks (2017), the core scope relates to the ICT-producing sector; the narrow scope comprises digital services and the platform economy, and the broad scope includes the use of digital technologies for activities such as algorithmic economy, as well as sharing and gig economies. (Bukht and Heeks 2017).

[69] See OECD. 2019. "An Introduction to Online Platforms and Their Role in the Digital Transformation." May 13, and Kenny, Martin, and John Zysman. 2016. "The Issues in Science and Technology." *The Rise of the Platform Economy.*

94. The global digital platform economy is growing rapidly. Seven out of the ten most valuable companies in the world use platform-based business models—US-based Apple, Microsoft, Alphabet, Amazon, and Meta, and China-based Alibaba and Tencent. In 2022, the combined market capitalization of digital platform companies with a market value of over $100 million—is estimated at more than $8 trillion.[70] Business-to-consumer (B2C) digital platform revenues were $3.8 trillion in 2019, equivalent to 4.4 percent of world GDP.[71]

95. Available data suggest that the platform economy in Laos is at an early stage. This offers exciting opportunities to drive economic growth and accelerate development.

- **Digital platforms help small and medium-sized businesses.** They are 99 percent of enterprises, and the platform economy helps them to reach new markets, search for new customers, and transact with them.[72]
- **Platforms enable speedy and cost-effective digitalization of domestic businesses.** This enables them to trade internationally, which contributes to the diversification of the export base.

96. Digital platforms could transform employment. The International Labor Organization (ILO) and Lao Statistics Bureau estimated that 1.5 million (82.7 percent) of 1.8 million employed people in the country are in informal employment, and that 73 percent of men and 87 percent of women self-employed.[73] Platforms could help formalize the economy by improving transparency, simplifying registration processes, easing tax collection, and providing stronger legal frameworks and social protections for self-employed workers.

97. Digital platforms can support development by helping reduce market frictions caused by insufficient information, weak institutions, and poor infrastructure. Digital platforms are easy to use and scale quickly, and this could allow the government to extend the reach of economic support to underprivileged groups, especially in geographically disadvantaged areas. Evidence from rural China suggests a positive impact on access to digital financial services mediated by digital financial literacy.[74]

Current State Assessment

Platform Economy Overview in Laos

98. Laos has a weak penetration of online platforms. The country ranked the fourth lowest in the 2020 Digital Platform Penetration index.[75] It was ahead of only Timor-Leste, Papua New Guinea, and Turkmenistan. There is scope for Laos to develop and implement nationwide platform strategies as well as learning from neighboring country experiences.

99. Enabling laws need to be strengthened for the digital economy to develop. Laos introduced a legal framework for the recognition of electronic documents and signatures, adopted provisions limiting intermediary liability, and has maintained an open regime for the cross-border flow of data and localization of data centers. There are several areas where the necessary enabling regulation is yet to be developed and implemented. As an

[70] https://companiesmarketcap.com accessed on April 12, 2022
[71] Statista. 2020. "Statista Digital Market Outlook." Accessed April 2022. https:// www.statista.com/outlook/digital-markets.
[72] Ibid
[73] International Labor Organization and Lao Statistics Bureau. 2017. *Lao PDR Labor Force Survey.* Accessed April 16, 2022. https://www.ilo.org/surveyLib/index.php/catalog/2032.
[74] Su, Lanlan, Yanling Peng, Rong Kong, and Qiu Chen. 2021. *Impact of E-Commerce Adoption on Farmers' Participation in the Digital Financial Market: Evidence from Rural China.* MDPI, Vol. 16.
[75] Asian Development Bank. 2021. "Post-COVID-19 Economic Recovery in Asia and the Pacific" March 4-5. http://mddb.apec.org/Documents/2021/EC/EC1/21_ec1_004.pdf

example, while the Law on Electronic Signature (2018) is in place, its implementation is still being developed. Some of these regulations already implemented could also be revised and modernized to ensure consistency with current trends.

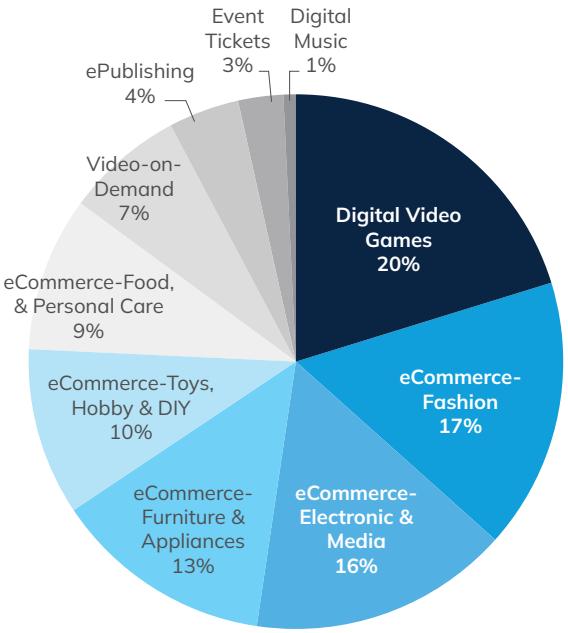
100. Laos has committed to the ASEAN Work Programme on Electronic Commerce (AWPEC) 2017-2025 to help facilitate cross-border e-commerce in the region. Its commitment to the e-ASEAN framework was ensured by its careful regulatory framework development. Nevertheless, its legal instruments are still not being used entirely, especially for data privacy and protection of consumers online. A lack of e-commerce data and statistics makes evidence-based policy impossible. Private enterprises also need e-commerce statistics to make informed investments and strategic decisions.

101. Enterprises face multiple hurdles to the adoption of digital platforms. Lao business owners may not have the necessary awareness and knowledge of digital platforms, or dedicated assistance programs to digitalize.[76] Almost half of businesses are not aware of government support programs and only 16 percent of firms have invested in digital technologies or new delivery methods associated with lower sales losses in 2021.[77] Many MSMEs struggle to access loans because they lack capital and cannot afford the high interest rates on offer. Local banks are not incentivized to provide loans to MSMEs, let alone tech start-ups, and there is no dedicated banking support for businesses wishing to move online.[78]

Sectoral Snapshots in Laos

102. Platform economy activities are new in Laos and there is limited adoption by either consumers or companies. This section analyzes the sectors in Laos that generate the most digital revenues (Figure 4.5) and engage most in platform activities.

Figure 4.5. Share of digital markets in Laos.
Source: Statista. 2021. "Share of digital markets in Laos." Accessed April 23, 2022.



[76] Runde, Daniel F., Romina Bandura, and Rachel Lee. 2022. *Digitalizing Laos Improving Government Transparency, the Business Environment, and Human Capital.* Brief, Washington D.C.: Center for Strategic & International Studies.
[77] World Bank. 2021. *Lao PDR Economic Update: A Path to Recovery.* Accessed April 2022. https://www.worldbank.org/en/news/feature/2021/08/20/lao-pdr-economic-update-august-2021-a-path-to-recovery
[78] UNCTAD. 2018. *Lao People's Democratic Republic Rapid eTrade Readiness Assessment.* Accessed April 17, 2022. https://unctad.org/system/files/official-document/dtlstict2018d3_en.pdf.

103. The list of the top 30 websites by traffic and mobile applications by popularity is dominated by search engines, social media, entertainment, and news or discussion boards.[79] Search is dominated by foreign platforms: Google has 96.39 percent, Bing 2.1 percent, Yahoo 0.72 percent, and Baidu 0.27 percent.[80] There is only one home-grown platform featured in the list, BCEL One.

104. Few of the major e-commerce platforms in the region offer to deliver goods or make services available to consumers. The most used e-commerce platforms operating in Southeast Asia including Shopee, Lazada (majority-owned by Alibaba), and Tokopedia are not present in Laos and no e-commerce site is in the top 30 list. Shopee and Lazada are in the top 30 in Thailand and Vietnam, and Khmer24 and Amazon in Cambodia.[81] Local equivalents such as buylao.com, yula.la, and olaa.la do not yet appear to attract many users, nor have they grown significantly based on the visitor traffic pattern analysis by Alexa. There are limited home-grown mobile-based online shopping platforms—YesPls and DroppinX—which are among the most used. Each has around 10,000 downloads from Google Play.

105. There is more engagement with social media and entertainment platforms, mostly foreign. There are 3.60 million social media users in Laos, 49.1 percent of the total population. (DataReportal 2021) The market is fully occupied by foreign social media giants without the presence of locally developed platforms. WhatsApp is the most-used social media application[82], followed by Facebook, which has 3.4 million users—46.4 percent of the population. TikTok is third, ahead of YouTube, Messenger, and Instagram. Top entertainment platforms include CH3 Plus, a video platform developed by a Thai company, LaoApp (developed by Unitel, a local telecom company), iQiyi (owned by Baidu, China), WeTV (owned by Tencent, China), Netflix (US-owned), and Garena, a gaming platform headquartered in Singapore.[83]

106. Local ride-hailing players are emerging. Local ride-hailing service providers such as inDriver, LOCA and DriveUp are nascent. LOCA, launched in 2018, is a start-up created by local entrepreneurs. It is the largest ride-hailing network with more than 300 cars in Vientiane. DriveUp, launched in 2019, was launched by a Cambodia-based food delivery and logistics company called Meal Temple Group and has more than 100 drivers on its platform.[84]

107. Online food delivery is most popular for restaurant-to-consumer delivery, while platform-to-consumer delivery is still limited. Many local restaurants use Facebook and WhatsApp as the main channels to receive food orders and communicate with consumers. Foodpanda, a food delivery service platform owned by Delivery Hero (Singapore), started to operate in Laos in 2019, offering deliveries from around 300 restaurants.[85] In 2021 it

[79] Historical web traffic data in 2020 from www.alexa.com. There is no updated information in Lao PDR due to the lack of data. The data of Thailand, Vietnam, and Cambodia are up to date, accessed on April 14, 2022.
[80] Similarweb. 2022. *Top Apps Ranking.* April. Accessed April 13, 2022 and Statista. 2022. *Market share of leading search engines across Laos as of February 2022.* February 28. Accessed April 15, 2022.
[81] TMO Group. 2021. *Must-know: 10 Largest South East Asia Online Marketplaces in 2022.* November 26. Accessed April 13, 2022. https://www.tmogroup.asia/must-know-southeast-asia-online-marketplaces/.
[82] Laotian Times. 2019. *WhatsApp the Most Popular Mobile App in Laos.* July 12. Accessed April 14, 2022. https://laotiantimes.com/2019/07/12/whatsapp-the-most-popular-mobile-app-in-laos/.
[83] DataReportal. 2021. *Digital 2021: Laos.* February 11, and SimilarWeb 2022.
[84] Cordon, Miguel. 2019. "Tech in Asia." *Cambodia's Meal Temple launches ride-hailing app in Laos.* October 1. Accessed April 15, 2022. https://www.techinasia.com/cambodia-meal-temple-launches-ridehailing-app-laos.
[85] Kang, Taejun. 2019. "The Laotian Times." *Foodpanda Launches in Laos with Over 300 Restaurants on Board.* November 22. Accessed April 22, 2022. https://laotiantimes.com/2019/11/22/foodpanda-launches-in-laos-with-over-300-restaurants-on-board/.

became the first and, so far, only operator to offer food delivery services in all 18 provinces and the number of restaurants on the platform has increased by more than 10,000.[86] GoTeddy is another home-grown platform that provides food and parcel delivery service. It was created in 2018, won the ASEAN ICT Award in 2019, and is growing fast in the domestic market.[87]

Future State and Goals by 2027

108. More digital consumers and more consumer participation in the platform economy. COVID-19 was a factor in the growth of internet users by 468,000 (15 percent) between 2020 and 2021 and digital revenue is forecast to grow at a rate of 6.5 percent, reaching $183.23 million in 2025. The upward trend is supported by socio-demographic factors.[88]

109. More home-grown platforms in the next five years. The platform economy is relatively untapped compared to neighboring countries. Local entrepreneurs have an opportunity to be pioneers in offering products or services through platforms. Domestic first-mover digital platforms with local knowledge will have little competition and low costs to encourage customers to switch. Many local entrepreneurs are ideating and launching competitive platform-enabled businesses (LOCA and GoTeddy, for example), signaling promising growth for locally developed platforms.

110. Domestic platforms face competition from foreign platforms, in particular superplatforms, by 2027. Many large platform companies such as Grab and Alibaba have progressively established their business in Southeast Asia, focusing on more advanced economies such as Thailand and Malaysia. The penetration of major players in Lao is still low, but its growing market will be an attractive target for many digital giants.

Recommendations

- **Government regulation should act as an enabler, creating a supportive environment based on its circumstances and stage of development.** The impacts of digitalization are highly contextual, and so other countries have adopted a variety of regulatory approaches. Platforms in the US have largely been left to develop free of state regulation, while Chinese platforms, although being privately owned, have been tightly controlled by the state and protected against foreign competition. European countries have been less hands-off than the US, but less restrictive than China. In the European Union, the Digital Markets and Digital Services Act (2020) aims to create a safer digital space where the fundamental rights of users are protected, and to establish a level playing field for businesses. Laos could conduct a nationwide assessment of the challenges and opportunities for platforms—especially given their cross-border nature—to help formulate policies aimed at catalyzing new digital platforms, digital entrepreneurship, and the digitalization of existing firms.

- **Maintain the lack of restrictions on cross-border data flows, with changes that should be developed in consultation with the private sector and implemented cautiously.** Laos does not impose significant restrictions on cross-border flows of data, a positive given the importance of data moving freely for the growth of

[86] The Star. 2021. *Foodpanda announces nationwide coverage in Laos.* October 09. Accessed April 15, 2022. https://www.thestar.com.my/aseanplus/aseanplus-news/2021/10/09/foodpanda-announces-nationwide-coverage-in-the-laos---the-first-food-delivery-platform-to-operate-across-all-18-provinces.

[87] Information on GoTeddy from https://www.crunchbase.com.

[88] Data from DataReportal. 2021. *Digital 2021: Laos.* February 11 and Statista. 2021. "Digital Economy in Lao PDR."

e-commerce. The Lao Statistics Center of the Ministry of Industry and Commerce should start to compile data and produce statistics on e-commerce activities in the country for the formulation and implementation of evidence-based policies in relevant areas.

- **Establish a regulatory framework for data privacy and protection of consumers online.** Closing existing regulatory loopholes will boost consumer trust in e-commerce. The ASEAN Framework on Personal Data Protection is an approach to managing data privacy that Laos has agreed to as an ASEAN member state. Although it is non-binding, it provides an appropriate framework for developing data privacy legislation and implementation. The Law on Consumer Protection 2010 should be revised and modernized to improve protection for online consumers.
- **More tailored and innovative assistance programs should be made available to support digital entrepreneurs.** The traditional channels for supporting microenterprises (for example, those that are not growth-oriented) and traditional SMEs (through loan programs, for instance) are unlikely to be effective. Digital entrepreneurs might not have the required collateral or be too young to qualify for traditional loans. Laos should consider adopting long-term-oriented approaches. These would include a regulatory sandbox, business incubators or accelerators, and mentorship programs. This may need policy experimentation and evaluation.

5

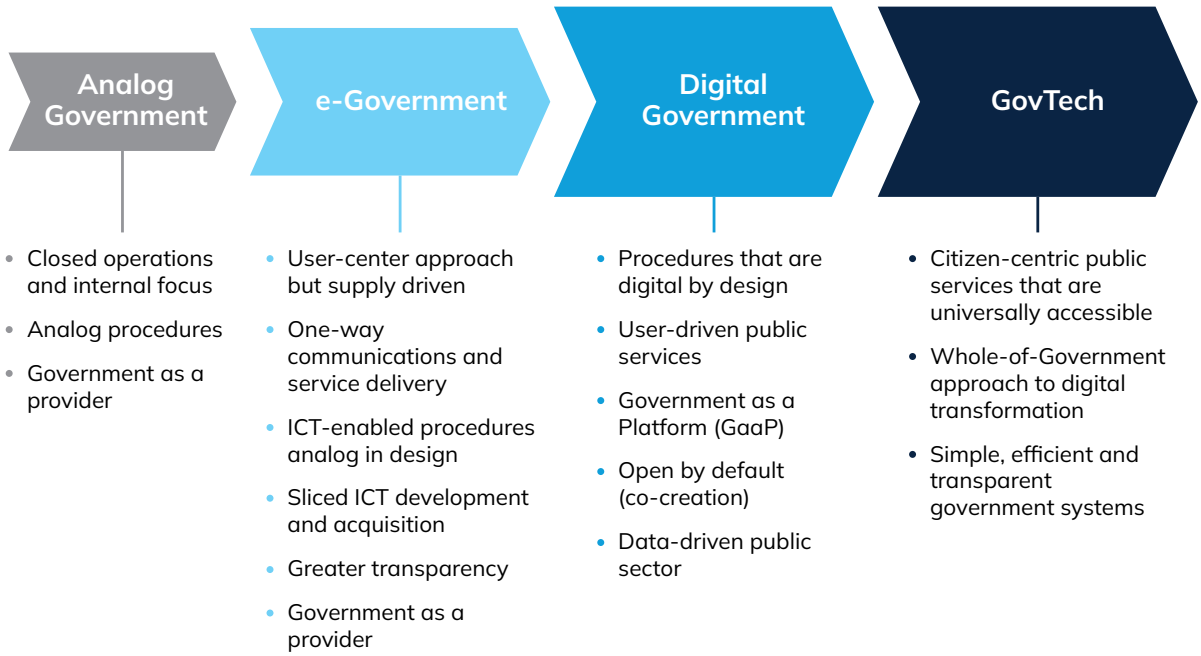
Digital Government

111. An innovative, open, agile, and accessible digital government is an essential foundation of digital development.[89] Governments have been using information and communication technology (ICT) to modernize the public sector for decades. For many years an "e-Government approach" meant using ICT technologies to digitize delivery of existing processes for greater efficiency. Pervasive consumer digital technology means that citizens expect a higher standard of digital services from governments. Digital government practices are the next step in government transformation. Technology becomes secondary to meeting the needs of citizens by re-engineering and re-designing services and processes. The digital government agenda continues to evolve as global trends and public expectations change. GovTech[90] is seen as the next step in the evolution. GovTech is a whole of government approach to public sector modernization which emphasizes three aspects of modernization:

- Universally accessible, citizen-centric public services.
- A whole-of-government approach to digital transformation.
- Simple, efficient, and transparent government systems.

Figure 5.1 describes the main characteristics of each evolutionary step in the digital transformation journey.

Figure 5.1. Digital Government Evolution.
Source: World Bank (2021)



[89] Digital Government Readiness Assessment (DGRA) Toolkit V.3 1, 2020
[90] https://www.worldbank.org/en/programs/govtech

112. The government has expressed a growing commitment to the digital transformation of its public sector but remains in the early stages of technology adoption. In 2021, to lead the country's digital transformation effort, the Ministry of Technology and Communications (MTC) was created by merging offices previously under MPT and MST. The development of a 10-year Digital Economy Strategy (2021-2030), and the 5-year Digital Economy Development Plan (2021-2025) which includes a Digital Government Development Plan, as well as the adoption of some key legislation, such as: Law on Cyber-crime (2015), Law on ICT (2016), Law on Electronic Data Protection (2017), and Law on Electronic Signature (2018). These are all steps in the right direction and clear indicators of the government's commitment. Key gaps remain:

- Key legislation on digital identification and data protection is still missing.
- The Digital Government Development Plan, although approved by government, is not well understood or aligned with individual ministries' digital strategies.
- Availability and use of shared technology infrastructure are limited due to budget and funding constraints.
- Core government systems such as the Government Financial Information System (GFIS) and the Personnel Information Management System (PIMS) were designed to automate analog processes and are not interconnected.
- Government data is in silos and underutilized.
- Government services to citizens, businesses, and employees (G2C, G2B, G2E) are scarce and piecemeal.
- The civil service lacks skills to take advantage of digital technologies to improve government operations and generate public value.

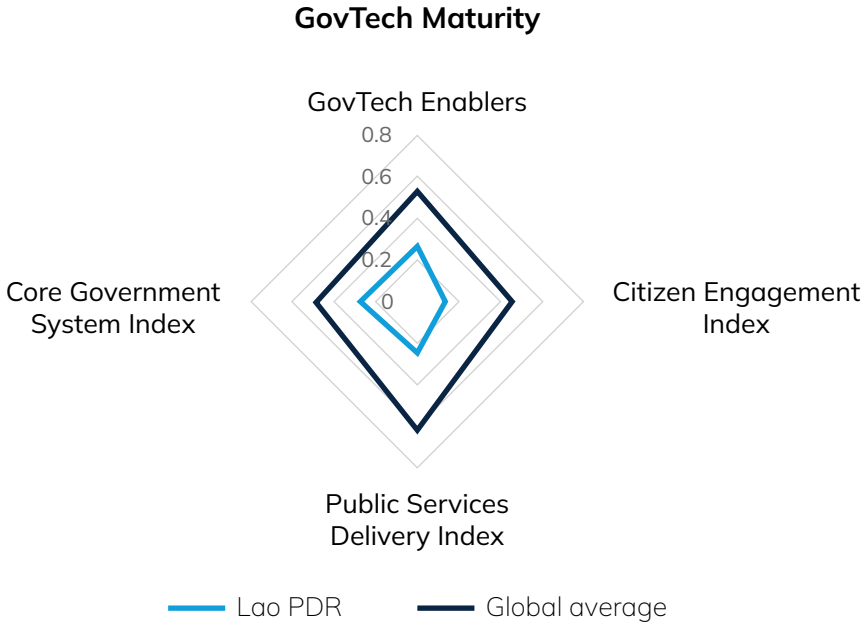
113. Consequently, Laos scores low in the rankings of digital government adoption. On the GovTech[91] Maturity Index (GTMI)[92], Laos is in the group of countries with minimal focus on GovTech, together with countries like Somalia, South Sudan¸ Marshall Islands, Mauritania, and the Federal States of Micronesia (Figure 5.2). Laos has low scores in all the sub-indices as well: Core Government Systems Index (CGIS), Public Service Delivery Index (PSDI), Citizen Engagement Index (CEI), and GovTech Enablers (GTEI). The UN also ranks Laos 167 out of 193 countries in its 2020 E-Government Readiness Index.[93]

[91] GovTech is a whole-of-government approach to public sector modernization that promotes simple, efficient, and transparent government with the citizen at the center of reforms.

[92] The GTMI is a composite index based on 48 key indicators defined to collect data from 198 economies in four categories: the Core Government Systems Index (CGSI) based on 15 indicators; the Public Service Delivery Index (PSDI) based on six composite indicators; the Citizen Engagement Index (CEI) based on 12 indicators; and the GovTech Enablers Index (GTEI) based on 15 indicators. The GTEI measures the presence of several cross-cutting enablers relevant to advancing GovTech; however, it does not quantify their effectiveness or performance. https://openknowledge.worldbank.org/bitstream/handle/10986/35745/GovTech-Maturity-Index-The-State-of-Public-Sector-Digital-Transformation.pdf?sequence=1&isAllowed=y

[93] https://publicadministration.un.org/egovkb/Data-Center

Figure 5.2. Level of GovTech Maturity.
Source: GTMI 2021



Current State Assessment

114. This section presents an assessment of the current state of digital government in Laos using the World Bank's Digital Government Readiness Assessment (DGRA)[94] toolkit. The DGRA toolkit helps countries assess their status in digital government. While a full DGRA assessment is not within the scope of this document, the nine-dimension of the DGRA analytical framework was used to structure the information collected for this study using questionnaires,[95] desk research and interviews with government officials. Annex 1 provides a brief description of the main topics assessed in each analytical dimension.

Legislation and Regulation

115. A digital government needs a sound legal and regulatory environment that encourages certainty and confidence in the adoption and promotion of ICT inside and outside government. This includes laws for data privacy, consumer protection, digital signatures, digital identification, cybersecurity, e-commerce, public-private partnerships, among others.

116. The government has made progress in the last 15 years in defining this legal and regulatory framework. Among the most important laws and regulations:[96] National IT Policy (2005), Law on Telecommunications (2011), Law on e-transactions (2012), Law on Cybercrime (2015), ICT law (2016), Law on Electronic Data Protection (2017), and Law on Digital Signature (2018). Key gaps remain:

- The lack of digital identification regulation.
- The lack of data protection legislation, beyond the Law on Electronic Data Protection.
- The legal framework for promoting public-private sector partnerships needs to

[94] https://openknowledge.worldbank.org/handle/10986/33674
[95] Please summarize here info about the questionnaires, who filled them out and what they were about.
[96] Section 3.1 Legal and Regulatory Framework for trust, security and usage of digital transactions provides more details

be strengthened, although a law on Public-Private Partnerships was adopted in 2021.[97]

- A need for stronger functions and processes to prevent and respond to cyberattacks.

Leadership and Governance

117. Political leadership, coordination between ministries, appropriate governance structures, and a clear vision linking government digital transformation with public-sector reform and innovation are essential. Timely and effective digital government transformation requires legal, institutional, technological, and cultural changes. High-level political commitment is critical. Digital government leaders such as Republic of Korea[98], have strong political leadership, clear vision and strategy, effective governance and organizational structure, and commit funding to innovation.

118. MTC has set out policies to lead the digital transformation. MTC is responsible for overseeing the development of connectivity, telecommunications, technologies, post, cyber-security, and innovation. It has 18 departments, including LANIC, which operates data center infrastructure and government cloud services. The Digital Government Center under MTC implements the digital transformation for the public sector in Laos and is responsible for the development and implementation of the Digital Government Development Plan. The Digital Government Center encourages adoption of ICT across ministries, departments, provinces, districts, and villages of Laos. In terms of policy, the government has adopted the National Digital Economy Development Vision 2040 (2021-2040). It has recently adopted the 10-year Digital Economy Strategy (2021-2030) and the 5-year Technology and Communication Development Plan (2021-2025) of which The Digital Government Master Plan (DGMP) is part. MTC is missing the instruments to coordinate the digital transformation initiatives of the line ministries at government level. Currently, ministries still develop their own ICT strategies, often not aligned to the DGMP. The limited technology resources of MTC forces other ministries to look for alternative solutions to their ICT needs. Often, they implement piecemeal and fragmented solutions.

Technology Infrastructure

119. Leaders in digital government increasingly use standardized technology infrastructure instead of institution- or application-specific solutions[99]. Technology infrastructure includes hardware and software, it covers standards, design, and their implementation to advance digital government. Government is not a single entity, but a collection of organizations and teams who work on designing, developing, and operating different systems and user-facing services. Leaders increasingly rely on a whole-of-government approach to technology and infrastructure. The use of cloud technologies is a strategic tool to achieve flexible, scalable, cost effective, secured, and resilient deployments, and shared government platforms provide common solutions to common problems.

120. The government offers shared technology infrastructure for its core operations through data centers operated by MTC, but some line ministries invest in their own solutions. MTC operates data centers and cloud infrastructure through LANIC. Demand for these services exceeds MTC's capacity to deliver, as limited financial resources prevent MTC from increasing supply. Line ministries such as MoF and others invest in their own data centers and servers. Although this solves the immediate problem, it creates a fragmented environment and is inefficient: capacity is not shared, wasting resources during low activity

[97] UNDP Digital Maturity Assessment 2022
[98] https://www.centreforpublicimpact.org/case-study/building-a-world-leading-e-government
[99] DGRA Assessment Toolkit (2020)

or idle time. Scarce technical skills also cannot be leveraged to serve a greater number of systems and users. These practices undermine a whole-of-government approach. The regulatory framework and the technical instruments that define responsibilities for technology infrastructure development are missing, and so the government cannot benefit from economies of scale generated by resource pooling and on-demand services.

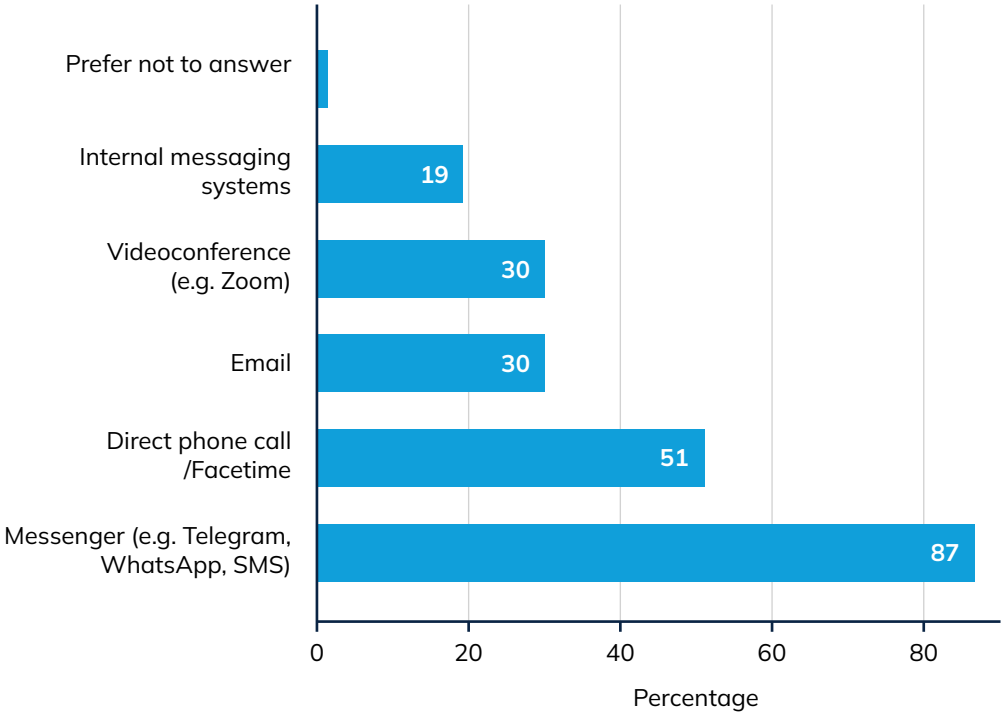
121. The shared platform model in the government is in its early stages, offering few government-to-government (G2G) services. Effective public digital platforms are usually built through an iterative process, building value-added services to enhance basic foundational services. MTC provides a portfolio of services to line ministries and other government entities through the Digital Government Center. This includes e-office, email, video conferencing, government chat system (G-Chat), government document sharing system, among others. The uptake from line ministries is uneven and the use of these services is not mandatory.[100] A survey of seven ministries conducted by the World Bank to understand remote working practices during the COVID-19 pandemic found that the most-used communication methods were phone and messaging apps rather than e-mail, which is still not widely used in government departments (Figure 5.3). There is an electronic know-your-customer (eKYC[101]) service managed by MTC which functions as a quasi-digital ID service to identify people through mobile SIM card registration. There is no formal digital ID service, mainly because it lacks the necessary regulatory framework. Other missing elements include digital signature infrastructure, interoperability standards, enterprise service bus, open data platforms, or a centralized citizen portal. Shared services would make it easier for technical teams from different entities to deliver digital solutions to citizens and other parties by focusing primarily on meeting their users' specific needs while leveraging the shared platform services offered by the Digital Government Center.

122. The government lacks a government-wide enterprise architecture (GEA) that clearly defines the roles and responsibilities between MTC and other government entities. A GEA is meant to guide the process of planning and designing ICT capabilities to meet organizational objectives. Its main purpose is greater alignment between IT and business concerns. A GEA is founded on a governance structure that identifies planning, decision-making, and oversight processes. In the absence of a government- wide GEA, line ministries do not know whether a new requirement should be provided and managed by MTC or by the ministry.

[100] For example, while MTC has purchased licenses for a government-wide VC system (TrueConf). Most ministries do not use it, and prefer to use other commercial products, like Zoom, and buy licenses for these. Some ministries, like the Ministry of Finance, have developed their own custom-made VC system. MTC is struggling to find budget to buy additional licenses for TrueConf and make it more widely available. Few government officials use e-mail or consider it an official means of communication. The @gov.la domain exists but is rarely used to provide email addresses.

[101] https://laokyc.gov.la/

Figure 5.3. Most frequently used tools to communicate with teams during the COVID-19 pandemic.
Source: World Bank (2021).



Cybersecurity, resilience, and privacy

123. Security and business continuity management are vital elements of the digital transformation process. Governments need citizens to trust them with their data, and so they must create a legal and regulatory framework on cybersecurity, resilience, and privacy. A government must also invest in strong cybersecurity and prevent unauthorized access to personal information. Its technology infrastructure must be resilient and guarantee a minimum level of business continuity to internal and external users.

124. The government has made limited progress in cybersecurity, business continuity and privacy. Some key regulations have been adopted, such as: Law on Cyber-crime (2015), Law on Electronic Data Protection (2017), Law on Electronic Signature (2018), Decree on Online Information Management (2014), and the Digital Security Plan.[102] Key gaps remain:

- A lack of government-wide cybersecurity strategy.
- Data protection legislation (beyond the Law on Electronic Data Protection).
- Alignment of cybercrime laws with international best practice. Effectively combating cybercrime requires ensuring that the legal framework includes rules on the procedures for collecting, accessing, and preserving the integrity of data and ensuring that it can be considered as evidence, despite being in electronic format.
- Mechanisms for protecting personal information. There is no program to protect critical IT infrastructure, and staff in government agencies are unfamiliar with safe-use practices.

[102] Part of the National Digital Development Plan (2021-2025)

125. LaoCERT is responsible for handling cybersecurity incidents. It was established in 2012, and originally functioned under MPT as part of LANIC. Now under MTC but separated from LANIC since 2016, LaoCERT is a member of the Asia Pacific CERT. Its main function is to assess and respond to cybersecurity threats. Coordination between LaoCERT and line ministry security policies and procedures are limited. Most line ministries do not have cybersecurity policies and protocols; those that do have developed them without input from MTC or LaoCERT.

Data infrastructure, strategies, and governance

126. A government's ability to collect, store, analyze, and share data is fundamental to improve service delivery. Data is a key strategic asset. Good data governance can contribute to setting a common vision, defining access rights and responsibilities. The data architecture should define the standards, interoperability requirements and semantic relationships on which the data infrastructure should be deployed.

127. The government has no government-wide data strategy or data governance framework (DGF) and has made little progress in building a government-wide data infrastructure. A government-wide data strategy has not yet been developed, and data resides mostly in silos in line ministries with limited interoperability and exchange. A DGF is also necessary to provide the support system on which decision rights and accountability for data resources is defined. The government-wide data infrastructure, which describes the processes and technologies used to manage all digital information flowing through the government, needs a data strategy and a DGF to function effectively, and to deliver the data the government needs to improve operations and generate value for the public.

128. The government maintains few shared digitized data registers. Shared data registers are key components of the shared government platform model of operation. A tax register, civil register, and vehicle register exist, among others, but not all are digitized or available across government entities. For example, the Ministry of Agriculture and Forestry has set up the Land Resource Information Management System (LRIMS)[103], which allows users to obtain land-related information for free. The LaoKYC[104] is an identification platform for citizens managed by MTC. It started as an enrolment service for personal mobile networks, but during the COVID-19 pandemic it also allowed citizens to self-report symptoms and register for tests and vaccinations. MoF has identified master data management as part of the design of its future Integrated Financial Management Information System (IFMIS). Key data registers in IFMIS master data include the chart of accounts, the responsibility center that identifies all government entities, and the vendor catalogue that identifies government suppliers and other payment beneficiaries. The Ministry of Home Affairs (MoHA) is also working on the implementation of an electronic civil registration and vital statistics (ECRVS) project which, in the future, will provide a digital register of everyone in the country.

Public Administration and Change Management

129. Digital government aims to transform public administration processes so that they are optimized for digital service delivery. Digital government initiatives also re-engineer back-office processes to digitize workflow and to automate routine processing. Previous concepts of e-government often prioritized digitization of existing business processes, but this has been rethought; current digital government initiatives aim to create digital-by-design business processes, simplify procedures, and create new channels to engage with stakeholders.

[103] https://lrims-dalam.net
[104] https://laokyc.gov.la/

130. There is no government-wide administrative reform or modernization strategy. The National Digital Economy Development Plan (2021-2025) includes several sub-plans that can underpin digital public administration reform, such as: the Digital Government Plan, the Digital Payment System Plan, the Human Resource Digital Development Plan, and the Digital Security plan. This omits a government-wide public administration modernization strategy to digitize and optimize government business processes and services. Information systems such as the GFIS or the PIMS have often only automated analog business processes and have not managed to eliminate the paper-based workflows that still dominate public administration. For example, a survey of seven ministries conducted by the World Bank found that half of respondents say that most of their work is paper-based, and one-fifth that more than 75 percent is paper-based. Projects such as IFMIS by MoF, or ECRVS by MoHA, are steps in the right direction, because both conducted a business process review (BPR) before system design and implementation to create digital-by-design business processes that leverage ICT technologies throughout their workflow.

131. There is no overall change management strategy for the digital transformation of government. A change management strategy describes how an organization will address changes in its business processes, information systems and operating procedures. Line ministries address their specific change management needs in a fragmented way, with varying levels of completeness. MoF plans to implement a change management strategy to implement IFMIS, and this can be replicated government-wide for new or upgraded versions of core government systems.

132. Core government systems are currently in the early stages of development, although there are plans to improve many in the immediate future. Core management systems are defined as information systems used to support decision making at a government-wide level. Information management systems such as IFMIS, e-procurement, and Human Resource Management Information Systems (HRMIS) have played key roles in the digital transformation journey of many countries, mainly because they are major undertakings that require the participation of multiple entities. The government is currently working on many core system projects. MoF is the owner of several of these systems including the GFIS, being upgraded with the support from the World Bank; the tax system (TAXRIS), planned to be upgraded with support from Republic of Korea; the debt management system (DMFAS), recently upgraded. MoHA is also looking to roll-out its Personnel Information Management System (PIMS) to the district level after a successful roll-out at national and provincial levels. MoHA is also evaluating a future upgrade to a full HRMIS to manage the employee lifecycle from entry to exit of civil servants. MoF is also looking into its readiness for an e-procurement system and is planning to develop an asset management system, as well as a learning management system. This could potentially be expanded to other ministries and become a shared resource.

133. Digital platforms are increasingly used in the public sector. Platforms are highly scalable technologies; therefore, a whole-of-government approach based on shared infrastructure is best suited for their implementation as the scope and number of users tends to grow exponentially. The government has experimented with some digital platforms, for example, the Ministry of Education and Sports (MoES) has deployed the Khang Panya Lao[105] teaching and learning platform to promote digitalization of education for teachers and students, and to support children's learning during the COVID-19 pandemic. By January 2022, more than 71,000 students have registered to Khang Panya Lao. MoF has implemented the National Single Window (LNSW)[106] dedicated to trade regulation. It offers the trade community a single point of interaction with government entities, banks and

[105] https://www.unicef.org/laos/khang-panya-lao
[106] https://www.laonsw.net/

other stakeholders involved in trade regulation. BoL also operates the electronic payment platform for real time, gross settlement between the commercial banks and other financial institutions.

134. Government services to citizens, business, and employees are at early stages of development. Line ministries design and implement ad-hoc services with little to no interoperability. The services are usually accessed through the web site of the ministry, and there is no citizen's portal where users can access all government services. For example: the Lao Trade Portal provides traders with information for importing and exporting. It is accessed through MoIC. Meanwhile, foreigners who wish to apply for an entry visa access the E-Visa service through the Ministry of Foreign Affairs. There is also no central catalogue of government services that includes information such as a brief description of each, fulfilment requirements, concerned government entities, associated forms to fill, duration for completion, and associated fees. There are no technical standards that lay out how government services should be built and operated.

User-centered design

135. Digital government should design its services using the principle of meeting user needs. This is regardless of class, gender, race, geography, or any other classification. Many governments fail to prioritize user-centricity in their digital transformation agenda. The result: inefficiencies, complex and time-consuming procedures, and citizen dissatisfaction. Governments should strive to enhance public service delivery through human-centric[107], universally accessible services.

136. In Laos, user services are designed in a piecemeal approach by the different line ministries, with little consideration of human-centric design. There are no government-wide standards to address the needs of the user community. Line ministries build and deploy systems and services in an ad-hoc manner with varying degrees of consideration for human-centric or inclusive design. Digital services rarely share information. Good design embodies the principle of "ask information once and use it everywhere". This is not followed. There are some interesting initiatives designed to address the needs of citizens, such as the One Door Service Centers (ODSC) which are currently physical one-stop shops to address the interaction between citizens and government. There are currently 49 ODSC across the country, and the government plans to expand them and make them more efficient through the implementation of Smart ODSC[108]. Smart ODSC will leverage information and communication technology to improve service delivery. Another example of user-centricity is the use of electronic money[109] to pay salaries and benefits to civil servants. This is particularly important in rural and remote areas where there are few banks. Ministry of Health (MoH) is seeking to expand its successful COVID-19 service delivery to include services for electronic consultation in remote areas for patients to communicate with doctors through SMS, or for women to receive pre-natal care. These services are currently in pilot stage.

Capabilities, culture, and skills

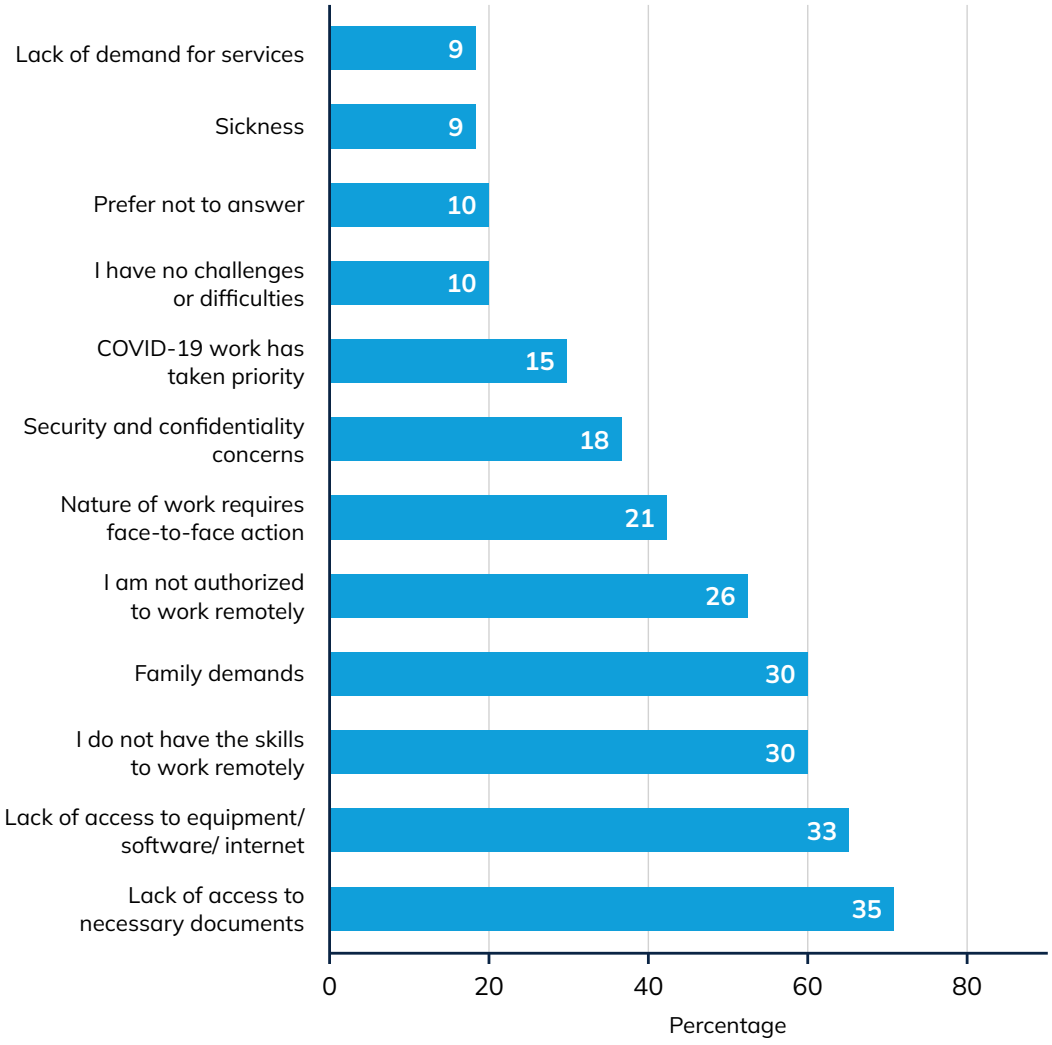
137. Successful digital governments hire skilled individuals into the civil service with digital, technical, and leadership capabilities, and ensure continuous learning and training opportunities. Strong technical skills mean civil servants can drive digital transformation of and take full advantage of digital opportunities. This also requires high-

[107] Human-centered design is an approach to interactive systems development that aims to make systems usable and useful by focusing on the users, their needs, and requirements (ISO 9241-210:2019(E)).
[108] Smart ODS Concept Note – June 2021.
[109] The specific service is named U-Money a joint venture between Viettel of Vietnam and a Lao company.

quality training in areas such as program management, infrastructure and application operations to database management, and data analysis.

138. The Lao civil service needs to improve its skills, capabilities, and culture to take full advantage of the opportunities that digital technologies present. A recent study by the United Nations Development Programme (UNDP)[110] categorized Laos as digitally nascent. This is due in part to the lack of an ICT or digital educational masterplan, limited training and change management programs, and absence of a digital recruitment and retention strategy. A survey conducted by the World Bank[111] highlighted some of the digital technology challenges and opportunities that civil servants and other public sector employees face. More than three in five responded that working remotely had a negative impact on the quality of work, primarily because of lack of access to documents, lack of access to equipment, software or internet, and a lack of remote working skills (Figure 5.4). All three issues could be addressed by the digital transformation strategy. The survey results suggested that the government should consider targeted training on digital skills, with an emphasis on institutions and staff groups with low skill levels.

Figure 5.4. Key challenges to working remotely.
Source: World Bank (2021)



[110] UNDP Digital Maturity Assessment 2022.
[111] Impact of COVID 19 on Public Sector Employees in Lao PDR, August 2021.

139. MTC is trying to address the lack of digital skills in the public sector. MTC acknowledges that it is facing a significant problem in attracting skilled resources to perform ICT-related tasks due to the limited pool of skilled candidates available, and the government's inability to match salaries in the private sector[112]. The UNDP Digital Maturity Assessment 2022 described the situation "Although IT professionals in Laos have good qualifications, the size of the talent pool is very limited". To strengthen digital skills in the public sector, MTC conducts regular ICT training, seminars and learning sessions for government staff. In addition, MTC operates an ICT training institute and has recently partnered with a private company to rebuild the Institute of Information and Communication Technology (IICT). In 2022, MTC signed an agreement with China Railway Construction Group Co., Ltd to construct a new building for the ICT training institute. The building will be equipped with the necessary teaching and learning materials, laboratory equipment and examination facilities. The new training facility is expected to be completed in late 2023 and aims to strengthen the digital capacities of the public sector employees.

Digital ecosystems

140. Open participation and discussion among citizens, the private sector, civil society, and academia in the digital ecosystem boosts innovation, education, and entrepreneurship. A digital ecosystem is a group of interconnected information technology resources that can function as a unit.[113] Digital ecosystems are made up of government, business, citizens associations, and individuals that support the production of and access to data, services, and content through interactions with the government[114]. Governments promote the development of a local ecosystem by supporting local entrepreneurs and start-ups to develop new products and services for the government, and by providing incentives to draw on private sector skills, innovation, and investments to address public-sector challenges.

141. The government is in the initial stages of building local digital ecosystems that can support its digital transformation effort. The UNDP Digital Maturity Assessment 2022 identified the lack of a strong policy and financial framework supporting the start-up ecosystem. MTC hosts seminars and partnerships with private sector and international organizations to jumpstart its creation. It has organized digital competitions, such as the Lao ICT award, Lao ICT expo and ICT hackathon. Lack of budget means these activities are sporadic. MTC has signed a MOU with a private company to conduct a feasibility study that will assess the adoption of blockchain technology[115] in the areas of Digital ID, e-resident, e-finance, e-health, and e-schooling. BoL is working on the digital payment ecosystem with commercial banks, international partners, and other private sector entities. They have established a multi-level payment system to promote the use of digital payments for both banked and unbanked individuals. BoL is also active in promoting and regulating the use of cryptocurrencies by issuing licenses to two private sector operators to become crypto exchange platforms.[116] While commendable, these initiatives lack continuity and are not part of a coherent government ecosystem strategy.

Future State and Goals by 2027

142. Laos needs a whole-of-government approach to sharing technology infrastructure, and for synchronizing digital strategies and policies. The piecemeal

[112] For example, in 2020, the starting base salary of a new university graduate entering the civil service was around 1,600,000 kip, well below the private sector average.
[113] https://www.techtarget.com/searchcio/definition/digital-ecosystem
[114] OCDE, 2014
[115] A blockchain is a digitally distributed, decentralized, public ledger that exists across a network.
[116] https://laotiantimes.com/2022/01/17/laos-authorizes-two-crypto-exchange-platforms/

e-government initiatives detailed above mostly focus on ICT-enabled services that are analog by design, one-way government-to-user communications and service delivery to citizens and businesses. A paradigm that leverages shared technology infrastructure can implement simple, efficient, and transparent government systems, and provide user-centric, universally accessible government services to citizens, businesses, and government employees. Digital government is not about implementing the biggest and latest ICT technologies, but about enabling governments to do a better job in addressing real problems and producing value for its citizens. The government can make considerable gains by initially focusing on initiatives that do not require costly new investments to address, but rather can be set up quickly to achieve progress in six areas that follow.

143. Strengthened governance and coordination is key. Effective and transparent governance is critical to the implementation of digital government. Solid foundations have been laid through the creation of MTC and the government-wide policy documents[117]. Effective organizational and governance frameworks will be required for better government-wide coordination, as well as an expanded and fine-tuned legal and regulatory framework.

144. Implementation of efficient, simple, and transparent government systems is important. The government can benefit from the unique situation of upgrades or replacements of core government systems going on at present, to develop an updated conceptual and functional model that incorporates the use of digital technologies, reduces manual interventions, leverages shared infrastructure, streamlines processes, and shares data among the different government systems.

145. The government can embrace data-driven government. Data should be seen as a strategic asset to generate public value. Governance processes should be designed to collect, process, store and disseminate data. The government can remove barriers to managing, sharing, and reusing data, and apply data to transform the design, delivery, and monitoring of public policies and services. Open data principles can be defined and followed, ensuring that citizens are aware of their data rights in terms of security and transparency of use.

146. Policymakers have the opportunity to design a truly user-centric public service. Services should be designed around the needs and convenience of users (citizens, businesses, and government employees) and be made accessible through a common portal so that users would not have to provide the same information twice. Citizen engagement should be incentivized, and citizens should be able to provide feedback both on the use and design of digital services.

147. Ministries can build strong digital skills among employees. The government should conduct an in-depth assessment of the digital skills and learning needs of ministries to build a continuous training program so that the civil servants acquire the digital skills required to accelerate digital transformation.

148. Stakeholders cooperate to build a local digital ecosystem. A digital ecosystem will promote the participation of the private sector, civil society, donors, and citizens in the digital transformation of the government. External parties can help in building digital skills and introducing the effective use of disruptive technologies such as artificial intelligence, machine learning, blockchain and the internet of things that have the potential to transform government services.

[117] These include National Digital Economy Development Vision 2040 (2021-2040), the 10-year Digital Economy Strategy (2021-2030) and the 5-year National Digital Economy Development Plan (2021-2025).

Recommendations

The table below presents a list of recommendations to help reach the desired future state for digital government. The recommendations are designed to address the key areas described above. They are in three groups:

- **Short-term priorities (1 or 2 years).** These have no dependencies and are inexpensive to implement.
- **Medium-term priorities (within 3 years).** These have dependencies, or are more efficient to undertake after the first group is complete,
- **Long-term priorities (within 5 years).** These have dependencies on medium-term initiatives or require the involvement and development of relationships with external stakeholders. These measures require larger investments.

The recommendations are explained in detail in Annex 2.

Timing	Area	Recommendation	Responsible entity
Short term (1 to 2 years)	**Strengthen governance and coordination**	Development of Digital Government Reform Implementation Roadmap	MTC and Line Ministries
		Creation of an Intersectoral Commission for Digital Government (ICDG)	MTC and Line Ministries
		Development of Government Enterprise Architecture (GEA)	MTC
		Development of Government-wide Data Governance Framework	MTC
		Development of Capacity Building and Change Management Plan	MTC and Line Ministries
Medium term (within 3 years)	**Implement efficient, simple, and transparent government systems**	Increase the use of shared technology infrastructure	MTC and Line Ministries
		Develop Cybersecurity Strategy	MTC and Line Ministries
		Strengthen and expand the shared platform model for Government to Government (G2G) services	MTC
	Strive to become a data driven government	Develop Government Data Strategy and Data Infrastructure Framework	MTC and Line Ministries
	Develop user centric public services	Development of user service design standards and guidelines	MTC
Long term (within 5 years)	**Strengthen digital skills in government**	Implement Capacity Building and Change Management Plan	MTC and Line Ministries
	Develop user centric public service	Implementation of User Centric Design Policy	MTC and Line Ministries
	Promote the expansion of a local ecosystem	Promote Public-Private Partnerships	MTC
		Development of Strategy for Adoption of Disruptive technologies	MTC

Annex 1. Dimensions of the Digital Government Readiness Assessment (DGRA)

1. **Legislation & Regulation.** Assesses the state of digital government laws such as data protection, e-commerce, digital ID, consumer protection, cyber-crime, open access, among others.
2. **Leadership & Governance.** Assess the existence of a main ministry in charge, vision, achievable goals, implementation roadmap, support from government official for the vision, strategy well communicated, sustainable funding.
3. **Technology & Infrastructure.** Existence of Government Enterprise Architecture, interoperability framework, secure networks and data centers, use of disruptive technologies, core government services, government portal, ICT policies and contact center
4. **Cybersecurity, privacy & resilience.** Assesses the existence of cybersecurity strategy, cybersecurity unit, CERT, National Critical Infrastructure Plan, and data privacy mechanisms.
5. **Data infrastructure, strategies, and governance.** Assesses the existence of data management strategy, basic data registers, data exchange agreements and protocols, use of big data and analytics, among others.
6. **Public Administration & Change Management.** Existence of administration reform strategy, standard procedures, government-wide catalogues, core government systems deployed, change management strategy.
7. **User Centered Design.** Assess the existence of user centered design strategy, standards for e-Services, participation of users in design, integrated multi-channel approach, inclusive services, process to accommodate user feedback
8. **Capabilities, culture & skills.** Existence of capability requirements, enough skilled staff, training plans, career paths, access to university talent, open to outsourcing
9. **Digital ecosystem.** Assess the existence of university majors on digital business and technology, innovation hubs, training institutes, private sector partners, national financial institution support for digital agenda.

Annex 2. Detailed overview of recommendations on digital government

Short term (1 to 2 years)

1. The government should develop an implementation reform roadmap as part of the Digital Government Plan. The Digital Government Reform Implementation Roadmap should set specific timetables for execution, cost estimates and identify sources of sustainable funding. It should assign responsibility for ICT projects and activities either to MTC or the sectoral ministries. This is currently missing in the Digital Government Plan. A five-year timespan for the roadmap could be appropriate to match the timespan of the Digital Economy Development Plan. The implementation roadmap is not meant to replace—rather complement—the Digital Government Master Plan by collating the different ICT strategies and plans of the line ministries with those from MTC. It should clearly describe MTC's role in providing shared infrastructure and services, a process should be established so that any ICT investment (above a certain threshold) should be evaluated against general ICT policies and plans. The implementation roadmap could also include a list of 10-15 priority governments services that could be digitized within the next two years or so. This could help establish the role of the committee as a coordination mechanism and focus scarce resources where they are most needed.

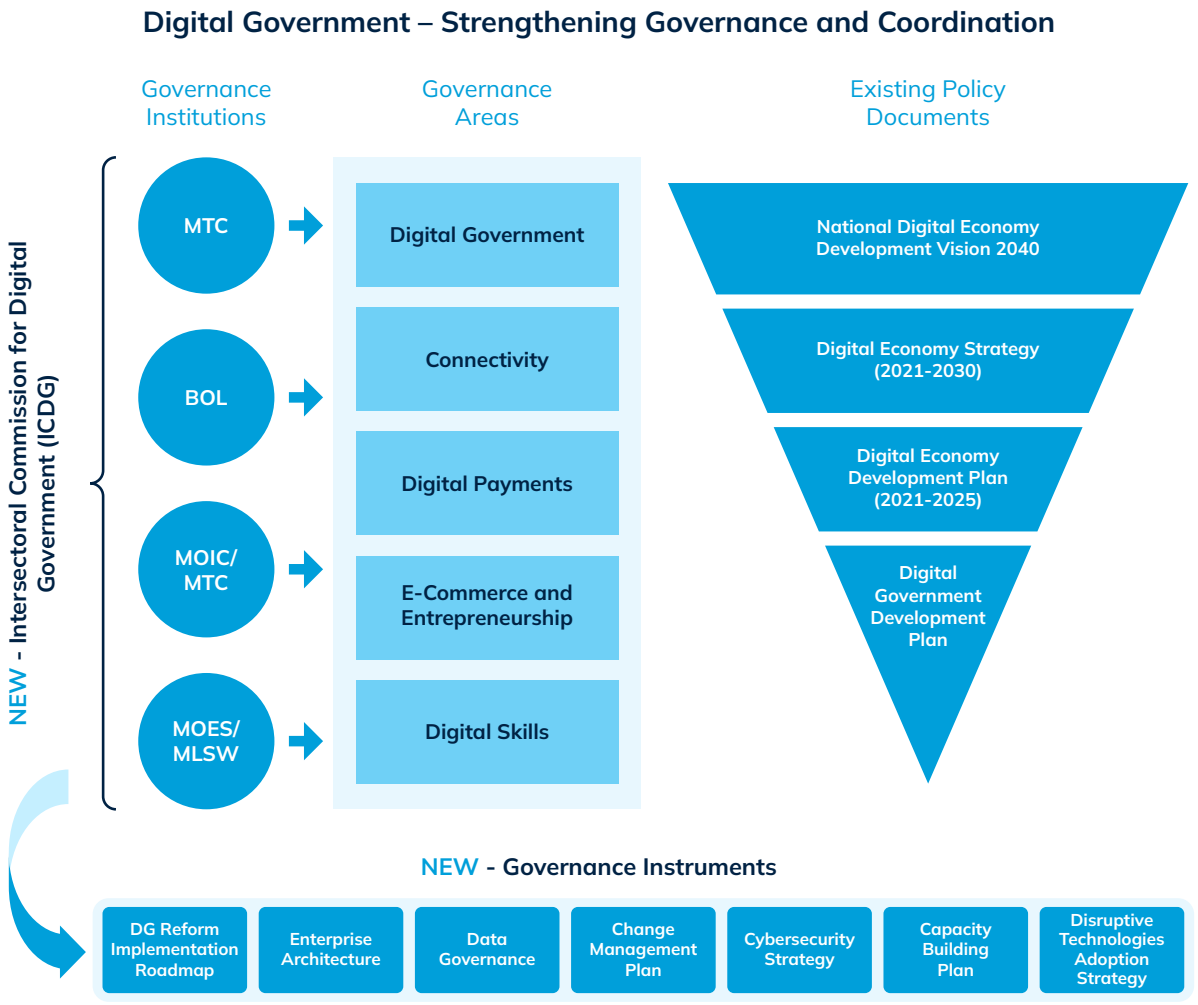
2. An Intersectoral Commission for Digital Government (ICDG) should be created with representatives from MTC, line ministries and other government entities (provinces, districts, SOEs) to guide and oversee the implementation of the Digital Government Reform Roadmap. Such oversight committees with limited mandates have been successfully set up in other countries. For example, in Brazil the federal government set up the Digital Governance Committee[1] responsible for digital advancement in the country. In Colombia, the Intersectoral PFM Information Commission (CIIGFP)[2] was set up in 2021 to oversee a country-wide PFM reform package. The commission is composed of national institutions, each one in charge of one or more PFM subsystems. These committees provide a governance mechanism through which several institutions can coordinate efforts, pool funding and other resources, and so implement reform programs. The commission can be subdivided into sub commissions with responsibilities over key work streams such as Adoption of Shared Infrastructure, G2G Services, Capacity building and Change Management, among others. The commissions are not permanent: once they have served their purpose their functions are devolved to the constituent members, or other entities created throughout the process.

3. The government should consider the creation of government-wide instruments to align the digital government initiatives of line ministries with those of MTC. There is a need to create specific technical instruments that help plan, design, and deploy digital technologies and set guardrails for the initiatives of line ministries, otherwise there is a high risk of redundancies, and government services will continue to operate in a fragmented and siloed manner. The instruments recommended include:

- A government-wide Enterprise Architecture (GEA).
- A Data Governance Framework (DGF).
- A Capacity Building and Change Management Plan.
- A cybersecurity strategy and plan.

4. This was the approach of the Republic of Korea, which is a global leader in digital government. The instruments adopted by the Korean Government include: The e-government 2020 Action Plan, The Intelligent Government Basic Plan, and The Digital Government Innovation Promotion Plan. These plans have institutionalized a whole-of-government approach, specifying the strategy for transitioning to intelligent information technologies. Figure A3 shows the "To Be" environment for digital government governance, including the main government agencies involved, the governance areas they oversee, the policy documents, and the proposed governance instruments.

Figure A3. Digital Government Proposed Governance Structure



5. The government should develop a government-wide Enterprise Architecture (GEA), with the main objective of achieving greater coherence between MTC and the various line ministries ITC initiatives. It should lay out a whole-of-government approach that supports the government ecosystem and transcends the boundaries of service delivery in a coordinated, efficient, and equitable manner. The GEA should cover technology infrastructure, data, integration, application, presentation, operations, and security dimensions. It must clearly describe the pool of shared infrastructure and services, who should provide it, who should use it, under which circumstances it should be used and what are the service levels that should be expected. GEA have been used in different countries, for example in the US, the Federal Enterprise Architecture[3] was launched in 2012, also in Canada[4]; in Costa Rica, Hacienda Digital[5] launched its Enterprise Architecture in 2021.

6. **The government should develop a Data Governance Framework (DGF) to complement the GEA and delve deeper into the decision rights and accountabilities defined to manage data as a strategic government asset.** The DGF should specify the roles, processes and information technologies required to create a consistent and proper handling of data across the whole of government. Comprehensive data architecture and governance framework have been implemented in several countries, including Argentina[6] and Mexico[7]. Both the GEA and DGF are considered "live documents" that should be reviewed and updated when required. MTC is probably best positioned to create and maintain the GEA and DGF.

7. **The government should develop a government-wide capacity building and change management plan.** The capacity building plan should be comprehensive, it should consider a whole-of-government approach, including civil servants from different levels of government (central, provincial and district). It should also consider the spectrum of digital capabilities, from technical skills required to use and manage ICT technology to more business skills required to manage and expand the digital transformation process. The government should also focus on drafting a change management plan that address key issues such as:

- Strategies to facilitate joint work between the different entities and MTC.
- Strategies for identifying and addressing resistance to change.
- Communications plan to inform the public about reforms and promote support from officials at all levels, among others.

For example, the Government of Australia has established a project to build digital skills across its public sector[8]. They do this through a comprehensive program that includes online help and guidance, digital service standard training, entry-level digital programs, agency partnerships, and digital communities of practice.

Medium term (within 3 years)

8. **The government should increase the use of shared technology infrastructure.** The adoption of shared technology infrastructure, ideally using cloud technologies, would reduce cost and improve performance, it would support cost efficient expansion and improve interoperability between government systems and digital services. It would also promote better coordination and communication between MTC as the operator of the technology infrastructure, and the line ministries and other entities as the consumers. The shared technology infrastructure should cover both hardware and software. Ideally, in a cloud service model that covers infrastructure (IaaS[9]) and platform (PaaS[10]) models so that platform software such as database management and other middleware[11] software can be leveraged for multiple uses. The US Federal government[12] provides PaaS cloud model to its entities. The Government of Panama, through the Autoridad Nacional de Innovacion Gubernamental (AIG)[13] provides cloud (currently in IaaS model) and network services to the Panamanian government sector.

9. **The government should develop a government-wide cybersecurity strategy and implementation plan.** The current computer security development plan, which is part of the Technology and Communication Plan (2021-2026), does not set specific guidelines and standards for line ministries to adhere to. Some line ministries have developed their own security policies, others operate without one. To confidently deploy services and for citizens to trust their personal data to the government, it is necessary that a government-wide cybersecurity policy is adopted and implemented. The policy must be complemented with a cybersecurity plan that defines specific actions line ministries have to take, to make

ICT infrastructure more secure and build internal capacity to prevent, detect and deal with cyberattacks.

10. The government should strengthen and expand the shared platform model for G2G services. The focus should be in creating an ecosystem of software, standards, services, and data registers that support the creation of user facing services, allowing technical teams to focus on user specific requirements and laying a common foundation. Emphasis should be placed in key areas such as interoperability frameworks and data exchange services, digital signature, digital ID, and shared registers for identification of land, vehicles, asset inventories, among others. Plenty of countries have used the Government Platform models, some examples are: Internal tools for civil servants in the United Kingdom;[14] Digital ID in Austria, Canada, Estonia, and Republic of Korea; interoperability data in Estonia, and Slovenia; reusable design and patterns in Argentina, Brazil, Singapore; public registers in Denmark, Italy, and Norway.

11. The government should develop a data architecture and infrastructure framework. The framework should define policies that cover the full data cycle, starting with collecting and generating the data, including both government and non-government data sources, structured and unstructured data, including sensory data sources. It should cover the policies for processing, storing, and securing the data and for sharing, curating, using, and publishing. The data architecture that manages the data cycle should be the basis for data infrastructure maintenance and expansion plans. Several countries have implemented data management strategies. These strategies are often nested within public sector digitalisation efforts. Notable examples include the US Federal Data Strategy[15], Canada's Data Strategy Roadmap for the Federal Public Service[16], and Ireland's Public Service Data Strategy[17].

12. The government should design a policy so that the digital services developed by line ministries and other government entities follow standard guidelines and are accessible from a single portal. The policy would be a prelude to a holistic user-centric design policy, and it would focus on having a central location where government digital services are available. Services would have to follow certain technical standards, such as single sign-on, data sharing, digital signature, user experience standards, security protocols. Standard service design is common in many countries, for example in Singapore, Australia, and Germany. In the UK, Service Communities[18] have been implemented to avoid silos of service delivery.

Long term (within 5 years)

13. The government should implement a user-centric design policy. A government becomes more user-driven by awarding a central role to people's needs and convenience in the shaping of processes, services, and policies; and by adopting inclusive mechanisms for this to happen. The specific standards and policies framework should be decided after further analysis, but it should satisfy the following principles:

- **Start with user needs.** The government conducts research, analyzes data, talks to users.
- **Use human-centric services that are universally accessible.** These design services consider device, internet-access, language, and other limitations.
- **Enhance engagement.** Improve participation and deepen the relationship between citizens and government.
- **Encourage individuals and business use open public data.** This can be done by building public data platforms.

- **Create interoperable government systems.** Ask for data only once.
- **Build digital services, not websites.** Services help people achieve something.
- **Follow an agile and iterative process.** Start small and iterate multiple times.

User-centric design has been used implemented in Mexico through the Participa[19] website that makes available digital tools that encourage citizen participation throughout the public policy cycle of the federal government. In Spain, Carpeta Ciudadana[20] facilitates greater connection between citizens and the public sector.

14. The government should elaborate a policy to incentivize the development of local ecosystems. The policy should define innovative ways to draw upon private sector skills, innovations, and investments to address public sector challenges, including the use of PPPs, and a focus on improving the local ecosystem to support local entrepreneurs and start-ups to develop new products and services for the government. This could be achieved by providing financial incentives, reducing costs of doing business, promoting the creation of innovation hubs and incubation centres. Many governments around the world continue to face challenges in the implementation of their digital transformation related to capacity and resource constraints, digital inclusion, and digital skills. Rwanda bridged the basic ICT/digital skills gap through digital certifications and accreditations designed for its government workforce.

15. The government should define and implement a strategy for the effective use of disruptive technologies. Disruptive technologies such as artificial intelligence, machine learning, blockchain, big data, among others can greatly improve core government operations and online service delivery. Governments could use disruptive technologies to increase transparency and reduce corruption such as in Brazil through the use of Rosie the Robot[21] or to improve efficiency in processing medical licences in Chile through the use of a neural network algorithm[22] where the processing time was reduced in over 60%[23]. Defining a national strategy for the use of disruptive technologies is a growing trend in many countries. According to the World Bank,[24] 53 countries have developed a national strategy on the use of disruptive technologies—most of them in the last five years.

[1] https://www.cgi.br/

[2] https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=159746

[3] https://obamawhitehouse.archives.gov/omb/e-gov/FEA

[4] https://www.canada.ca/en/government/system/digital-government/policies-standards/government-canada-enterprise-architecture-framework.html

[5] https://www.hacienda.go.cr/contenido/15643-proyecto-hacienda-digital-para-el-bicentenario

[6] https://www.argentina.gob.ar/contenidosdigitales/disenio/arquitectura

[7] https://www.gob.mx/guiasinteroperabilidad/guias_tecnicas/gt_8/html/info_gt8.html

[8] https://www.dta.gov.au/our-projects/building-digital-skills-across-government

[9] Infrastructure as a service (***IaaS***) is a type of cloud computing service that offers essential compute, storage, and networking resources on demand

[10] Platform as a service (**PaaS**) provides customers a complete cloud platform—hardware, software, and infrastructure—for developing, running, and managing applications

[11] Middleware is a type of computer software that provides services to software applications beyond those available from the operating system

[12] https://cloud.gov/

[13] https://aig.gob.pa/nube/

[14] https://www.gov.uk/

[15] https://strategy.data.gov/

[16] https://www.canada.ca/en/privy-council/corporate/clerk/publications/data-strategy.html

[17] https://www.gov.ie/en/publication/1d6bc7-public-service-data-strategy-2019-2023/

[18] https://gds.blog.gov.uk/2019/01/28/what-service-communities-are-achieving-across-government/

[19] https://www.participa.gob.mx/

[20] https://sede.administracion.gob.es/carpeta/clave.htm

[21] https://blogs.worldbank.org/governance/rosie-robot-social-accountability-one-tweet-time

[22] A neural network is a series of algorithms that endeavors to recognize underlying relationships in a set of data through a process that mimics the way the human brain operates.

[23] https://ia-latam.com/2019/02/05/inteligencia-artificial-en-compin-redujo-en-605-plazo-de-pago-de-licencias-medicas/

[24] GTMI 2021