Myanmar:
Investment Analysis and Implementation Options for Proposed Digital Government Project
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Executive Summary

The Government of Myanmar (GOM) is assessing a possible investment in a digital government project, as the first phase of implementation of their e-Governance master plan and overall digital development efforts. The primary objective of this study is to assist the government in assessing if this digital government investment will be financial and economically viable. The study’s secondary objective is to provide implementation options and considerations for GOM, if they decide to embark on the project. The scope of the study includes (i) country background, lessons learned from previous and ongoing projects in Myanmar, international case studies, and strategic rationale for digital transformation, (ii) financial and economic analysis, (iii) key implementation options and considerations for their digital government investment, including institutional arrangements, key risks, and political economy issues, and (iv) conclusion and recommendations.

Myanmar has experienced steep growth in mobile cell phone and mobile broadband users in the past five years. The government has awarded three mobile licenses to foreign operators (Ooredoo, Telenor, and MyTel). Mobile phone access has increased dramatically from seven percent in 2012, to 106 percent in 2017. The price of SIM cards also dropped from $2,500 in 2012 to less than $2 in 2016. Mobile broadband users increased from 0.6 percent in 2012 to 55 percent in 2017. However, Myanmar still lags other countries in terms of digital performance and ICT use in government. Myanmar’s strengths includes strong political will on digital government, with the publication of its e-Governance Master Plan in 2015, and initial meetings of the e-Governance Steering Committee. High mobile penetration, commitment from the civil service, and transparency agenda are also advantages. The barriers to implementation of digital investments include low capacity and shortage of skilled resources, fragmentation and duplication of efforts (a “silo approach”), and lack of standardization. This study highlights a new global trend of a whole-of-government approach in digital government and public service delivery, its key concept, and international case studies from early adopters of whole-of-government approaches. By taking advantage of international experiences in digital transformation, Myanmar could adopt a leapfrog strategy and use seven key guiding principles for their digital investments.

GOM has developed a concept-level design for a proposed $100 million digital government project, as the initial step in implementing their e-Governance Master Plan. This concept-level design is subject to GOM’s additional refinement and elaboration process, and the draft design is used as the basis for this study’s analytics. The proposed investment is a strategic, e-government project that would speed up Myanmar’s priority project implementation by providing a common technology platform for all ministries and departments to build their domain-specific systems and services. It would also leverage the pervasive mobile network and significant internet access to achieve the country’s socioeconomic goals. GOM’s proposed project has three components as shown below, and Appendix A provides a detailed description of each component and its subcomponents.
A comprehensive “benefit mapping” methodology was used to visualize how all digital investments, and a set of outputs link to different levels of outcomes, and eventually link to the high-level strategic outcomes such as GOM’s National Economic Plan. Then, an analysis model was developed, based on an internationally recognized model, and customized to adapt to the unique environment of Myanmar to quantify the financial and economic impact of digital investment.

The approach to modelling the financial and economic impact of the project was guided by various selected key principles. These principles are (i) to focus the financial and economic analysis only to “intermediate outcomes” and “end outcomes” in the benefit map, (ii) recognition that outcomes not captured in the benefit map may be more significant in practice, (iv) use of local data when available, and develop assumptions for key variables when it is not available, and (iv) take an extremely conservative view in all assumptions to ensure that the overall model does not overestimate the impacts. The table below shows the financial and economic analysis over a five and a ten-year period for the digital government project’s investment of $100 million.

<table>
<thead>
<tr>
<th>Assessment metric (with 9.95% Bank of Myanmar’s discount rate)</th>
<th>5 years</th>
<th>10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefit/Cost ratio (at net present value)</td>
<td>Financial</td>
<td>1.57</td>
</tr>
<tr>
<td></td>
<td>Economic</td>
<td>7.38</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>Financial</td>
<td>$39,696,399</td>
</tr>
<tr>
<td></td>
<td>Economic</td>
<td>$448,193,061</td>
</tr>
<tr>
<td>IRR</td>
<td>Financial</td>
<td>109%</td>
</tr>
<tr>
<td></td>
<td>Economic</td>
<td>295%</td>
</tr>
</tbody>
</table>

The financial and economic analysis finds strong positive results for the proposed project. It shows a net present value of about $40 million of total financial impact, that is, the impact on public sector productivity. It also shows that the proposed project will have an estimated $448 million of total economic impact, that is including broader impacts of time and cost savings for people and businesses because of digital government, benefit from reduced corruption, growth of the ICT sector, and impact of increased ICT adoption and digital innovation in the private sector.
This study also provides three additional key issues for GOM to consider if it decides to proceed with this project investment. These key issues concern institutional arrangements, risks and political economy. It will be critical to put the right institutional arrangements in place for the success of the digital investment, and take high-level strategic decisions about the nature of the implementation and institutional arrangements that will be appropriate for Myanmar. There are three broad models that governments internationally have adopted when seeking to implement whole-of-government approaches to digital government. These are the delegated, centralized, and shared/franchised models. The study describes each of the models, conducts a SWOT analysis, and proposes the shared/franchised model as the preferred operating model for Myanmar based on initial and conceptual assessment of the country’s context.

GOM will also need to take account of the likely key risks for this proposed project. Based on research by multiple governments and the European Commission, the Transformational Government Framework describes nine critical success factors for whole-of-government digital government projects, each of which represents an area of significant risk if not managed effectively. These include risks related to strategic clarity, user focus, stakeholder engagement, skills, benefit realization, and so on. A risk log on the severity of each risk is also provided, with a summary of each risk area and the possible mitigation strategies for GOM.

The study also provided a board and generalized overview of the likely political economy (PE) issues that GOM may need to consider for the proposed project. It is important for such crosscutting initiatives to consider the PE context in which it will be undertaken, including how power and resources are currently distributed and contested in the domains impacted by the project, and how different stakeholders’ needs, power, and influence vary. The study describes the PE context, benefits, risks, and stakeholder landscape. It also provides an example of a possible approach to analyze the forces likely to drive stakeholder attitudes, and the possible actions to translate negative perceptions into positive ones.

This proposed digital government project represents a major opportunity for Myanmar. The country measurably lags behind peers in digital development, and there is strong evidence that closing these gaps will lead to significant benefits.

Myanmar currently does not have key digital foundations and building blocks needed to deliver its development goals and strategies. In particular, there is a need for an integrated, cloud-based, whole-of-government IT platform, improved skills and capabilities across government ministries to manage digital services effectively, and strengthened governance structures and operating models needed to deliver effective whole-of-government digitally enabled change.

The digital government investment is not expected deliver the totality of the country’s ambitions or address all the critical gaps but is expected to put in place the essential foundations and building blocks. The investment also appears to be able to adopt a low-risk approach for delivery. The key strategic risks to any major digital investment delivery and its impact have been identified, with practical recommendations for mitigation that are grounded in proven international best practices and documented standards.

It is recommended for the GOM to proceed with the proposed digital government investment, as described in their concept-level design. The project is strategic for the country’s development goals, and the analysis shows a strong positive return over the 5 and 10-year period. It is also recommended for GOM to use the shared/franchised operating model set out in international standards for digital transformation, as the institutional arrangement. Finally, it is recommended for GOM to conduct detailed risk and political economy analysis during the project’s implementation, and develop and undertake plans and mitigation actions to address these possible issues.
Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAI</td>
<td>Digital Adoption Index</td>
</tr>
<tr>
<td>DIC A</td>
<td>Directorate of Investment and Company Administration</td>
</tr>
<tr>
<td>DEDC</td>
<td>Digital Economy Development Committee</td>
</tr>
<tr>
<td>DG</td>
<td>Digital government</td>
</tr>
<tr>
<td>DM</td>
<td>Digital Myanmar</td>
</tr>
<tr>
<td>e-government</td>
<td>Electronic government</td>
</tr>
<tr>
<td>e-governance</td>
<td>Electronic governance</td>
</tr>
<tr>
<td>EDMS</td>
<td>Electronic Document Management System</td>
</tr>
<tr>
<td>G2B</td>
<td>Government-to-business</td>
</tr>
<tr>
<td>G2C</td>
<td>Government-to-citizen</td>
</tr>
<tr>
<td>G2G</td>
<td>Government-to-governent</td>
</tr>
<tr>
<td>GNI</td>
<td>Gross National Income</td>
</tr>
<tr>
<td>GOM</td>
<td>Government of Myanmar</td>
</tr>
<tr>
<td>GPMS</td>
<td>Government Procurement Management System</td>
</tr>
<tr>
<td>IaaS</td>
<td>Infrastructure as a Service</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technologies</td>
</tr>
<tr>
<td>MOTC</td>
<td>Ministry of Transport and Communications</td>
</tr>
<tr>
<td>MSDP</td>
<td>Myanmar Sustainable Development Plan</td>
</tr>
<tr>
<td>NGO</td>
<td>Nongovernmental organization</td>
</tr>
<tr>
<td>NPV</td>
<td>Net Present Value</td>
</tr>
<tr>
<td>OASIS</td>
<td>Organization for the Advancement of Structured Information Standards</td>
</tr>
<tr>
<td>Pa aS</td>
<td>Platform as a Service</td>
</tr>
<tr>
<td>PE</td>
<td>Political Economy</td>
</tr>
<tr>
<td>PPP</td>
<td>Public-private partnership</td>
</tr>
<tr>
<td>ROI</td>
<td>Return on Investment</td>
</tr>
<tr>
<td>SaaS</td>
<td>Software as a Service</td>
</tr>
<tr>
<td>SDGs</td>
<td>United Nations Sustainable Development Goals</td>
</tr>
<tr>
<td>SIM</td>
<td>Subscriber Identification Module</td>
</tr>
<tr>
<td>SME</td>
<td>Small and medium enterprises</td>
</tr>
<tr>
<td>SMS</td>
<td>Short message service</td>
</tr>
<tr>
<td>TA</td>
<td>Technical assistance</td>
</tr>
<tr>
<td>WODG</td>
<td>Whole-of-Digital Government</td>
</tr>
</tbody>
</table>

All dollar amounts are U.S. dollars unless otherwise indicated
1. Study Objectives, Background Context, and Rationale

This chapter elaborates the objective of the study, which is to assist the Government of Myanmar (GOM) in assessing and estimating the return on investment for their proposed digital government project (“project” or “investment”). The study’s secondary objective is to provide implementation options and considerations for GOM, should it decide to embark on this project.

This chapter also provides the country background and the lessons learned from previous and ongoing projects in Myanmar, and the broader experience and lessons learned from governments internationally. It also describes GOM’s strategic rationale for considering investment in this project, and provides an overview of GOM’s concept-level design for the project.

1.1 Study Objectives

The study’s primary objective is to conduct a financial and economic analysis of GOM’s intended investment in the digital government project. Its secondary objective is to provide an overview of critical institutional risks and political economy issues for GOM’s consideration as they plan and implement this project. The financial and economic assessment is based on the conceptual design for this $100 million by GOM. The project is the first phase of GOM’s investment in their e-Governance Master Plan, and overall digital government efforts. The concept design for this proposed project has also been developed, and is described in Appendix A.

1.2 The Myanmar Context

Country Background

Myanmar is often called a land of opportunity owing to its rich endowment of natural resources, its strategic location connecting India, China, and Thailand, and its status as the largest country in mainland Southern East Asia. However, Myanmar remains one of the least developed countries in Asia with a gross national income (GNI) per capita of $1,160, which is significantly lower than that of its aforementioned neighbors: India at $1,600; China at $7,930; and Thailand at $5,720.

Within the past decade, the country has taken significant steps to facilitate its transition into a market economy, notably through the then-Thein Sein Government’s launch of major political and economic reforms in 2011 aimed at incremental market and political liberalization. Specifically, the Government of Myanmar began implementation of a series of reforms to remove constraints on commerce, trade, and private enterprise that included the introduction of a unified exchange rate, special tax exemption for foreign investors, removal of trade restrictions, provision of greater autonomy for the central bank, and increased government transparency.

Sector Context

Myanmar has undertaken telecommunications sector reforms and experienced steep growth in mobile cell phone users in the past five years. With the support from the ongoing World Bank-financed Myanmar Telecommunications Sector Reform Project (P145534), the country’s telecommunication sector liberalization has led to transformative outcomes. The government has awarded three mobile licenses to foreign operators (Ooredoo, Telenor, and MyTel) to date. Mobile phone access has dramatically increased from 7 percent in 2012, to 106 percent in 2017. A SIM card price dropped from $2,500 in 2012, to a less than $2 in 2016. Mobile broadband users increased from 0.6 percent in 2012, to 55 percent in 2017.
The impact of this markedly improved access has been transformational in terms of economic and social empowerment at the local level, and provides the basic connectivity platform for its people and businesses to participate in the global digital economy (DE). However, Myanmar’s ability to achieve transformational outcomes is handicapped by several obstacles, particularly insufficient investment in digital government and limited participation in the growing global DE landscape. Timely interventions to overcome the two identified hurdles are needed to boost the country’s socioeconomic success.

i. Digital Government: Global indicators suggest that improving governance should remain a key priority for the full realization of development aspirations. The population’s new-found access to free and uncontrolled information through social media or internet, has also increased their expectations for improved transparency, accountability, and services by the government. The widespread access to information and communication technologies (ICT) is a unique opportunity for Myanmar to leverage digital government for economic growth. This will enable the country to leapfrog and achieve the needed improvements in government transparency, accountability, and services necessary to meet increased demands on the public sector.

As identified in Myanmar’s e-Governance Master Plan (Infosys 2015), GOM’s ICT investments and usage is currently based on agency silos. This results in duplicative and fragmented digital government infrastructure, platforms, applications, and software across the public sector. GOM is already experiencing limited management and utilization of multiple data centers and systems, challenges in the integration and sharing of data and information between their agencies, and high cybersecurity risks for the country’s critical systems and infrastructure. This comes at a significant cost to the country. Such fragmentation also does not enable effective collaboration and decision making at the political and operational levels in the government and ultimately increases costs and creates inconvenience to its people and businesses. It also undermines the delivery of economic and social services, economic management, and inclusive political processes. The country’s e-Governance Master Plan makes provisions for the development of integrated digital platforms that can be utilized across the government. However, GOM is still assessing the feasibility of investing in such platforms.

ii. Technology Disruption. The impending Fourth Industrial Revolution, which is the advent of “cyber-physical systems,” is also expected to disrupt almost every industry in every country. Specifically, it may transform existing markets and networks by displacing leading firms, alliances, and products. This revolution will be driven by rapid advances in artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, and so on. Its pace and impact will also be exponential, as it is multiplied by the network effects of billions of people who already have internet access and significant (and ever increasing) computing power in their hands. It is critical for Myanmar to be ready for this revolution.

Digital Experience to Date

The first significant ICT projects in Myanmar were initiated about 17 years ago. These were typically run by government ministries and focused on their own processes, with no effective cross-government collaboration. The current e-Government Unit within the Ministry of Transport and Communications (MOTC) was established in 2014. Since this time, a number of e-Government-related technology projects have been delivered and a number are in progress. These have been mainly enabled by loans from international organizations or other governments. There have been some achievements – such as online filing for customs agents, online application for all import and export licenses, and online application and payment for visas to Myanmar.
Current economic values of the digital market in Myanmar are limited. Assuming that the country is at the low end of latest international estimates for developing countries, then the ICT sector itself would account for about 1.5 percent of GDP (about $1 billion) and the broader economic value created by use of ICT across the economy would be about 7 percent of GDP ($4.7 billion). This is consistent with the estimates for the size of the Myanmar ICT sector in 2010 according to McKinsey Global Institute (2013, 43), and the annual growth rates which they forecasted.

Although it still lags behind other countries in the region, over the past five years, Myanmar has experienced rapid telecommunications sector reforms and exponential growth of mobile cellphone users (3G+) and smartphone usage. As of January 2017, 50.56 million SIM cards had been sold by Myanmar’s operators, providing the majority of the population with connectivity. The transformative outcomes go beyond mobile phone ownership. By April 2017, Myanmar had more than 46 million internet users – 70 percent of these accessing via mobile (Kanale 2017). The World Bank-financed Myanmar Telecommunications Sector Reform Project that has supported this progress also includes a component to establish the initial foundations for e-government, including a national portal, e-leadership and capacity building activities.

Despite this significant recent progress, Myanmar lags other countries – both in the region, and within its peer group of Lower Middle-Income countries. In fact, Myanmar’s position among a recent global digital adoption benchmarking is low. The Digital Adoption Index (DAI) in the World Bank’s 2016 World Development Report assesses countries against nine key indicators of progress in three domains: digital people, digital business and digital government. Myanmar scores 0.23 on this index – a performance level significantly below the level predicted by the country’s wealth as shown in Figure 1.1 (where the dotted line indicates the strong positive correlation globally between digital performance and GDP per head).

Analysis of the above data suggests that if Myanmar were to improve its relative performance on the digital economy to the average level being achieved now by other Lower Middle-Income countries in East Asia, this would be associated with an increased in GDP per capita of 21.6 percent. Looking more specifically at the Government of Myanmar’s own use of ICT, the United Nations’ E-government Development Index for 2016 ranks Myanmar as 169th out of 193 countries. As Figure 1.2 illustrates, this
assesses the maturity of digital government in Myanmar as below the global average and the average within Asia.

*Figure 1.2: E-Government Development Index, 2016*

Myanmar also scores below average for other Lower Middle-Income countries, as shown in Figure 1.3. Moreover, Myanmar scores below average on each of the three individual elements of the UN Index: online services, telecommunications infrastructure, and human capital.

*Figure 1.3: Myanmar and Average Lower Middle-Income Countries: E-Government Development Index, 2016*

**Strengths and Weaknesses of Myanmar’s Current Position**

Although a number of past ICT initiatives have been unsuccessful in kickstarting the transformation recognized as essential to the government’s economic and other objectives, there are multiple indicators that the environment has changed sufficiently for rapid progress to now be made.
This study consulted relevant stakeholders from a range of ministries – both ICT professionals and policy/service leaders – to obtain feedback on the key challenges facing Myanmar’s digital transformation. Several common themes emerged from this consultation, and these are summarized in Table 1.1 and Table 1.2. Table 1.1 highlights the key strengths of Myanmar’s current position as perceived by government stakeholders.

Table 1.1: Key Strengths for Myanmar to Achieve Digital Transformation

- **Strong political will**
  The e-government agenda is now led at the very highest levels of government. The newly formed e-Government Steering Committee held its first meeting in Naypyitaw on April 4, 2018, led by State Counsellor Daw Aung San Suu Kyi. The committee’s “patron” is the Vice President 2, U Myint Swe, while the two cochairs of the Working Committee are Minister of the Ministry for Transport and Communications (MOTC), U Thant Sin Maung, and Minister Thaung Tun of the Ministry of the Office of the Union Government. Members of the committee also include Deputy Minister of the President’s office, U Myint Thu, a close adviser to the State Counsellor as well as U Thaung Tin in his capacity as patron of the Myanmar Computer Federation.

  In her prepared remarks, the State Counsellor spoke about the importance of data security, combating corruption, and the need to bring the chief ministers of all states and regions on board with digital government efforts. Interestingly, she called out the failings to date of the MOTC-led e-government efforts because of “weaknesses in cooperation, coordination and communications.”

  The State Councillor personally wrote to all ministries issuing three instructions. These are:
  
  - Creation of a Chief Information Officer role in all ministries
  - Mandating the use of standardized Unicode Myanmar font at all ministries
  - Implementation of an all-of-government Electronic Document Management System (EDMS) and Government Procurement Management System (GPMS) which includes a focus on cybersecurity.

  All ministries are moving forward with e-government initiatives, including website and infrastructure development. Additionally, a central government portal is being supported by the World Bank’s Myanmar Telecommunication Sector Reform Project.

- **Commitment from the civil service**
  Consultations with ministries during the preparation of this study, expressed universally positive and enthusiastic support from government officials. In particular, there is a clear view that effectively implemented digital investment will improve the efficiency of service delivery.

- **Anticorruption and transparency agenda**
  The Anti-Corruption Commission, formed in 2014, sees the e-government agenda as a key enabler in realizing the government’s anticorruption ambitions. The current government was elected with a significant majority in 2015 and is committed to greater transparency and a reduction in corruption. The e-government agenda is seen by the government as a key enabler in this area.

- **e-Governance Master Plan**
  A high-level and comprehensive e-Governance Master Plan has been developed by the Ministry of Transport and Communications. The Master Plan provides legitimacy for all expected aspects of e-government development, and the digital investment aligns with, and supports, the objectives set out in the Master Plan.

- **Mobile penetration**
  Previous challenges to successful implementation of e-government initiatives have included electricity and connectivity infrastructure limitations. Recent infrastructure transformation, including an increase in mobile penetration from 12 percent in 2012 to 80 percent in 2017, now provides significant opportunity for e-services delivery.

- **Capacity building in ICT**
  There is a recognition across the government that capacity building (in its broadest sense) is required for the e-government agenda to be delivered successfully. In support of this, ICT training has recently been introduced by the Union Civil Service Academy (the organization responsible institution for civil service training). The World Bank’s Myanmar Telecommunication Sector Reform Project also supports e-leadership training and ICT capacity building.
Table 1.2 highlights the key barriers to be addressed as GOM takes this agenda forward, as identified by this study’s consultations.

**Table 1.2: Key Barriers to Implementing any Digital Investment**

- **Capacity and skilled resources**
  
  This is an issue cited universally as the biggest barrier to making progress by government ministries/agencies. It covers both personnel and institutional capacity across the government and includes:

  - Need for an adequately defined CIO role/structure, together with CIO posts being perceived as unattractive in terms of career progression (illustrated by inconsistency in the function and seniority of the CIO role, and with it frequently being carried out alongside other duties). Few ministries/agencies have full-time CIOs and supporting teams.
  
  - Strengthen institutional capacity, with an absence of governance, and delivery systems and processes
  
  - Need for basic digital literacy among many civil servants.

- **Fragmentation, duplication, and lack of standardization:**
  
  Many government institutions have, and continue to set up, their own infrastructure and applications. This is likely expensive, wasteful, and increases cybersecurity exposure.

  For the few shared services that have been set up, the collaborative governance to make them work has not been fully realized. For example, feedback on the cross-government document management system suggests that it is not yet being fully utilized. A comment from one agency/ministry is that they do not use it because it does not meet their needs.

  Lack of standardization (at both the technical level and the business process level) is a barrier to integrated e-government. It is of concern to government ministries/agencies and is part of the acknowledged lack of institutional capacity in this area.

- **Recruitment and retention**
  
  Another shared theme is difficulty in finding/attracting candidates for CIO posts (relating to the capacity issue above).

  Two significant impacts of this are potential overreliance on external (often overseas) contractors, together with inadequate internal resources to manage these contractors.

  The recruitment and retention difficulties for posts that are key to the effective development of Myanmar’s e-government program highlights the importance of institutional reform alongside personal capacity building and technology implementation. It also highlights the need for formalized knowledge transfer to form part of the digital investment to deliver its full potential.

- **Basic infrastructure gaps**

  Myanmar is currently not able to meet all of its electrical power requirements and fixed-line internet connectivity is limited.

It will be important for GOM to address digital transformation in a way that builds on the strengths identified in Table 1.1 and addresses the challenges outlined in Table 1.2.

### 1.3 The International Context

The challenges identified in Table 1.2 are far from unique to Myanmar. The World Bank’s 2016 World Development Report undertook a major review of global digital development trends. It found that despite rapid diffusion of digital technologies, diffusion of benefits lags behind: “Digital dividends – faster growth, more jobs and better services – have fallen short and are unevenly distributed.” The countries that are seeing greatest benefits are ones that have effective policies to address four key drivers:

- Accessible and affordable internet
• A regulatory environment that creates a vibrant business climate and lets firms leverage digital technologies to compete and innovate
• Skills that allow workers, entrepreneurs, and public servants to seize opportunities in the digital world
• Accountable institutions that use the internet to empower people.

The human and institutional capability gaps identified in Myanmar are therefore typical of the barriers to progress that many countries globally experience as they move towards the digital society.

With regard to digital government, institutional capacity issues are again commonplace internationally. In December 2010, the World Bank hosted an international symposium reviewing the experience of e-government around the world. This kicked off a year-long consultation process on best practice for digital government transformation led by the international e-government standards consortium, OASIS. That consultation process concluded that the root cause of e-government underachievement is that most investment in public sector ICT has involved overlaying technology onto the existing operating model of government: an operating model based around existing functionally oriented government departments and agencies. OASIS reported that: “The experience of governments around the world over the last two decades has been that silo-based delivery of services simply does not provide an effective and efficient approach to e-government.”

However, the OASIS review also identified emerging best practice approaches around the world that took a whole-of-government, non-siloed approach:

“An increasing number of governments and institutions are now starting to address the much broader and more complex set of cultural and organizational changes which are needed if ICT is to deliver significant benefits in the public sector. Countries such as the UK, Canada and Australia have all recently published strategies which shift decisively away from “e-Government” towards a much more radical focus on transforming the whole relationship between the public sector and users of public services” (OASIS 2012).

The international standard that has since been developed to bring these approaches together was published in 2012 (and updated in 2014) as the “Transformational Government Framework.” As the standard summarizes these best practices, their core feature is that they “take a whole-of-government view of:

• the relationship between the public sector and the citizen or business user
• the most efficient way of managing the cost base of government” (OASIS 2014).

This shift towards a whole-of-government approach has accelerated significantly over the past few years. The UN E-Government Survey 2016 reports that:

• A new trend in e-government has been the evolution towards the provision of integrated public services online through, among others, one-stop platforms allowing to access a range of public service.... Whole of Government service delivery, enabled by e-government technology, can offer people services from various public agencies bundled together as a single, joined-up service
• Along with integrated services, e-government may increasingly support policy integration and encourage the efforts of various government institutions to work more closely together.

Numerous countries have now implemented this whole-of-government approach, including Australia, the Republic of Korea, Singapore, and the United Kingdom – some of the most highly ranked governments on the UN’s E-Government Maturity Index. While pioneered by wealthier, early-adopting governments as a response to the duplication and low impact of their earlier e-government investments, whole-of-government
approaches are increasingly being deployed by less developed countries too. The UN E-Government Survey 2016 reports that nearly one in four Lower Middle-income countries have now established a one-stop digital service – often the first key step on the way to a whole-of-government approach.

**Box 1.1: Whole-of-Government Digital Transformation in India**

India is working to develop a whole-of-government service delivery and software platform, integrating both central and local government: UMANG (Unified Mobile Application for New-age Governance). Developed by the Ministry of Electronics and Information Technology (MeitY) and National e-Governance Division (NeGD), UMANG:

- Provides a single platform for all Indian Citizens to access citizen centric services, offered by central and state government departments, local bodies, and other utility services from private organizations
- Is available on multiple channels like mobile applications, web, IVR and SMS which can be accessed through smartphones, feature phones, tablets, and desktops
- Is supported by an integrated and open approach to software development being driven forward in collaboration with the developer community in India: IndiaStack. IndiaStack is a set of APIs that allows governments, businesses, startups and developers to utilize and jointly develop a suite of citizen-service applications covering identity management, payments, and transactions.

Implementing a whole-of-government approach is proven to offer strong results. It has helped governments achieve greater efficiencies, enables cross-agency coordination of resources and services and fosters one-stop governance transformation and digital service delivery – for example, in the UN E-Government Survey 2016 and in the World Bank’s 2016 World Development Report.

While the approach has yielded significant results, it also comes with challenges. The key challenges focus not on the technology but on governance. As the UN points out in its 2016 Survey: “Efforts to promote whole-of-government service delivery and policies have to be accompanied with efforts to ensure that organizational cultures, coordination mechanisms and financial and accountability systems support collaboration among public institutions.”

### 1.4 Strategic Rationale for Digital Transformation

Myanmar has an opportunity to learn from global best practice on digital transformation and to achieve higher impact at lower cost (and with faster speed) than the early adopters of whole-of-government approaches by doing so at a much earlier stage in its technology deployment.

Most early adopters of such approaches (such as the United Kingdom and Australia) did so only after many years of making significant technology investments on an agency-by-agency basis. Typically, these governments have spent hundreds of millions of dollars building up transactional e-government functionality in individual agency websites (overlaid by a government portal) only to find that much of it was wasted because take-up for digital services remained low. Only then did these governments decide to seriously start to tackle the governance challenges needed to deliver genuinely integrated and user-centric services – and all have found that their legacy of duplicated agency-level ICT investment makes this even more difficult.

GOM has an opportunity to establish the key governance processes and platforms needed for a whole-of-government approach now, before it makes large numbers of significant technology investments in digitizing transactions and common business processes within ministries. Figure 1.4 illustrates this leapfrog strategy.
Lessons learned from international experience also highlight the need for investments in digital government to be based on seven guiding principles outlined in Table 1.3.

### Table 1.3: Seven Key Principles Guiding Digital Investments

1. **Business-led not technology-led.** It will be important to ensure that any investment provides equal weight to delivery and governance in addition to technology. This will ensure that the investment is (i) demand-driven not technology-led, (ii) aligned with the Government of Myanmar’s broader vision, policies, strategies, and action plans, (iii) focused on the needs of the people and businesses who will use digitally enabled services, and (iv) based on sound political economy analysis, understanding, and action plan in order to ensure that stakeholder issues are identified and addressed.

2. **Collaborative governance and delivery.** The “build once, reuse always” whole-of-government digital platform will consist of common digital government infrastructure, platform, and software services. But the aim should not be to consolidate and centralize all IT systems across agencies. Rather, line agencies should continue to own and manage their own databases and applications but be enabled to:
   - Make use of the common platform to build or operate their systems in a more cost-effective, reliable, secure, and convenient manner
   - Focus their resources on delivering value to their internal and external constituents
   - Work collaboratively with other agencies within common governance process that are focused on understanding and meeting constituent needs in an integrated way where these cut across the organizational boundaries of different agencies.

3. **Building demand for digital in parallel with improving supply.** “Build it and they will come” approaches to digital technology mostly fail. Digital investments will need to balance improved supply of digital services with targeted actions to tackle barriers to take-up on the demand side. This will include both:
   - Building understanding, capacity and skills within agencies to create and manage digital services that leverage the digital assets created.
   - Building demand for digital services across Myanmar society, addressing key barriers to take up of digital services by people and businesses including understanding, awareness, access, and trust.

- **Phased delivery.** Any digital investment should not seek to impose rapid business change across the government. It should develop a phased and low-risk roadmap that builds agency support by delivering tangible early results and that learns from experience before major technology commitments.
- Openness and empowerment. Experience in other governments suggests that the public sector is not always best placed to drive innovative solutions to public policy problems. Where it can be done safely and securely, the investment should seek to open up its tools and services for reuse by the wider community in Myanmar – empowering universities, businesses, civil society organizations, and individual people to create new forms of public value using digital assets.

- Trust-by-design. Other governments have found that a critical barrier to more integrated digital government can be a lack of public trust. Any digital investment should therefore treat trust and privacy as much more than simply a “hygiene factor” to be managed. Digital investments should have a structured approach to demonstrate to the people of Myanmar that they will get improved levels of security, privacy, trust, and control over their personal data.

- Capacity building and strong project management. Given the complexity of the multistakeholder, cross-sectoral delivery ecosystem that will be involved in any major digital investment – coupled with the relative lack of institutional capacity and capability identified above – it will be important to establish systems that:
  - Build capabilities and skills for all those involved in delivering the digital investment
  - Give ministers and leaders full transparency of progress at all times by the wide range of delivery partners who will be involved, with early warning of potential delivery problems.

1.5 Overview of Concept Design for Proposed Project

This section provides a general overview of GOM’s proposed digital government project. This is a concept level design that is subject to GOM’s additional refinement and elaboration process. The draft design is the basis for the analytical chapters that follow.

The digital government project is a strategic, e-government investment for GOM, and the first step to implementing the country’s e-Governance Master Plan. The project speeds up Myanmar’s priority project implementation by providing a common technology platform for all ministries and departments to build their domain-specific systems and services. It also leverages the pervasive mobile network and significantly internet access to achieve the country’s socioeconomic goals. The achievement of these goals depends heavily on GOM’s ability to (i) coordinate digital investments, systems, and services at the national level, and (ii) provide quick-win digital services to Myanmar people and businesses. The project’s benefits include:

- Reducing duplication and fragmentation in ICT investments and usage across GOM’s agencies. This includes issues related to containerized data centers, silo-based applications, limited interoperability across agencies, uncoordinated cyber security protection, and risks.
- Delivering socioeconomic benefits to the Myanmar people, as highlighted in the Myanmar Sustainable Development Plan (MSDP) and 12-Point Economic Policy, through improved public service delivery.
- Enabling achievement of GOM’s socioeconomic development goals, and more effective and efficient implementation of the country’s priority projects, to deliver faster and better results to government officials, people, and businesses.

GOM’s proposed project has three components as shown in Figure 1.5.
Component 1 on Enabling Environment for Digital Government Integration: This component will review and strengthen existing digital leadership, institutional capacity building, and change management activities, so it can facilitate process and cultural changes in the government ministries and agencies.

Component 2 on Digital Platform and Services, and Demand Enablers: This component will build on the existing technical foundations to create a common digital platform consisting of basic infrastructure, platform, software, and tools. This platform is for use by any GOM agencies to develop user-centric digital services on an “as-a-service” utility model through three layers: infrastructure, platform, and software. The intent is to provide line ministries with most underlying technology components to allow for faster and more efficient service delivery while minimizing duplicative and silo ICT investments.

This component will also generate demand for the use of the digital government platform by (a) building understanding, capacity, and skills within GOM to create and manage digital services using the platform; and (b) building demand for digital services across Myanmar’s society, addressing key barriers to take-up of digital services by people and businesses including understanding, awareness, access, and trust.

Component 3 on Project Management Support: This component will support the creation and functioning of a project implementation unit (PIU) to conduct and oversee implementation activities. A project management consultant (PMC) firm will be provided to strengthen the PIU’s capacity and build sustainability. The PMC will also ensure the project’s assets and services meet the needs of their users through a digital product management function. This function will own the process of understanding the very diverse set of users’ needs for digital services, prioritizing these against policy priorities and practical constraints, and then marshalling all the technical, policy, and service design work that is needed to provide a progressively richer set of offers.

Appendix A provides additional information about the components and subcomponents of this proposed project.
2. Financial and Economic Analysis

This chapter provides a summarized description of the financial and economic analysis conducted for this digital government investment. GOM’s conceptual design for this estimated $100 million digital government project (as described in Appendix A) is used as the basis for computing the financial and economic analyses. A cost-benefit model is then developed for this analytical purpose, and the full description of this analysis is provided in Appendix B.

The chapter describes the approach to modelling the financial and economic impact, and the core principles behind this assessment. It also elaborates on the highly conservative assumptions used to ensure that the overall model systematically underestimates, rather than overestimates, likely impacts.

2.1 Benefits and Costs

This section identifies the primary and direct benefits that the Government of Myanmar will gain from this digital investment, by using “benefit mapping” methodology. The analysis begins with the high-level outcomes that the government would like to achieve in the long term. The overall strategic outcomes being targeted by the GOM in the National Economic Plan are:

- To support national reconciliation and the emergence of a united federal democratic union.
- To achieve balanced economic development across the states and regions.
- To create opportunities for the emergence of capable and skilled new generations for the benefit of the country.
- To establish an economic system that can achieve and maintain positive development outcomes through the participation, innovation, and efforts of Myanmar people.

Figure 2.1 expands on this, mapping out the detailed routes to impact by which any digital investment will contribute to the National Economic Plan. This has been developed using “benefit mapping” methodology recommended in the global open standard for whole-of-government digital transformation, developed by the Organization for the Advancement of Structured Information Standards (OASIS) “Transformational Government Framework”. It gives “line of sight” from digital investments to end socioeconomic impacts by:

- Summarizing – on the left-hand side of the benefit map – all possible activities and investments. The components in the benefit map focus on the demand-side of the market or the supply-side.
- Showing how these will combine to deliver a set of outputs – both enablers (such as technology platforms, digital services, and so on) and business changes within the Government of Myanmar.
- Showing how these business changes result in a set of intermediate outcomes and end outcomes.
- Showing how these end outcomes from a digital investment contribute to achievement of the strategic purpose of the program – supporting delivery of the MSDP and UN Sustainable Development Goals (SDGs).
Figure 2.1: Benefit Map for Digital Investment

- **Hypothetical digital investments and activities**
  - Stimulating access & use of digital by people and businesses
  - Building new digital networks and strong international connections
  - SME outreach
  - Community-based digital hubs
  - Digital services promotion

- **Enablers**
  - Tools and networks to support digital adoption
  - User-centric services and channels
  - G2B, G2C
  - Enhanced national portal
  - Service transformation

- **Outputs**
  - Digital inclusion: Myanmar people and businesses have the access, trust, and skills needed to make effective use of digital technologies in their lives and work
  - Increased capabilities within and collaboration between GOM agencies
  - Aggregated interactions with users of government services (G2C, G2B, and G2G)
  - Channel shift: increased take-up of digital services by citizens and businesses
  - Reduced corruption due to streamlined processes and increased self-service
  - Growth of ICT sector supported by Digital Government Investment

- **Business changes**
  - Better decision-making and more innovation by government agencies
  - Streamlined interactions with users of government services (G2C, G2B, and G2G)
  - Increased cyber security of government systems

- **Intermediate outcomes**
  - Growth of digital economy with more businesses using digital to innovate

- **Find outcomes**
  - Improved outcomes in key sectors for Digital Economy
  - National reconciliation and a united federal democratic nation
  - Balanced economic development
  - Positive development through the participation, innovation, and efforts of all citizens

**Key:** Route to impact — Feedback loop
Key performance indicators to measure progress at each stage of the benefit map will be developed as part of the strategy development phase of the investment. Pending this more detailed work, the following indicators in Table 2.1 will be used to assess the performance of the project.

**Table 2.1: Project indicators**

<table>
<thead>
<tr>
<th>Outputs</th>
<th>Intermediate outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Percentage of agencies using two or more platform functions developed by the Project (for example, cloud computing, cybersecurity, and enterprise architecture)</td>
<td>• Value of duplicated ICT expenditure avoided across Government of Myanmar agencies</td>
</tr>
<tr>
<td>• Percentage of government agencies using one or more shared services developed by the project</td>
<td>• Increased availability of digital services for Myanmar people and/or businesses</td>
</tr>
<tr>
<td>• Amount of ICT policy and e-legislation supported by the project</td>
<td>• 250,000 Myanmar people (50 percent women) and 5,000 businesses as demonstrative users of the digital services developed by the project</td>
</tr>
<tr>
<td>• Number of people trained (both government and private sector), and percentage of those trained who report that the training has helped them deliver their objectives better</td>
<td>• User satisfaction of the design and quality of digital public services developed by the project</td>
</tr>
<tr>
<td>• Percentage of digital services incorporating beneficiary consultation and feedback into its design</td>
<td>• Output and employment levels of ICT companies engaged in design and delivery of digital investment services</td>
</tr>
</tbody>
</table>
2.2 Analytical Framework

This section describes the overall framework used for financial and economic analysis to support the digital government project. The analysis model was developed based on an internationally recognized model, and customized to the unique environment of Myanmar. (Details on methodology, assumptions, and forecasting are provided in Appendix B.)

The digital investment benefit map (Figure 2.1) sets out the overall benefits, but it is not realistically feasible to quantify all the benefits shown in the map. Therefore, the approach to modelling the financial and economic impact of digital investment has been driven by the following principles:

- Limit the financial and economic analysis only to those elements of the benefit map shown in Figure 2.2.
- Recognize, however, that outcomes not captured here may in practice be even more significant.
- Use local data when available,
- Where local data is unavailable, develop assumptions for key variables based on international benchmarks.
- Take an extremely conservative view in all assumptions to ensure that the overall model systematically underestimates rather than overestimates likely impacts.

In the process of quantifying key elements of the benefit map, the following assumptions are used.

**Public sector productivity** gains derive from:

- cost savings and avoided expenditure from reducing ICT wastage
  - estimate current ICT annual expenditure by GOM
  - forecast of Myanmar’s ICT development for the next 10 years without the digital government project for comparison with the scenario with the project
  - forecast by reference (historic growth rates of government expenditure on digital investments (Myanmar, OECD countries for comparison)
  - develop a forecast for expenditure under the Digital Myanmar (DM) project

- streamlined back office processes and government-to-government (G2G) services
  - 20-50 percent is estimated for extra saving through the rationalization, digitization, and sharing of back office functions.

- channel shift to digital services for the people and businesses of Myanmar.

---

**Figure 2.2: Digital Investment Outcomes – Selected Impacts Quantified in this Analysis**

- Intermediate outcomes
  - Growth of digital economy with more businesses using digital to innovate
  - Streamlined interactions with users of government services (G2C, G2B and G2G)
  - Channel shift; increased take-up of digital services by citizens and businesses
  - Reduced corruption due to streamlined processes and increased self-service
  - Growth of ICT sector supported by Digital Government investment
  - GOM cost savings and avoided expenditure from sharing ICT and data

- End outcomes
  - Time and cost savings for citizens and businesses
  - Streamlined interactions with users of government services (G2C, G2B and G2G)
  - Reduced corruption due to streamlined processes and increased self-service
  - Growth of digital economy with more businesses using digital to innovate
  - Public sector productivity

- Additional Gross Value Added
Savings by channel shift from traditional manual methods to digital channels are calculated based on the total number of transactions done through the project’s e-services by Myanmar people and businesses per year.

**Increased Gross Value Added** derives from:

- time savings for Myanmar people and businesses, freeing up more productive time across the economy
- reduced corruption flowing from streamlined processes and greater transparency
- growth of the digital economy, covering both:
  - growth of the ICT sector in Myanmar
  - the economic impact of increased use of ICT to drive innovation across the broader digital economy.

The results of the financial and economic analyses are shown in Table 2.2, calculated over both a five and a ten-year period. Appendix B presents more detail on the methodology, data, assumptions, and evidence base that underpin this analysis.

### Table 2.2: Financial and Economic Metrics

<table>
<thead>
<tr>
<th>Assessment Metric (with 9.95% discount rate)</th>
<th>5 years</th>
<th>10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefit/Cost Ratio (at Net Present Value)</td>
<td>Financial</td>
<td>1.57</td>
</tr>
<tr>
<td></td>
<td>Economic</td>
<td>7.38</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>Financial</td>
<td>$39,696,399</td>
</tr>
<tr>
<td></td>
<td>Economic</td>
<td>$448,193,061</td>
</tr>
<tr>
<td>IRR</td>
<td>Financial</td>
<td>109%</td>
</tr>
<tr>
<td></td>
<td>Economic</td>
<td>295%</td>
</tr>
</tbody>
</table>
3. Other Key Considerations for Digital Government Investment

This chapter provides additional issues for GOM to consider, if the government decides to proceed with this project investment. First, it analyzes three possible institutional operating models that governments internationally have adopted to implement whole-of-government approaches to digital government, and suggests the most appropriate model based on Myanmar’s institutional and sectoral context.

The chapter also provides an initial analysis of the likely key risks for such a project, and offers possible mitigation strategies that GOM could eventually adopt. These include key risk areas related to strategic clarity, leadership, user focus, stakeholder engagement, skills, benefits realization, and so on.

Finally, this chapter also describes the likely political economy issues that GOM may have to consider for successful implementation of such an investment. It identifies the different stakeholders and risks to be managed and mitigated, and the issues that will shape stakeholder perceptions of this digital investment. The section also describes the nine critical success factors that typically impact whole-of-government projects.

3.1 Institutional Arrangements

This study notes that it will be critical to put the right institutional arrangements in place for the success of the digital investment. As the UN pointed out in its 2016 E-Government Survey, “Efforts to promote whole-of-government service delivery and policies have to be accompanied with efforts to ensure that organizational cultures, coordination mechanisms and financial and accountability systems support collaboration among public institutions.”

Significant additional work and stakeholder engagement is still needed to define the detailed institutional arrangements needed to deliver any digital investment successfully in Myanmar.

That said, it is appropriate now to take some high-level strategic decisions about the nature of the implementation and institutional arrangements that will be appropriate for Myanmar. This section of the study analyzes the three broad models that governments internationally have adopted when seeking to implement whole-of-government approaches to digital government. These three models are illustrated in Figure 3.1 and are described in more detail below.

**Figure 3.1: Operating Model Options for Digital Investments**

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Extent of Independence</th>
<th>Extent of Centralisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delegated</td>
<td>Authority distributed</td>
<td>Authority centralised</td>
</tr>
<tr>
<td>Centralised</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centralised</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared/Franchised</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Option 1: Delegated model (digital services delivered directly by every ministry and agency)**

The delegated model is the option that is most similar to the current situation in the Government of Myanmar, where agencies build, maintain, and control their own digital services. In a whole-of-government approach,
such a model would leave full delegation for digital services to individual agencies, but mandate that this must be done in compliance with a set of central standards and policies, such as:

- Compliance with a national enterprise architecture (such as the “unifying architecture” that is recommended for development as part of the Myanmar e-Governance Master Plan)
- Compliance with common “look and feel” standards to promote an integrated appearance to agencies’ digital services
- Common access to agency services through the national portal
- A requirement to use common digital shared services (for example, cloud hosting, authentication, e-payments) unless a compelling business case can be made not to do so.

The most developed example of this approach is, perhaps, in the United States where presidential mandates require government agencies to align with a highly developed federal enterprise architecture. The national portal provides a single access point to digital services, but aims to channel customers as rapidly as possible to the relevant agency website rather than deliver services within the portal itself. “One click to service” is the aspiration.

Such an approach is relatively straightforward to implement as it sits well with existing accountability and delivery structures. However, governments adopting this approach often find that compliance by agencies is patchy and slow to implement. Moreover, this model makes it more difficult to integrate services across agency boundaries, develop a single view of the customer, and cross-sell digital services and hence drive up adoption of digital services.

Option 2: Centralized model (digital services managed by one ministry)

A centralized model involves moving as many functions and resources as possible associated with the digital investment into one ministry or agency. This agency assumes ultimate responsibility and the necessary authority and budget to effect change.

The Australian Government’s Centrelink was one of the earliest international examples of the reorganization of government to facilitate more user-centric and efficient service provision in this way. Perhaps the most developed and successful model now is Service Canada. Originally informed by the apparent success of Centrelink, the Service Canada model is an example of a whole-of-government, multichannel and multicluster approach that provides an integrated experience for customers. Service Canada acts as a specialist customer service proxy for other departments and offers multichannel service delivery (phone, counter, web, and so on). This model effectively provides the Canadian government with a central service agency that gathers all customer-facing online services and supporting digital government tools into one place.

Such an approach offers significant scope for customer service improvement, higher levels of take-up for digital services and higher levels of efficiency in ICT utilization. However, it is complex and difficult to implement, requiring significant levels of change to the “machinery of government.” It also runs the risk of creating a disconnect between digital services and the business needs of government agencies.

Option 3: Shared/Franchised model (digital investments delivered through a collaborative, shared authority model)

This model is essentially a hybrid of the other two. It aims to achieve the same high degree of integration for customers as Option 2 (that is, the “One Stop Solution” offered by Service Canada, rather than the signposting portal offered by usa.gov) but without centralizing authority away from government agencies.
This hybrid model was originally developed for the U.K. government’s multichannel one-stop digital service, and is now used by many other governments around the world, for example, in Hong Kong, Croatia, New Zealand, United Arab Emirates, Queensland, and South Australia.

This model is recommended in the “Transformational Government Framework,” the only international best practice standard for whole-of-government digital transformation. The standard states that it is: “a model that permits the joining-up of services from all parts of government and external stakeholders in a way that makes sense to people and businesses, yet without attempting to restructure the participating parts of government. Conceptually, this leads to a model where the existing structure of government continues to act as a supplier of services, but intermediated by a ‘virtual’ business infrastructure based around customer needs.”

Table 3.1 quotes the overview description of the model given in this standard.

**Table 3.1: The Franchise Operating Model Given in the Transformational Government Framework**

Key features of this operating model include:

- The model puts into place a number of agile cross-government virtual “franchise businesses” based around customer segments (such as, for example, parents, motorists, disabled people).
- These franchises are owned by the government department most closely associated with that customer group, but are responsible for integrating government services for that group from all departments.
- Franchises are responsible for gaining full understanding of their customers’ needs so that they can deliver quickly and adapt to changing requirements over time in order to deliver more customer-centric services – which in turn, is proven to drive higher service take-up and greater customer satisfaction.
- Franchises provide a pragmatic and low-risk operational structure that enables functionally organized government agencies at national, regional, and local to work together in a customer-focused ‘Delivery Community’. They do this by:
  - Enabling government to create a “virtual” delivery structure focused on customer needs
  - Operating across the existing structure of government (because they are led by one of the existing “silos”) and resourced by organizations that have close links with the relevant customer segment including, possibly, some outside of government
  - Dividing the task into manageable chunks
  - Removing a single point of failure (because of the franchised, distributed nature of the model)
  - Each franchise working to a common and precisely defined operating model so as to ensure consistency
  - Working across and beyond government to manage the key risks to customer-centric service delivery
  - Acting as change agents inside government departments/agencies.

**Source:** OASIS 2014.

Figure 3.2 shows how this model is illustrated by one of the early governments to adopt the model – the Government of South Australia.
Figure 3.2: The Operating Model for Government Service Delivery in South Australia

Integral to the model is that it is introduced in a phased way over time, rather than as a “big bang” change within the government. Initially, a central team works with just a small number of pilot franchises to develop and refine the ways of working that are needed and to build confidence through early success. To illustrate with an example, two early franchises might be a “farmers franchise” based in the Ministry for Agriculture, Livestock and Irrigation and a “parents franchise” based in the Ministry of Education. Though based in their respective ministries, these would be small teams with responsibility for developing relevant and integrated digital content and services for their customer groups from all parts of government, not just from their own ministry. They would work with the central team to deliver this integrated cross-government service in a way that leverages the central digital infrastructure and that also helps to document the skills, processes, and institutional capabilities that are required to deliver citizen-centric services. This structure will allow subsequent franchises to be set up more rapidly for other customer groups. Over time, the central team would work with more ministries to progressively expand the number of franchises. Even then there will remain a need for a strong central team, setting the standards franchises must work within and monitoring quality.

Assessment of Institutional Options

Each of the above options has advantages and disadvantages.

A detailed strengths, weaknesses, opportunities, and threats (SWOT) analysis of each option is provided below. Table 3.2 synthesizes this detailed analysis into an overview of the relative merits of each option for Myanmar, assessed against three criteria:

- User benefit: which model will bring greatest benefits to Myanmar’s people and businesses?
- Government benefit: which model will bring greatest efficiencies to government?
- Do-ability: how do the models vary in terms of cost, delivery risk, and time-to-market?
### Table 3.2: Summary of Options Assessment

<table>
<thead>
<tr>
<th></th>
<th>Delegated</th>
<th>Centralized</th>
<th>Shared/Franchised</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Benefit</td>
<td>✓</td>
<td>✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Government Benefit</td>
<td>✓</td>
<td>✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Do-ability</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓ ✓</td>
</tr>
</tbody>
</table>

In summary, the Shared/Franchised model offers the best balance between distributed responsibility and centralized control, is most realistic in terms of required change, and provides a lower probability of escalating cost during implementation. Based on initial and conceptual assessment of Myanmar’s context – this is recommended as the preferred operating model for delivering the digital investment and progressing the broader e-Governance Master Plan. It will allow the Government of Myanmar to:

- Seamlessly enable the provision of an integrated digital One Stop Shop for its constituents
- Find an effective balance between agency responsibility and centralized control – one that maintains strong ownership of digital services by government agencies while at the same time enabling integration across agency boundaries
- Shift from centralized management at the early stages in the program towards a more cross-government approach as franchise capability and processes mature
- Enact substantial reform while leveraging current resources and minimizing disruption
- Limit the amount of structural change required within government
- Enable a phased, incremental and low-risk approach to delivering change
- Benefit from the availability of international precedents, standardized best practice, and sources of ongoing assistance

### Operating Model SWOT Analysis

The section above identifies three strategic options for the operating model that will drive implementation of the digital investment:

1. Delegated model (digital services delivered directly by every Ministry and agency)
2. Centralized model (digital services managed by one Ministry)
3. Shared/Franchised Model (delivered through a collaborative, shared authority model)

Table 3.3 considers each option in terms of strengths, weaknesses, opportunities, and threats (SWOT) over a range of issues that are important to the success of any digital investment.

### Table 3.3: Summary of SWOT Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Delegated</th>
<th>Centralized</th>
<th>Shared/Franchised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agencies are directly responsible for their interface with customers of their services</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agencies collectively own the solution and get tangible benefits quickly</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Agencies retain control over content and presentation</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Avoids duplication of ICT investment</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Strengths</td>
<td>Delegated</td>
<td>Centralized</td>
<td>Shared/Franchised</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
<td>-------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Can possibly use existing governance committees</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct control of the online channel by one business area</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
| Easier to achieve multichannel service integration (assuming other channels are delivered by this same central agency). Service delivery can be more consistent across channels. | | | ✓
| Has the shortest implementation period | | ✓ | |
| Interagency decision making and, therefore, bureaucracy is reduced. The organization is more agile. | | ✓ | ✓
| Is the least costly option | | | ✓
| Moderate change required | | | ✓
| Not a radical change from the current approach | | | ✓
| Ownership, budget responsibility, and benefit realization fall in agency jurisdiction | | ✓ | ✓
| Reduces confusion for customers, specifically in cases where customers are unaware of the detailed structure and machinery of government | | | ✓
| Responsibilities are clear and management is accountable and transparent | | ✓ | ✓
| The online channel is more responsive to customer needs because there is a direct line of control from strategy and management decision making to production | | ✓ | ✓
| The risk is spread among departments and agencies | | ✓ | ✓
| The risks are reduced – instead of building one large business, one small business model is built, that can be replicated and changed as required | | | ✓
| The service delivery business is “machinery-of-government change-proofed,” because customer-facing delivery structures are separate to the structures of departmental organization | | ✓ | ✓

<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>Delegated</th>
<th>Centralized</th>
<th>Shared/ Franchised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agencies must take responsibility for customer satisfaction</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
| Agencies would need to comply with centrally established operating model | | | ✓
| Centralization will require very effective partnerships with other government agencies | | ✓ | |
| Significant business transformation | | | ✓
| Complex and extremely significant change management transformation | | | ✓
| Coordinating marketing and branding is more difficult | | | ✓
| Cumbersome governance and bureaucracy, least agile on a whole-of-government level | | | ✓
| Is difficult to monitor and police compliance with standards and processes | | | ✓
| Is the most expensive option – requires large investment in government machinery reorganization | | | ✓
| Requires high level of flexibility, coordination, and collaboration | | | ✓
| Least likely to achieve successful integrated customer-centric service delivery | | | ✓
<table>
<thead>
<tr>
<th>Lengthy implementation period</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little incentive for agencies to willingly participate in whole-of-government goals, agency buy-in would need to be mandated, enforced, or coerced</td>
<td>✓</td>
</tr>
<tr>
<td>Relies on agency budget to achieve customer satisfaction</td>
<td>✓</td>
</tr>
<tr>
<td>Requires significant investment in resources for governance and processes</td>
<td>✓</td>
</tr>
<tr>
<td>The risks are all owned by one organization</td>
<td>✓</td>
</tr>
<tr>
<td>There is an upfront cost required to establish the franchise model</td>
<td>✓</td>
</tr>
<tr>
<td>Training required to operate a franchise</td>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Delegated</th>
<th>Centralized</th>
<th>Shared/ Franchised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agencies can manage production according to the best fit for their organization</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Better gather and share intelligence from every agency</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Economies of scale can be realized – franchises can be easily reproduced once the operating model is established</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The model is supported by international best practice standards</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Increases the efficiency of customer acquisition as services are effectively join-up.</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Joins up providers of services in a virtual horizontal organization which enables customer service knowledge transfer</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Over time, the process of establishing franchises and integrating services becomes easier and cheaper</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Physically locates providers of services together which enables customer service knowledge transfer</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Threats</th>
<th>Delegated</th>
<th>Centralized</th>
<th>Shared/ Franchised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agencies would need to surrender elements of control</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Agency service creep – over time agencies gradually start to establish their own internal capability again, reducing the effectiveness of the transformation.</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Distributed ownership = diluted ownership?</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy for an agency to stonewall progress</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Higher risk of being vulnerable to political climate</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>If opportunities for improved efficiency and effectiveness are not achieved, this option may increase the individual agency costs of website development and maintenance</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Involves radical transformation</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Involves substantial change management issues</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is disruptive and intrusive to agency organization</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11
3.2 Key Risks

Whole-of-government digital transformation programs typically face significant risks. As the relevant international standard (the OASIS Transformational Government Framework) explains: “Typically, these risks are not related to the technology itself – which is largely mature and proven – but rather to business and cultural changes. Such changes are integral to the business management, service management and technology management transformations required as part of a Transformational Government program.”

Based on research by multiple governments and the European Commission, the Transformation Government Framework describes nine critical success factors for whole-of-government digital government projects, each of which represents an area of significant risk if not managed effectively. This framework captures all of the key strategic risks that are identified for the digital investment, and Figure 3.3 presents a risk log for the investment structured under these headings.
The risk log rates the severity of each risk in terms of its likelihood and potential impact using a rating from 1-to-5. These two values are multiplied to calculate an overall severity rating for each risk, out of a potential total of 25. The most significant risk areas relate to skills and leadership/institutional capability, and the relationship between these and GOM’s ability to fully realize the potential benefits from any digital investment.

**Possible Mitigation of Strategic Risks**

Based on the initial and concept level design of the digital government investment described in Appendix A, this report identifies how each draft component could have mitigation strategies included in its activities to manage the relevant risks. This report identifies how the project could seek to mitigate each of the identified risks, including through phased introduction of the shared/franchised operating model recommended described.

Developing detailed plans to manage these risks will be a core function for the initial strategy and roadmap development phase of the investment. These risks could also be better managed with sufficient expertise and resources allocated to project management and effective governance. Table 3.4 provides details of the analysis. These mitigation strategies will have to be adjusted and fine-tuned as the project’s design is detailed and finalized.

<p>| Table 3.4: Summary of Risks and Mitigation Strategies |
|---|---|---|---|---|---|
| Risk # | Description of risk | Risk area | Impact (1-5) | Prob. (1-5) | Severity (I*P) | How the investment seeks to mitigate the risk |
| 1 | <strong>Vision</strong>: lack of clarity about the business changes needed at an agency level to contribute towards the overall benefits realization for the investment | 1. Strategic Clarity | 5 | 4 | 20 | ICT Governance, Capacity Building, Change/Political Economy Management and PPP: This will provide a structured approach to developing the underpinning business changes needed. |
| 2 | <strong>Centralization</strong>: too much of the work on the digital investment is managed centrally, resulting in disconnects with agencies’ business needs and a failure by agencies to take make the necessary internal business changes. | 2. Leadership | 5 | 4 | 20 | ICT Governance, Capacity Building, Change/Political Economy Management and PPP: Established international standards for ICT enabled transformation, in particular the Shared/Franchised business model provides a proven methodology for cross-government governance, management, and implementation. |
| 3 | <strong>Senior resistance to change</strong>: risk of resistance to the project from managers within Government of Myanmar ministries, once they start to understand the degree of change to the ways they currently work that integrated digital government will require. | 2. Leadership | 4 | 3 | 12 | ICT Governance, Capacity Building, Change/Political Economy Management and PPP: The Shared/Franchised business model referenced against Risk 2 provides established and detailed mechanisms that address this risk, in particular by taking a phased approach to implementation which does not seek to implement change across the whole of government at once but works with early adopters to demonstrate the benefits, build internal champions at the highest level in government, and then progressively expand. |
| 4 | <strong>Impending election</strong>: Risk of any impact that the 2020 national elections may have on implementation of and political support for the project. | 2. Leadership | 5 | 2 | 10 | ICT Governance, Capacity Building, Change/Political Economy Management and PPP: The Shared/Franchised business model referenced against Risk 2 has demonstrated that once adequate momentum for ICT-enabled change is created across government, it is able to withstand political leadership changes and that it is unaffected by machinery-of-government changes. |</p>
<table>
<thead>
<tr>
<th></th>
<th><strong>Risk</strong></th>
<th><strong>Description</strong></th>
<th><strong>Root Cause</strong></th>
<th><strong>ICT Governance, Capacity Building, Change/Political Economy Management and PPP</strong></th>
<th><strong>Software-as-a-Service and Public Services</strong></th>
<th><strong>Risk Mitigation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td><strong>User centricity:</strong></td>
<td>lack of user focus for the investment, resulting in minimal take-up of services.</td>
<td>3. User focus</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td><strong>Negative perceptions of Myanmar people:</strong></td>
<td>risk that greater integration of data and services relating to individuals is perceived as a threat to privacy, leading to resistance from civil society organizations and reduced levels of take-up of digital services by people.</td>
<td>3. User focus</td>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td><strong>Wider engagement:</strong></td>
<td>lack of engagement with wider project stakeholders across private sector and civil society, resulting in reduced impact against strategic outcomes.</td>
<td>4. Stakeholder engagement</td>
<td>5</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>8</td>
<td><strong>Adequate capability:</strong></td>
<td>lack of skills for managing a project of this complexity, exacerbated by the historic reliance on external consultants to deliver technology projects, who will struggle to manage the internal business changes needed.</td>
<td>5. Skills</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>9</td>
<td><strong>Institutional implementation and sustainability:</strong></td>
<td>lack of institutional capacity and capability to define and manage the organizational changes.</td>
<td>5. Skills</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>10</td>
<td><strong>Foreign suppliers:</strong></td>
<td>risk that overreliance on foreign suppliers to build the digital systems results in a lack of project-related job creation in the Myanmar ICT sector, undermining longer-term political support for the project.</td>
<td>6. Supplier Partnership</td>
<td>4</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>11</td>
<td><strong>Market impacts:</strong></td>
<td>the ICT infrastructure market in Myanmar is still immature. Depending on how the digital investment is designed and implemented, it could have diametrically different market impacts: on the one hand, it could help pump-prime development of a competitive market place across all elements of the market; on the other hand, it has the potential to crowd out private sector investment and reduce competition in the market.</td>
<td>6. Supplier Partnership</td>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

14
<table>
<thead>
<tr>
<th></th>
<th>Service architecture: The technical design of key components is developed from a technology-led perspective so is not fit for purpose as a whole of government solution, and does not fully take account of existing cross-government projects.</th>
<th>7. Future-proofing</th>
<th>4</th>
<th>3</th>
<th>12</th>
<th>Infrastructure and Platform-as-a-Service; Software-as-a-Service and Digital Services; and ICT Governance, Capacity Building, Change/Political Economy Management and PPP and all other components: The governance elements in Component 3 and the relationship among all three components, can be designed to ensure that technology specification, design and implementation is led by business requirements.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Lack of a “sharing culture” in government ministries makes a shift to open data and shared data difficult to achieve, with officials hoarding data because they see it as part of their personal power base.</td>
<td>7. Future-proofing</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>Infrastructure and Platform-as-a-Service; Software-as-a-Service and Digital Services ICT Governance, Capacity Building, Change/Political Economy Management and PPP and all other components: The Shared/Franchised business model, together with a SaaS offer that meets the business needs and concerns of ministries, will mitigate Risk 13.</td>
</tr>
<tr>
<td>14</td>
<td>Change inertia: lack of motivation as agencies see the investment as just another underdelivering e-government initiative which they do not have adequate expertise/resources/support to engage with.</td>
<td>8. Achievable Delivery</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>ICT Governance, Capacity Building, Change/Political Economy Management and PPP and all other components: A collaborative approach to developing business plans, requirements and implementation in this project will mitigate Risk 14. The Shared/Franchised business model provides the detailed operational framework for this.</td>
</tr>
<tr>
<td>15</td>
<td>Ambition: lack of focus and ambition on full impact of the investment with the investment only focusing on what is easy to deliver. In particular, risk that the project team focuses on procuring outputs, not delivering desired outcomes.</td>
<td>8. Achievable Delivery</td>
<td>4</td>
<td>4</td>
<td>16</td>
<td>ICT Governance, Capacity Building, Change/Political Economy Management and PPP and all other components: These key elements will mitigate Risk 15: - Benefit Realization Plan - Operating Model and Roadmap</td>
</tr>
<tr>
<td>16</td>
<td>Benefit delivery: agencies do not have governance processes developed enough to define, measure and manage the longer-term impacts that are expected of them.</td>
<td>9. Benefits Realization</td>
<td>5</td>
<td>5</td>
<td>25</td>
<td>ICT Governance, Capacity Building, Change/Political Economy Management and PPP and all other components: These key elements will mitigate Risk 16: - Benefit Realization Plan - Operating Model and Roadmap</td>
</tr>
<tr>
<td>17</td>
<td>Weak monitoring and evaluation processes result in inadequate tracking and delivery of project outcomes</td>
<td>9. Benefits Realization</td>
<td>5</td>
<td>4</td>
<td>20</td>
<td>ICT Governance, Capacity Building, Change/Political Economy Management and PPP and all other components: These key elements will mitigate Risk 17: - Benefit Realization Plan - Operating Model and Roadmap</td>
</tr>
<tr>
<td>18</td>
<td>Benefits focus/imbalance: risk that benefits of digital investment are not effectively linked to the government’s policy priorities and/or not spread equitably across a wide range of the Myanmar population, undermining longer-term political support for the project.</td>
<td>9. Benefits Realization</td>
<td>5</td>
<td>3</td>
<td>15</td>
<td>ICT Governance, Capacity Building, Change/Political Economy Management and PPP and all other components: The Benefit Realization Plan and the citizen focus/insights provides by the Shared/Franchised business model will mitigate Risk 18</td>
</tr>
</tbody>
</table>
3.3 Political Economy

This study also provides a broad and generalized overview of the likely political economy (PE) issues that GOM may need to consider for their integrated digital government investments. It is important for such crosscutting, whole-of-digital government initiatives to consider the PE context in which it will be undertaken, including how power and resources are currently distributed and contested in the domains impacted by the project and how different stakeholders’ needs, power and influence vary.

This section describes the PE context, benefits, risks, and stakeholders landscape. It also provides an example of a possible approach to analyze the forces likely to drive stakeholder attitudes, and the possible actions to translate negative perceptions into positive ones. Other aspects of PE will need to be considered by GOM for a more comprehensive and holistic analysis. These possibly include (i) detailed and methodological analysis of the PE context; (ii) stakeholder impacts, power and influences; and (iii) PE challenges from the government, social and other domains’ perspective. It is recommended for GOM to conduct a more detailed PE analysis for successful implementation of this investment.

Political Economy Context, Benefits, and Risks

The PE context in Myanmar makes this digital government aspiration both potentially more rewarding and more challenging than in other countries that have already adopted similar approaches:

- More rewarding because the integrated digital investment approach will enable limited social capital and limited technical expertise for improving public services to be used in a much more efficient and impactful way within Myanmar.

- More challenging because capacity to manage significant levels of change (both at the center and in government agencies) is weak, and because corruption remains a significant fact of life across the whole service delivery value chain in Myanmar.

Over the long term, all key stakeholder groups in Myanmar will benefit from this integrated approach to digital government:

- **Government**: will see significant efficiency and effectiveness gains with clear impacts against socioeconomic development priorities.

- **Citizens**: will no longer need to engage with fragmented and bureaucratic processes across multiple ministries, but will receive seamless service either on a self-service basis through digital channels or on a facilitated basis in their neighborhood.

- **Businesses**: will benefit from reduced bureaucracy and corruption and be empowered to develop commercial services built upon open access to government data.

- **Civil society**: will be better able to hold government to account because of improved transparency, and will be able to create new sorts of social value and innovation through open access to government data.

In the short term, however, our initial analysis suggests that several key subsegments of these stakeholder groups are likely to see the digital investment as a threat, and will work positively or passively to undermine the project. The Government of Myanmar may need to actively manage six major areas of likely political economy risks, as illustrated in Figure 3.4.
Stakeholder Landscape and Analysis

Three broad stakeholder domains are impacted by the digital investment at the top level: government; people and civil society; and business. Such domains could be broken down into eight key stakeholder groups, as shown in Figure 3.5.

It would also be beneficial for GOM to conduct a detailed analysis of the forces likely to shape each stakeholder group’s likely attitudes to the digital investment, as it proceeds subsequently with this investment. Figure 3.6 provides an example of a possible approach for analyzing two stakeholder groups, and provides examples of specific actions to translate negative perceptions into positive ones. It is suggested for GOM to conduct a complete analysis of all the stakeholder groups mentioned above during the project’s implementation under a PE management activity.
### Figure 3.6: Understanding Positive and Negative Perceptions of Different Stakeholder Groups

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Likely positive perception</th>
<th>Likely negative perception</th>
<th>How to translate potential negative perceptions into positive ones</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Citizens</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Citizens</td>
<td></td>
<td>Negative perception about the actual delivery records of past e-governance projects.</td>
<td>Early digital services should deliver tangible benefits for people to create demand and public recognition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Negative perception that benefits of are not spread equitably among people, which undermines long-term support for project.</td>
<td>Targeted action on key digitally excluded groups.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Poor IT literacy will increase dependence of many people on third parties to access e-services.</td>
<td>Provision of “assisted digital” channels.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Because of poor computer density, many people will find mobile device as a limitation to access services unless these are purpose-built for mobility.</td>
<td>Voice, video, and visual-based interface should be given priority over written text and oral voice communication.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High mobile data price coupled with low speed make the video base interface unaffordable for most people.</td>
<td>User interface design should be given due priority.</td>
</tr>
<tr>
<td><strong>Civil society and media</strong></td>
<td></td>
<td>Negative perception that greater integration of data and services relating to individual people is a threat to privacy, causing resistance and reducing the levels of take-up of services by people.</td>
<td>Policy reform and selected public investment to reduce the cost of data to make video links with government offices affordable.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Media may feel erosion of their role in sharing information as GOM becomes more effective at using digital communication.</td>
<td>Build privacy-by-design principles into the investment from the start, and communicate this clearly and consistently.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other stakeholder groups, include politicians, relevant subgroups of government officials, businesses, IT firms and associations, donors, and development partners.</td>
<td>Aim to give people greater levels of security, privacy and control over their own personal data.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide technical assistance (TA) to universities, NGOs, think tanks, and media houses to take advantage of increasing transparency and availability of growing data.</td>
<td></td>
</tr>
</tbody>
</table>
Conclusions and Recommendations

This study set out to assess three key questions in relation to digital investment in Myanmar:

• Will the digital investment deliver a significant return on investment?
• What should be the institutional considerations for any digital investment?
• What are the risks, and can they be effectively managed?

This final chapter considers three issues with regards to the investment decision for GOM – in terms of strategic rationale for the project, management of risks, and return on investment. It draws together the conclusions on these issues based on the analysis undertaken in the report and sets out the recommendations for GOM’s action in the light of these conclusions.

4.1 Strategic Rationale to Proceed with Digital Investment

This proposed digital government project represents a major opportunity for Myanmar. The country measurably lags their peers in digital development, and there is strong evidence that closing these gaps will lead to significant benefits, in terms of both:

• Transforming the efficiency, effectiveness, and transparency of the country’s public services
• Increasing economic growth, by giving Myanmar’s people and businesses the tools they need to operate effectively in the 21st century economy and connect to global markets.

The government is already focused on these opportunities, and the e-Governance Master Plan provides clear leadership on the direction in which policy should develop. However, there is a clear risk that these strategies will not achieve their aspirations. This is because Myanmar currently does not have the key digital foundations and building blocks needed to deliver these strategies. In particular, there is a need for:

• An integrated, cloud-based, whole-of-government IT platform – otherwise GOM risks seeing individual ministries and projects that will duplicate requirements for IT services. These services are common across government and should be managed at a whole-of-government level.
• Skills and capabilities needed across government ministries to manage digital services effectively. There is a risk that clear strategic leadership from ministers will not flow through into effective delivery.
• Strengthened governance structures and operating models needed to deliver effective whole-of-government digitally enabled change. The government faces a double risk: either it will continue to operate in a fragmented, slow, and duplicated way across ministries; or, it will seek to manage too much of the digital investment agenda from the center, leading to bottlenecks and a disconnect between centralized digital investments and the business needs of individual ministries. The e-Government Steering Committee led by the State Counsellor and Vice Presidents are important first steps but experience in other countries indicates that this will not be sufficient.

In summary, the strategic rationale behind the digital government investment is that it will address these critical gaps. The investment is not expected to deliver the totality of its ambitions for digital government and the digital economy by itself, but is expected to put in place the essential foundations and building blocks. The proposed investment is expected to:

• Put in place the key platform, enablers and governance process needed to deliver both the National e-Governance Master Plan, and improved services to people and businesses
• Address key capacity and capability constraints that have held back digital investments in the past, enabling all GOM investments to be deployed in the most effective and impactful way
• Provide benefits through a phased and low-risk implementation approach using proven, documented, and well-supported international standards
• Enable integrated delivery of people-centered services
• Avoid duplication of ICT expenditure through a “build once, reuse always” approach
• Future-proof all other ICT investments by building in interoperability from the outset and avoiding the development of unnecessary legacy ICT systems within ministries.
• Build sustainable capacity inside the government
• Leverage digital government as a key pillar to drive forward growth and innovation across the wider economy in Myanmar.

4.2 Low-risk Approach to Delivering Digital Transformation
The investment appears to be able to adopt a low-risk approach for delivery, if it considers the key risk and mitigations. The key strategic risks to any major digital investment delivery and its impact have been identified, with practical recommendations for mitigation that are grounded in proven international best practice and documented standards for managing whole-of-government digital transformation.

4.3 Return on Investment
This study indicates that this proposed $100 million digital investment will:

• Deliver a significant return on investment (ROI) in its own right, with the estimated $100 million investment delivering a net present value (NPV) of more than $448 million over five years and $2.8 billion over ten years.

• Provide an accelerator for all of Myanmar’s future digital projects, enabling the government to deliver all its other planned projects on digital government and the digital economy at higher impact, faster speed, lower cost, and lower risk.

4.4 Recommendations
In view of the conclusions summarized above, it is recommended that the Government of Myanmar:

1. Proceed with the proposed digital government investment, as the project is strategic for the country’s development goals, and the analysis shows a strong positive return over five and ten years. As described in this document, the project will:
   • Support the development of an effective legal, regulatory, and policy framework to support the growth of digital government and the digital economy
   • Develop common ICT building blocks for reuse by all agencies on a “build one, re-use always” basis, enabled by cloud technology and delivered to agencies as a service
   • Implement global best practice to enable collaborative, cross-agency and cross-sectoral governance of ICT and digital services
   • Enable and promote high-value digital services to demonstrate the value of integrated digital delivery of public service delivery approach to constituents, with high levels of gender-equitable take-up for those services.

2. Support the principles listed in this report that will guide the detailed design and delivery of any digital investment. In summary, these principles are:
• Business-led not technology-led
• Collaborative governance and delivery
• Building demand for digital in parallel with improving supply
• Phased delivery
• Openness and empowerment
• Trust-by-design
• Capacity building and strong project management.

3. Support the use of the shared/franchised operating model set out in international standards for digital transformation as the basis for this more detailed planning. This will provide mitigation against most of the risks identified for the digital investment, enabling GOM to build capability for citizen-centric, digitally enabled transformation within its ministries in a phased and low-risk way over time.

4. Conduct detailed risks and political economy analysis during the project’s implementation, and develop and undertake plans and mitigation actions to address these possible issues. These are decisive factors for Myanmar’s success in such whole-of-digital government investments.
Appendix A: GOM’s Digital Government Project Concept

Project Overview
The proposed digital government project is a strategic investment for the Government of Myanmar (GOM). It will speed up the implementation of country’s priority projects, and leverage the pervasive mobile network to achieve its socioeconomic goals.

The project’s objective is to develop the digital platform for public service delivery, and deliver priority public services electronically to Myanmar’s government, people, and businesses.

This proposed investment will build on the significantly improved digital connectivity and initial e-government component under the ongoing telecommunications sector reforms project supported by the World Bank, and continue and expand the country’s digital effort based on the government’s e-Governance Master Plan.

Project Approach and Beneficiaries
The project aims to achieve its objective by delivering four key changes in Myanmar’s national capabilities:

- **Digital inclusion**: Myanmar’s people and businesses will have the access, trust, and skills needed to make effective use of digital technologies in their lives and work.
- **Increased capabilities within and collaboration among government agencies**: agencies will have the skills, tools, business processes, and incentives to benefit from digital technologies and to respond effectively to customer needs and national challenges that cut across agency boundaries.
- **Integrated ICT use and cybersecurity**: government agencies will make widespread, effective, and secure use of the digital building blocks and services provided by the Digital Myanmar Project.
- **Service transformation**: the Government of Myanmar will have a “single view of the customer,” with people and businesses able to access user-centric services through an integrated, multichannel one-stop service.

The investment will also have four major groups of beneficiaries:

- **Government agencies** will see significant efficiency and effectiveness gains from the investment, including: cost savings and avoided expenditure from sharing ICT and data; improved cybersecurity; improved processes for inter-agency collaboration; and streamlined interactions with constituents (G2C, G2B and G2G).
- **Myanmar people** will no longer need to engage with fragmented and bureaucratic processes across multiple agencies, but will receive seamless service either on a self-service basis through digital channels or on a facilitated basis in their neighborhood.
- **Myanmar businesses** will benefit from streamlined services and from the reduced bureaucracy and corruption that flows from these, and be empowered to develop new commercial services built upon open access to government data.
- **Myanmar civil society organizations** will be better able to hold government to account because of improved transparency, and will be able to create new sorts of social value and innovation through improved access to government data.

Description of Project Components and Subcomponents
The project will have three components as described below.

**Component 1: Enabling Environment for Digital Transformation**

This component will review and strengthen existing digital leadership, institutional capacity building, and change management activities, so it can facilitate mindset and process changes in the government ministries and agencies. The component will also establish appropriate legislation, regulation, policies, standards, and develop the needed public-private partnership (PPP) framework for ICT partnerships.

**ICT Governance and Sustainability**

This activity would include the review, update, mainstreaming, and enforcement of organizational structure and digital leadership to facilitate the government’s transformation through the project. It will develop and mainstream the appropriate legal and regulatory framework on digital government. The policy development includes establishing a national enterprise architecture, establishing trust amongst its people, facilitating local content development and availability across all engagement channels, and implementing a common digital infrastructure, platforms, and enablers to facilitate digital service implementation and delivery.

This subcomponent will also develop a plan for the national digital infrastructure and platforms to ensure its technical, operational, and financial sustainability. The business plan will consider the cost of operating the platform, including the upgrades needed subsequently to address obsolescence of the IT assets, and to propose possible chargeback mechanisms for their use by the other agencies.

The platform’s operations should also be considered, including the sustainability of hiring staff at market rates. It will also train government employees in conceptualizing, planning, managing, and monitoring digital government services to help build technical sustainability.

The government shall develop a common data management strategy to establish the vision and actions for the public-sector agencies to harness data-related or data-dependent capabilities. The strategy shall address the handling of data as a public-sector asset to be created, stored, managed, and processed.

The capacity building program would be designed for public officers, nonprofits and commercial partners who are involved in the provision of services in each ministry. This would include chief information officers, business managers, project managers, and IT specialists. The focus will be on project management to empower, motivate, and engage each individual and obtain their buy-in into the digital government program, and enable their eventual management of their own ICT systems on the digital infrastructure and platform.

**Change and Stakeholder Management**

This subcomponent will institute a holistic change management program based on a sound political economy analysis and action plan. The change management activity will also have holistic actions needed to facilitate institutional coordination, ownership, and processes, to help the other agencies move towards the use of the common digital infrastructure and platform.

This change management activity will also assess stakeholder readiness inclusive of government entities, nonprofits, and commercial partners, determine the needed change management interventions (including communications and training), create an execution plan, and ensure adoption. It will also recommend changes to organizational structures, roles, and responsibilities, redesigning the government processes, helpdesk, and implementation assistance required to minimize resistance to change, and ease adoption.

The change management process will also assess the impact of digital government on jobs and provide a mitigation plan and measures (including training and redeployment) to minimize such impacts.
For the government to be responsive to changes, it should institute the agile management methodology which serves as an iterative, incremental method of managing the design and build activities of engineering, information technology, and other business areas. The intent is to introduce new processes and digital services in a highly adaptable and responsive manner.

**Internal GOM Service Enablement**

This subcomponent will help GOM agencies to build the skills to develop and manage user-centric digital services, such as public service design, capacity, and business processes needed for design. In addition, the necessary technical assistance will be brought in for sector-specific services, including climate change adaptation and mitigation. It will do so both by building capacity within key individual agencies and building GOM’s overall capacity to identify and respond to customer needs that cut across agency boundaries.

Within key GOM agencies, it will train government employees in conceptualizing, planning, managing, and monitoring digital government services to help build technical sustainability, and in managing their data in a way that facilitates easy sharing and interoperability with other GOM agencies and the public. The capacity-building program would be designed for public officers who are involved in the provision of services in each ministry. This would include chief information officers, business managers, project managers, customer insight managers, and IT specialists.

**People and Business Enablement**

The project will carry out a mass awareness and usage promotion campaign on its digital services available to the public, for people and businesses to be initial users. The demonstration effect is expected to be particularly effective for users of the integrated digital services, as such types of coordinated services are only possible online. The campaign will increase awareness and usage for 2.5 million people (including 50 percent women) and 25,000 businesses. People and businesses from urban and rural areas will be equally targeted on average, to strengthen digital inclusiveness.

People’s feedback will be used to identify the key services of interest at its initiation in year 1, to prioritize the digital services for development in this project and establish a baseline measurement of use and satisfaction rating with selected public services.

Engagement surveys will also be carried out during midterm and/or year 3 of this activity, to provide a feedback loop to validate the digital services delivered or reprioritize the remaining digital services for development. Surveys will also be carried out at the end of this activity and/or year 5 to validate digital services usage and satisfaction ratings.

This activity will also conduct an analysis of the gender gap in ICT access, conduct gender-informed feedback gathering (for example, focus groups with women), identify the challenges women face in accessing such digital services, and develop and carry out actions to enable the targeted women’s access and use of the digital services. It will collaborate with the relevant GOM agencies on gender mainstreaming as needed, to enable the 50 percent women’s participation target as users in these digital services. This market engagement activity will also include capacity building for small and medium enterprises (SMEs) and civil society organizations.

**Component 2: Digital Platforms, Enablers and Services**

The digital government agenda aims to co-create with its constituents to provide quality information and digital services, connect with people on public policies and to increase public sector efficiency. The GOM recognizes the internet as an important avenue to deliver information and services to the public. The GOM seeks to provide its people with an integrated experience across government-related information and
services, while establishing technical standards, common digital tools and building capabilities to support
government ministries and line agencies in improving their online presence. Leveraging the high mobile
phone penetration in Myanmar, the government will focus on implementing more value-adding mobile
services.

Millions of Myanmar people use the internet, with better broadband connections and increased mobile
phone usage. The Myanmar people are heavily engaged in social media platforms, for example, Facebook,
and Viber, to express their personal views, suggestions, and complaints on various topics. The GOM seeks to
widen and deepen online engagement efforts and utilize social media platforms to engage its people.

Public consultation will be an important tool for the GOM to draw upon when shaping the country’s public
policies or developing new initiatives and schemes. The GOM will identify online initiatives to drive e-
consultation exercises for its people and to encourage e-participation, through easy-to-use services to gather
feedback.

At the heart of an efficient GOM is a collaborative one that operates in an environment which supports inter-
organizational collaboration facilitated by digital technologies. To keep pace with the opportunities
presented with new technological developments, the GOM could establish common infrastructure, platforms,
and services to provide a resilient and secure ICT environment, where government ministries and line
agencies could “rent” computing resources on demand and pay based on actual usage, allowing them to
flexibly scale up or downsize technical operations based on real-time needs. This will transform the way the
GOM conceptualize, design, develop, and deploy applications and services in the future.

**Digital Platforms and Enablers**

This subcomponent will provide cloud computing services to allow all government entities, nonprofits, and
commercial partners to develop, run, and manage their own databases and applications without the
complexity of building and maintaining the infrastructure and platform typically associated with developing
and launching such applications. The “build once, reuse everywhere” digital infrastructure will be based on
global cloud computing approaches, and consists of commonly needed Infrastructure, Platform, and
Software as a Service (IaaS, PaaS, SaaS).

Government entities, nonprofits, and commercial partners will continue to own and manage their own ICT
systems but would make use of the common digital infrastructure and platforms to build or operate their
digital services and systems in a more cost-effective, reliable, secure, and convenient manner, and to deliver
value to their internal and external constituents. For example, the line agencies’ ICT systems would be hosted
on the platform’s cloud service; ministries and agencies can use the digital platform’s standards and
messaging service buses to connect their own applications seamlessly, or with other agencies if desired.

Government entities and external stakeholders inclusive of commercial and nonprofit entities would also be
able to build their digital services quickly and reliably using the platform’s digital service enablers, such as
online authentication, online payment, SMS gateway, and so on.

The infrastructure and platforms would be based on open architecture and standards which facilitates
integration with other trusted commercial services to create value and convenience to the Myanmar people
and enterprises. The subcomponents are:

1. **Infrastructure as a Service (IaaS):** IaaS is a form of cloud computing that provides virtualized computing
resources over the internet. The IaaS subcomponent would consolidate and strengthen the
government’s National Data Center. It will also virtualize the National Data Center’s resources into a
cloud-based service for use across government on a service-oriented and financially sustainable basis.
This cloud-based facility will not duplicate any existing datacenter development efforts but aims to (i)
support the need for redundancy for critical infrastructure; and (ii) provide increased data center bandwidth to support the increase in digital service utilization.

II. Platform as a service (PaaS): PaaS is a category of cloud computing services that provides an application platform allowing government agencies to develop, run, and manage their own applications, without the complexity of building and maintaining the infrastructure typically associated with developing and launching such applications. The PaaS will comprise the following subcomponents:

- **Social Digital Experience Platform.** A social mobile experience platform provides the capabilities to deliver a variety of user-facing digital experiences, for example, internet and mobile. As the government utilizes ICT for public service delivery, it becomes increasingly important to interact with constituents at every stage of their lifecycle. With a social mobile experience platform, the government and its commercial stakeholders can co-deliver constituent-centric information and services on mobile and internet channels and draw insights from the digital interactions through mobile, websites, call centers, customer portals, and other touchpoints. By monitoring where transactions are carried out, the government can identify opportunities to make those touchpoints easier to use and more valuable to them, hence enriching the constituent’s digital experience.

- **National digital service enablers.** The implementation of digital government would require a set of “build once, reuse everywhere” common enablers to accelerate implementations at lower cost. It will focus on the following national digital service enablers:

  i. **Cybersecurity enablers.** The subcomponent focuses on strengthening the National Data Center against cyberattacks, strengthening the government-wide network, addressing end-point security issues residing at the ministries’ end, establishing a digital forensic lab, strengthening the Government Security Operation Center and protecting the critical information infrastructure.

  ii. **Identity and privacy management.** This includes developing a framework within the GOM that the customer has existing relationships with, and those who manage identities on their customers’ behalf with a clear business model for mutual trust among all parties for the customers’ benefit and improved online experience. For example, identity management will be used to identify beneficiaries that can avail government social programs and target them as appropriate.

  iii. **Single sign-on/authentications.** This will simplify registration by providing single sign-on capability so that locals and businesses can use the same single sign-on to transact with different government ministries and line agencies and are only asked for the login and password once in the process. This will help improve the people and business experience with government services.

  iv. **Data exchange “hub.”** This will establish a government-wide “hub” to facilitate data exchanges between ministries and line agencies in a “hub and spoke” arrangement rather than building multiple point-to-point exchanges.

  v. **Open API.** This aims to facilitate communication and interaction between digital service applications. Open APIs are accessible to entrepreneurs and private firms outside of the government, to create new and often unexpected innovation by enabling core public sector digital services to be “remixed” to create more value for the people.
vi. **e-Payments.** This aims to simplify setting up e-payment arrangements for transactions with the government to people and businesses, including the use of e-payment methods such as credit cards and debit cards.

vii. **Data analytics.** To establish a data analytics program in partnership with one or more leading governments and private sector players to develop institutional capacity for leveraging data analytics for public sector usage.

viii. **Delegated authorizations.** This will enable users to authenticate and delegate authorities to other trusted parties. This enabler is valuable for the disabled and elderly or those people who delegate their government affairs to spouses or professionals.

ix. **SMS gateway.** This gateway will facilitate the sending of SMSs which would be of value to notify people and businesses on e-transaction statuses, appointment notices, reminder notices, and emergency alerts.

**Digital Services**

This is an activity to develop high-value digital services. It will serve to demonstrate the value of online public service delivery to constituents and enable the country to realize the initial benefits of taking such an approach. The project will conduct consultations with public sector stakeholders to finalize these demonstrative services. The preliminary shortlist of services includes:

- **Government-to-People**
  - A People’s Daily Life comprising essential public services most frequently used by the people.
- **Government-to-Business (contributing towards the digital economy agenda)**
  - Online business and company registration
  - Online licenses and permits registration
  - e-procurement system
- **Government-to-Employee**
  - Enhancing the Government Personnel Management System
  - Enhancing the Electronic Document Management System
  - Scaling the Government Email Service

During the project preparation phase, MOTC will reference the e-Governance Master Plan to identify more priority projects and solicit ministries’ inputs through stakeholder workshops. Proper due diligence will be conducted to ensure the identified projects contribute towards MSDP’s goals.

**Digital Government Service Enablement Fund**

Under the Digital Government Service component, a funding resource will be established for ministries and agencies to procure consultancy and implementation services, to develop and offer at least 20 MSDP digital services. Government entities, nonprofits and commercial partners will be encouraged to submit proposals to MOTC to seek funding support in conceptualization, specification writing, implementation, and promotion of digital services.

The funding criteria to qualify for digital services support will require utilization of government’s shared digital government infrastructure and services, and incorporation of positive digital government practices. These criteria are expected to include the digital service’s use of the cloud computing resource at the National Data Center, compliance with cybersecurity policies and practices, conducting digital service publicity, and so on. The criteria would also require a participatory approach in designing the digital services, given the
need to hear the beneficiaries’ voice and input on functionality and simplicity of the designed systems, and to ensure that these digital services will meet the needs of the targeted groups.

The government could explore innovative procurement approaches to digital service development. The government could reach out to local startups, tertiary institutions, and ICT industry for ideas to solve specific problems rather than prescribing a predefined solution through tender.

This centrally managed fund disbursement, with a decentralized implementation approach, will enable the government to implement multiple digital services concurrently while ensuring the compliance of standards and utilization of shared ICT infrastructure.

**Digital Services Promotion**

The project will carry out a mass awareness and usage promotion campaign on its digital services available to the public, for these people and businesses in Myanmar to be demonstrative initial users. The campaign will increase awareness and usage for 250,000 people (including 50 percent women). The targeted people will be 50 percent each from urban and rural areas to strengthen digital inclusiveness and 25,000 local enterprises.

Demographic segmentation of these piloted people and enterprises will be carried out to match their specific needs to the available digital services. From the people and enterprise engagement perspectives, this activity will conduct engagement surveys at key milestones in its duration. The feedback will be used to identify the key services of interest at its initiation in year 1, to prioritize the digital services for development in this project and establish a baseline measurement of use and satisfaction rating with selected public service services.

Engagement surveys will also be carried out during midterm and/or year 3 of this activity, to provide a feedback loop to validate the digital services delivered or reprioritize the remaining digital services for development. Surveys will also be carried out at the end of this activity and/or year 5 to validate digital services usage and satisfaction ratings.

This activity will also conduct an analysis of the gender gap in ICT access, conduct gender-informed feedback gathering (for example, focus groups with women), identify the challenges women face regarding accessing such digital services, and develop and carry out actions to enable the targeted women’s access and use of the digital services. It will collaborate with the relevant ministries and third party intermediaries. For example, post offices, cyber cafes, and telecenters on gender mainstreaming as needed, to enable the 50 percent women’s participation target as demonstrative users in these digital services.

**Product and Innovation Management**

This subcomponent will have overall responsibility for ensuring that the project’s assets and services meet the needs of their users. The product and innovation management function will own the process of understanding the diverse set of people’s needs for digital services, prioritizing these against policy priorities and practical constraints, and then marshalling all the technical, policy, and service design work that is needed to provide a progressively richer set of offers. This subcomponent will also assist GOM in technical assessment of the ICT-related policies, regulations, and guidelines.

**Component 3: Project Management Support**

This component will support the creation and functioning of a project implementation unit (PIU) to conduct and oversee implementation activities. A project management consultant (PMC) firm will be provided to
strengthen the PIU’s capacity and build sustainability. The PIU will support MOTC to provide regular updates and table strategic cross-government issues for decision making at the e-Government Steering Committee. The component will also setup and support the operations of a digital government project steering committee (DMSC) and project working group (DMWG). The DMSC and DMWG will provide overall strategic guidance and ensure successful implementation, and closely monitor the activities of the project, guide the PIU, and provide the project team with technical and policy support.

The PMC will have an added responsibility for ensuring the project’s assets and services meet the needs of their users through a digital product management function. This function will own the process of understanding the diverse set of users’ needs for digital services, prioritizing these against policy priorities and practical constraints, and then marshalling all the technical, policy, and service design work that is needed to provide a progressively richer set of offers.

**Top Level Project Plan**

A high-level plan for the proposed digital investment is illustrated in Figure A.1. This is indicative only at this stage, because the detailed work to develop a delivery roadmap will be undertaken in the initial phase of the project.

![Figure A.1: Top-level Project Plan](image)

The overall approach in undertaking this detailed planning will be guided by the international best practice standard for Whole-of-Government Transformation (the OASIS TGF), and specifically the component of that standard titled [B10] Roadmap for Transformation (OASIS 2104). Based on experience in planning and delivering this sort of approach in other governments, the standard recommends a phased approach, typically consisting of these five phases. The phasing is designed to:

- Ensure that the investment delivers quick wins at an early stage, in order to demonstrate value to constituents and build support for and belief in the project. Quick wins in the context of the digital government project are likely to involve rapid development of user-centric content for specific constituent groups, including businesses in those sectors prioritized by the digital economy strategy, using existing portal infrastructure.

- Avoid risky “big bang” approaches to implementation, and instead pilot, learn from experience, and scale up over time.

**Table A.1: Summary of the Five Phases for a Whole-of-Government Digital Transformation Roadmap Recommended in the OASIS TGF Standard**

- **Plan:** The preparation and planning needed to develop a tailored delivery roadmap for the government, to ensure that the business case for integration and transformation is fully articulated, that all key stakeholders are on board, that a migration strategy towards open, service-oriented ICT architecture is in place, supported by a clear commercial, procurement, and supplier partnership strategy.
• **Initiate:** In this first phase of delivery, the focus is on building maximum momentum behind the roadmap for the minimum of delivery risk. This means focusing in particular on three aspects:
  - Some early quick wins to demonstrate progress and early benefits, for a minimum of delivery risk
  - Embedding the roadmap in effective governance structures and processes
  - Selecting effective delivery partners.

• **Deliver:** In this phase, some of the more significant investments start coming on stream, including the key platforms needed to enable open and shared data and “one-stop” service delivery, along with the first wave of transformation projects from champion/early adopter agencies.

• **Consolidate:** In this phase, the focus shifts towards driving take-up of the initial services, expanding the initial one-stop service over more channels, learning from smart data and user feedback, and using that feedback to specify changes to the business and technology architectures being developed as longer term, strategic solutions.

• **Transform:** Finally, the program looks to build out the broader range of e-transformation projects, drive forward the migration of all major customer-facing services towards the new one-stop channels, and complete the transition to the full strategic ICT platform needed to guarantee future agility as business and customer priorities change.

**Dependencies**

The digital investment will engage with, build on, and integrate with a significant set of existing and planned initiatives. Building the roadmap and operating model that enables effective management of these dependencies will be a core task for the strategy development phase of the investment. Key existing and planned projects that may impact on or be impacted by the project are highlighted in Table A.2. A dependency management plan is to be developed as part of the project roadmap.

<table>
<thead>
<tr>
<th>Ministry/agency</th>
<th>Project</th>
<th>Status</th>
</tr>
</thead>
</table>
| Ministry of Commerce | • Various online applications, covering more than 10 services and five websites (includes export/import licensing)  
• Company registration service with e-payment facilities                                                                 | • Operational  
• Planning       |
| Ministry of Construction | • Ministry of Finance and Central Bank joint project to implement a cash card  
• Implementation of toll tax collection system on highway using RFID and prepaid system  
• National GIS (National Spatial Area Data) system, with other agencies in the same ministry  
• Land management system                                                                 | • Planning  
• Planning  
• Planning       |
| Information Technology and Cyber Security Department | • Data center project (with Korean assistance)  
• Myanmar National Portal Project  
• Various cybersecurity projects                                                                 | • Operational  
• Operational  
• Waiting for cybersecurity law to be passed by parliament |

Table A.2: Key Existing and Planned Projects Relevant to Digital Government Project
| Ministry of Planning and Finance | • Digital Economy Development Committee  
  • Myanmar Custom Department – Myanmar Automatic Cargo Clearance System (MACCS) | • Operational  
  • Operational |
| Ministry of Electricity and Energy | • Data sharing project | • Planning |
| Ministry of Labour, Immigration and Population | • E-Visa System  
  • Smart ID pilot project | • Operational  
  • E-ID cards being piloted now in four pilot areas |
| Union Attorney General’s Office | • Law database (for use in the justice system)  
  • Online information and notification system | • Planning  
  • Planning |
| e-Government Steering Committee, Ministry of Transport and Communications | • e-Governance Master Plan | • Awaiting final approval to implement |
Appendix B: Methodology Underpinning Financial and Economic Analysis

This appendix describes the detailed cost-benefit model that has been developed to support the digital investment. It is not currently feasible to quantify all of the benefits shown in the benefit map (see Figure 2.1).

The approach to modelling the financial and economic impact has therefore been driven by the following principles:

- Limit the financial and economic analysis only to those elements of the benefit map shown in Figure B.1.
- Recognize that outcomes not captured may in practice be even more significant.
- Use local data when available.
- Where local data is unavailable, develop assumptions for key variables based on international benchmarks.
- Take an extremely conservative view in all assumptions to ensure that the overall model systematically under-estimates rather than over-estimates likely impacts.

*Figure B.1: Digital Investment Outcomes – Selected Impacts Quantified in this Analysis*
As stated earlier for purposes for determination of the rates of return, a hypothetical $100 million investment has been assumed, based on the project’s concept design. The methodology is based on an internationally used model, tailored to the specific circumstances of Myanmar, comprising four sections.

- Section 1 considers the data, assumptions, and evidence base that supports the model.

The following sections then describe the methodology by which the study has quantified key elements of the digital investment benefit map shown in Figure B.1.

- Section 2 considers public sector productivity gains flowing from:
  - cost savings and avoided expenditure from reducing ICT wastage
  - streamlined back office processes and G2G services
  - channel shift to digital services for the people and businesses of Myanmar.

- Section 3 examines increased gross value-added flowing from:
  - time savings for Myanmar’s people and businesses, freeing up more productive time across the economy
  - reduced corruption flowing from streamlined processes and greater transparency
  - growth of the digital economy, covering both:
    - growth of the ICT sector in Myanmar
    - the economic impact of increased use of ICT to drive innovation across the broader digital economy.

Finally:

- Section 4 presents the detailed cost-benefit forecasts over five and ten-year periods that arise from this methodology.

**Data, Assumptions and Evidence Base**

Key variables used in the financial and economic analyses are described in Table B.1.

<p>| Table B.1: Key Variables used in the Financial and Economic Analysis |</p>
<table>
<thead>
<tr>
<th>Variables</th>
<th>Value used for Myanmar</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Value Added</td>
<td>$ 61,305,977,859</td>
<td>We have assumed that the ratio of GVA to GDP is the average for other Lower Middle-Income Countries in East Asia: 91.9%. (Average in 2016 across Cambodia, Indonesia, Lao, Mongolia, Vietnam).</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>$1,275</td>
<td>World Development Indicators. Current $, 2016.</td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>6.5%</td>
<td>World Development Indicators. 2016.</td>
</tr>
<tr>
<td>Exchange rate used to convert 1 kyat into U.S. dollars</td>
<td>0.001</td>
<td>World Bank (K per $, average for 2016 = 1,234.9).</td>
</tr>
<tr>
<td>Exchange rate used to convert sterling prices into U.S. dollars</td>
<td>1.35</td>
<td>World Bank (£ per $, average for 2016 = 0.74).</td>
</tr>
<tr>
<td>Discount rate for NPV calculation</td>
<td>9.95%</td>
<td>Myanmar Central Bank discount rate (source: CIA World Factbook).</td>
</tr>
<tr>
<td><strong>People and businesses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total population</td>
<td>52,885,223</td>
<td>World Development Indicators. 2016.</td>
</tr>
<tr>
<td>Number of adults (15 +)</td>
<td>38,606,213</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>World Development Indicators. 2016.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of an hour of an employee’s time</td>
<td>$0.64</td>
<td></td>
</tr>
<tr>
<td>Based on World Bank data on per capita income, with an assumed 40-hour week over 50 weeks per year.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of an hour of nonworking time</td>
<td>$0.12</td>
<td></td>
</tr>
<tr>
<td>Here the study has used the above value, scaled down by the factor recommended in the U.K. government’s guidance on the business case for e-government (one hour of lost working time should be valued at £20, and one hour of nonworking time at £3.74.).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of contacts between GOM and an average customer each year</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Analysis undertaken for the U.K. government in 2009 gives a range of 6-24 transactions per year, and an average of 11 identity-check transactions occurring annually. The study has used this value in its analysis.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Channels

| Estimated proportion of customer contacts by channel: | |
| Manual/government office | 99% |
| Self-service digital | 1% |
| This channel split is estimated, because information on the degree of take-up of existing e-services is extremely patchy. However, Myanmar is at an early stage of e-government. Very few e-services exist, most that do are for business users rather than individuals, and the overwhelming majority of services are still delivered through manual processes involving face-to-face contact with government officials. Myanmar does not have a network of community-based access facilities for e-government, so assisted digital is currently a nonexistent channel in Myanmar. |

| Estimated cost of a customer contact by channel: | |
| Manual/government Office | $0.11 |
| Self-service digital | $0.01 |
| These costs use average values taken from UNDP-funded impact assessments of over 100 digital government services in Asia. |

| Minutes saved for user when a manual transaction shifts to digital self-service | 234 |
| Based on UNDP-funded evaluation which found the average time taken for a manual service was 249 minutes, reducing to 15 minutes via a national portal. |

| Percentage of government employees engaged in front office activity | 72% |
| The starting point is the analysis of Myanmar government employment set out in Conceptualizing Public Sector Reform in Myanmar (Hook, Than, and Ninh 2015). This shows that the Ministry of Education is the largest ministry, with a staff of 336,600, primarily teachers (38 percent of the civil service). The three ministries that comprise agriculture, forestry and fisheries have a staff of 107,980 (12 percent), who are primarily state enterprise employees and field workers. The Ministry of Health has a staff of 58,110 who are primarily health workers (7 percent). These three sectors comprise well over half of the civil service, and it is estimated that 90 percent of them are in front line roles. A 50/50 split between back office and front office is assumed for other ministries. |

| Percentage of government employees engaged in back office activity | 28% |
| As above |

### Government expenditure

| Total government expenditure, 2016 | $10,990,000,000 |
| CIA World Factbook estimate for 2016. The CIA estimate is consistent with the growth trend estimated by GOM published in the "Myanmar Public Expenditure Review, 2015", a one-off analysis which estimated that government expenditure grew from $2.5 billion in 2008 to $9.4 billion in 2014. |
| Number of FTEs employed by the government | 900,000 |
| Conceptualizing Public Sector Reform in Myanmar (Hook, Than, and Ninh 2015). This report quotes data produced by the MNPED Project Appraisal |
and Performance Review Department, and covers government employees engaged under the Civil Service Personnel Act.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Monthly Pay Scale (MMK, '000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Salary before March 2015</td>
</tr>
<tr>
<td>15</td>
<td>270 – 350</td>
</tr>
<tr>
<td>12</td>
<td>220 – 300</td>
</tr>
<tr>
<td>11</td>
<td>200 – 210</td>
</tr>
<tr>
<td>10</td>
<td>180 – 190</td>
</tr>
<tr>
<td>09</td>
<td>160 – 170</td>
</tr>
<tr>
<td>08</td>
<td>140 – 150</td>
</tr>
<tr>
<td>07</td>
<td>110 – 165</td>
</tr>
<tr>
<td>06</td>
<td>100 – 110</td>
</tr>
<tr>
<td>05</td>
<td>99 – 104</td>
</tr>
<tr>
<td>04</td>
<td>93 – 99</td>
</tr>
<tr>
<td>03</td>
<td>87 – 92</td>
</tr>
<tr>
<td>02</td>
<td>81 – 86</td>
</tr>
<tr>
<td>01</td>
<td>75 – 80</td>
</tr>
</tbody>
</table>

The median figure was used from the new salary structure published by the Government of Myanmar in March 2015, as shown in Conceptualizing Public Sector Reform in Myanmar (Hook, Than, and Ninh 2015): 215,000 kyat per month, or 2.58 million kyat per year.

Methodology for Assessing Impact on Public Sector Productivity

Cost Savings and Avoided Expenditure from Reducing ICT Wastage

The methodology:

- Estimates current ICT annual expenditure by the Government of Myanmar
- Forecasts how this will develop over ten years in the absence of the digital investment, in order to create a baseline cost position against which the digital investment scenario should be compared
- “Sanity checks” this forecast by reference to i) historic growth rates in Government of Myanmar expenditure and ii) current levels of expenditure on digital government by OECD countries
- Develops a forecast for expenditure under the digital investment, based on low end of savings reported by other governments

a) Estimate Current ICT Annual Expenditure by the Government of Myanmar

As with many governments, this data is not readily available for Myanmar. Neither the Ministry of Planning and Finance nor the MOTC have central information and individual ministries do not publish details. IT costs are typically contained under other more general headings with ministry budgets.

This lack of data on ICT expenditure is common across most governments.

The most comprehensive and robust multicountry data has been developed through one-off reviews undertaken by the European Commission (eGovernment Unit 2006) (looking at 25 European countries) and the OECD (2013) (20 countries). These found total ICT expenditure by government represented 0.31 percent of GDP (in Europe) and 0.35 percent of GDP (OECD). Taking the lower of these results and applying it to Myanmar, this would suggest annual ICT expenditure across all organizations in the Myanmar public sector of $944 million.¹⁰

However, this is likely to be an overestimate. Myanmar is less advanced than European countries on the “Online Services” component of the UN’s E-Government Development Index which measures the sophistication of a government’s e-service provision. The average European score on this measure is 0.7241, whereas Myanmar scores only 0.1594.
The study has therefore weighted its estimate for Myanmar government ICT expenditure to reflect this proportional difference in performance in a proportional difference of expenditure by the Myanmar government. This suggests a total cross-government expenditure in 2016 on digital government of $208 million, equivalent to 1.9 percent of total government expenditure or 0.3 percent of GDP.

The study believes this is a cautious assumption, probably leading to an underestimate of Myanmar government ICT expenditure (because in practice there are likely to be other factors in addition to spending differences that account for the different UN rankings between Myanmar and Europe).

b) Forecast How This Will Develop Over Ten Years in the Absence of the Digital Investment

Our baseline assumption is that overall government expenditure will grow at same rate as forecast growth for GDP, and that the proportion spent on digital government will remain constant within that.

This results in predicted annual expenditure on digital government in 2027 of $507 million, as illustrated in Table B.2.

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual GDP growth rate</th>
<th>Government expenditure ($ million)</th>
<th>Digital government expenditure ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>6.5%</td>
<td>10,990</td>
<td>208</td>
</tr>
<tr>
<td>2017</td>
<td>6.90%</td>
<td>11,748</td>
<td>222</td>
</tr>
<tr>
<td>2018</td>
<td>7.20%</td>
<td>12,594</td>
<td>238</td>
</tr>
<tr>
<td>2019</td>
<td>7.30%</td>
<td>13,514</td>
<td>255</td>
</tr>
<tr>
<td>2020</td>
<td>7.0%</td>
<td>14,456</td>
<td>273</td>
</tr>
<tr>
<td>2021</td>
<td>7.0%</td>
<td>15,464</td>
<td>292</td>
</tr>
<tr>
<td>2022</td>
<td>7.0%</td>
<td>16,543</td>
<td>313</td>
</tr>
<tr>
<td>2023</td>
<td>7.0%</td>
<td>17,697</td>
<td>334</td>
</tr>
<tr>
<td>2024</td>
<td>7.0%</td>
<td>18,931</td>
<td>358</td>
</tr>
<tr>
<td>2025</td>
<td>7.0%</td>
<td>20,252</td>
<td>383</td>
</tr>
<tr>
<td>2026</td>
<td>7.0%</td>
<td>21,664</td>
<td>409</td>
</tr>
<tr>
<td>2027</td>
<td>7.0%</td>
<td>23,175</td>
<td>438</td>
</tr>
<tr>
<td>2028</td>
<td>7.0%</td>
<td>24,792</td>
<td>469</td>
</tr>
</tbody>
</table>

The study then assessed the plausibility of this forecast, first, by referencing historic growth rates of government expenditure.

Historic data on government expenditure in Myanmar is not available in the World Bank’s World Development Indicators. The study therefore developed the chart in Figure B.2 using:

1. Data for 2007-08 to 2013-14 that is published in the Myanmar Public Expenditure Review, 2015
2. For 2016, the study used data from the CIA World Factbook; with 2016 extrapolated through trend analysis.

Comparing this growth to that in the forecast model developed for the baseline assessment – the study finds that:

- The forecast growth multiple in the nine years from 2018 to 2027 in this model is 1.7
- The actual historic multiple over the previous nine years was 4.3

This suggests that the baseline forecast is highly conservative compared to experience over the past decade.
The study has also checked the forecast level of digital government against current levels of expenditure on digital government by OECD countries. As Figure B.3 shows, the baseline forecast would only take Government of Myanmar expenditure per employee up to the lowest levels of OECD expenditure today.

*Figure B.3: Comparisons of Per Capital Expenditure Per Central Government*

Again, this provides confidence that the study’s baseline cost projection is reasonable and conservative.

d) Forecast for Expenditure with Digital Investment

There is increasing evidence that more integrated and service-oriented management of public sector ICT at the whole of government level delivers significant savings. For example:

- The U.S. government is currently deploying IaaS which will provide about $20 billion in cloud computing services to more than 25 of its agencies. The transition from an agency-owned IT infrastructure to the IaaS platform is expected to deliver benefit-cost ratios of approximately 7:1 (Jackson 2011).

- In 2009, the U.K. government’s efficiency review (HM Treasury 2009) quantified the level of savings that government could achieve from integrated ICT management at £3.2 billion a year (20 percent) across the £16 billion spend on IT.

- In a February 2014 report, the Australian National Commission of Audit (2014) identified efficiency savings in the range of 20-30 percent from public sector adoption of service-oriented and cloud-enabled ICT.
The study has used the lower end of the range identified by the Australian National Commission of Audit as the basis for quantifying the potential ICT efficiency savings that the digital investment will deliver: 20 percent.

Moreover, it is assumed that this will not be delivered all at once. This analysis cannot produce a fine-tuned timetable showing how projected savings might be phased in. The study therefore assumed a phased “S” curve of progress towards the 20 percent target over ten years, as illustrated in Figure B.4.

The projected efficiency gains from the digital investment represent the difference between the two scenarios, as shown in Table B.3.

![Figure B.4: Assumed “S” Curve for ICT Efficiency Adoption](image)

**Table B.3: Projected Efficiency Gains from the Digital Investment**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline scenario</strong> Baseline government expenditure ($ million)</td>
<td>255</td>
<td>273</td>
<td>292</td>
<td>313</td>
<td>334</td>
<td>358</td>
<td>383</td>
<td>409</td>
<td>438</td>
<td>469</td>
</tr>
<tr>
<td><strong>Digital investment scenario</strong></td>
<td>253</td>
<td>269</td>
<td>284</td>
<td>297</td>
<td>309</td>
<td>311</td>
<td>318</td>
<td>332</td>
<td>350</td>
<td>375</td>
</tr>
<tr>
<td><strong>Value of potential efficiency savings</strong></td>
<td>3</td>
<td>4</td>
<td>9</td>
<td>16</td>
<td>25</td>
<td>47</td>
<td>65</td>
<td>78</td>
<td>88</td>
<td>94</td>
</tr>
</tbody>
</table>

Estimate how this benefit stream will be shared over different elements of the ICT value chain

Finally, the study estimated where these benefits are likely to fall across the ICT value chain. The hypothesis is that the digital investment will move ICT provision in Myanmar from a traditional model to an “as-a-service” model as illustrated in Figure B. 5.
Figure B.5: Delivering Benefits Across the ICT Value Chain

Note: This diagram draws heavily on an illustration of the shift from traditional to cloud computing developed by Microsoft Corporation. The quantified analysis in the lower part of the diagram is developed by MOTC, drawing on cost data from Kable which shows that U.K. government organizations spend 36 percent of their ICT budgets on telecommunications and infrastructure, with the rest split across the software and service layers. The broader business benefits – greater innovation, increased time-to-market, and so on – are more illustrative, and reflect MOTC interviews with public sector CIOs.

In other words, the infrastructure elements of the digital investment (for example, consolidation and cloud-enablement of data centers), while these may form some of the most visible components of the investment, in practice only account for a third of the financial savings in ICT.

Streamlined Back Office Processes and G2G Services

Various independent reviews have suggested that savings in the order of 20–50 percent can be achieved through the rationalization, digitization, and sharing of back office functions. Relevant studies include:

- **Shared Services and Finance BPO, PWC, 2008:** the table below summarizes the range of savings achieved by over 100 organizations over a period of five years. It identifies the level of efficiency savings attributable to each of the back-office functions:

<table>
<thead>
<tr>
<th>Business function</th>
<th>Finance</th>
<th>IT</th>
<th>HR</th>
<th>Procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential benefits</td>
<td>36%</td>
<td>16%</td>
<td>24%</td>
<td></td>
</tr>
<tr>
<td>Scope for cost savings</td>
<td>20%</td>
<td>40%</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Scope for broader business benefits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The study has assumed that 20 percent is viable in Myanmar in this ROI analysis. This is the target set by the U.K. government in its 2008 Efficiency Review, and was delivered in practice as audited by the U.K.’s National Audit Office – with the government subsequently setting more ambitious targets. As mentioned above, it is also assumed that this benefit is delivered in a phased way, through a ten-year “S curve” delivering the full 20 percent savings only after ten years.

**Channel Shift to Digital Services for People and Businesses**

For purposes of determining the returns, it is presumed that the investment will conservatively deliver demonstrative services for 250,000 people (including 50 percent women) and 5,000 businesses.\(^ {14} \)

International experience suggests that take-up of e-services typically follows an “S curve” pattern, so the study used such a curve (see Figure B.6) as the basis for profiling a likely pattern of how the investment will meet its targets.

**Table B.4: Estimated Growth in Digital Transactions**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myanmar people using digital services</td>
<td>12,500</td>
<td>25,000</td>
<td>150,000</td>
<td>225,000</td>
<td>250,000</td>
</tr>
<tr>
<td>Number of transactions per person per year</td>
<td>1</td>
<td>2.0</td>
<td>4</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Number of transactions by Myanmar people</td>
<td>12,500</td>
<td>50,000</td>
<td>600,000</td>
<td>1,800,000</td>
<td>2,750,000</td>
</tr>
</tbody>
</table>
Businesses using digital services | 250 | 500 | 3,000 | 4,500 | 5,000
--- | --- | --- | --- | --- | ---
Number of transactions per business per year | 1 | 2.0 | 4 | 8 | 11
--- | --- | --- | --- | --- | ---
Number of business transactions | 250 | 1,000 | 12,000 | 36,000 | 55,000
--- | --- | --- | --- | --- | ---
Total number of digital transactions | 12,750 | 51,000 | 612,000 | 1,836,000 | 2,805,000

Finally, the study calculated the potential public-sector productivity impact of this channel shift, by applying evaluation evidence from other countries. A UN funded evaluation of the impact of over 100 digital services in Asia found that average transaction costs are:

- $1.76 for a transaction delivered through traditional manual methods
- $0.10 for a transaction delivered on a self-service basis through digital channels

This suggests a $1.66 saving on average per transaction – resulting in a total saving by year 5 from the channel shift achieved through delivering investment targets of about $5 million per annum. In practice, take-up of services will then continue to grow – but it is assumed in the ten-year cost-benefit model that these savings remain constant in the final five years of the investment.

**Increased Gross Value Added**

**ICT Sector and the Digital Economy**

The methodology followed here was to:

- Estimate the current size of the digital economy in Myanmar
- Forecast how this will develop over ten years in a “do nothing” scenario
- Develop a forecast for growth under the digital investment
- Estimate how these benefits will be split between the ICT sector and the broader digital economy

**Estimate Current Size of the Digital Economy in Myanmar**

The “digital economy” term is often used interchangeably with others such as, for example, the ICT sector, but it is important to be clear. This study uses the definitions set out in the most comprehensive recent study of the global academic literature on the digital economy (Bukht and Heeks 2017). This proposes three “nested” definitions, as illustrated below. Of the terms used in this chart, “digitalized economy” is the scope that most accurately reflects the scope of the digital economy agenda for Myanmar being taken forward by the Digital Economy Development Committee (DEDC).

**Figure B.7: Defining the Digital Economy**

Definitions:

- “All economic activity based on digital technology”
- “That part of economic output derived solely or primarily from digital technologies with a business model based on digital goods or services”
- “A combination of manufacturing and services industries that capture, transmit and display data and information electronically”

Source: “Defining, conceptualising and measuring the digital economy”, Rumana Bukht and Richard Heeks, 2017
No authoritative data on the scale of any of these elements of the digital economy is available in Myanmar. The study therefore looks to international benchmarks. Drawing on estimates from a range of authoritative studies, including by the OECD, UNCTAD and Gartner, Bukht and Heeks present a range of estimates for the global scale of these sectors – both globally and in developing countries. Table B.5 summarizes this analysis and extrapolates it to Myanmar based on the assumption that Myanmar is at the lower end of the range for developing countries suggested by the Bukht and Heeks meta-analysis.

Table B.5: Estimating the Size of Myanmar’s Digital Economy

<table>
<thead>
<tr>
<th></th>
<th>% of GDP</th>
<th>Myanmar estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Global</td>
<td>Developing countries</td>
</tr>
<tr>
<td></td>
<td>Low estimate</td>
<td>High estimate</td>
</tr>
<tr>
<td>ICT sector</td>
<td>4.50%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Digital Economy (including ICT sector)</td>
<td>5%</td>
<td>2%</td>
</tr>
<tr>
<td>Digitalised Economy (including Digital Economy)</td>
<td>21%-21.5%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Multiple other sources suggest that this analysis is broadly correct. For example:

- The finding illustrated above - that there is roughly a 4:1 multiplier from the ICT sector to the broader value of the digitalized economy – is borne out by other studies. For example, World Bank estimates show that each job created in the ICT sector globally indirectly creates a further three to four jobs in other sectors (World Bank 2012).

- The estimate for the Myanmar ICT sector is in line with data published by the Myanmar Directorate of Investment and Company Administration, which shows foreign direct investment into Myanmar in the transport and communications sector as $3 billion in 2016-17. Anecdotal evidence suggests that this figure is largely ICT investment, perhaps accounting for about $2 billion. While it is not straightforward to extrapolate from investment in a sector within a year to the amount of output produced by that sector, investment of about $2 billion is certainly consistent in the context of a growth market like Myanmar with an estimated annual output of about $1 billion.

- McKinsey Global Institute (2013, 43) have estimated that the output of the Myanmar ICT sector was $100 million, supporting 2,500 jobs. The historic data on foreign direct investment (FDI) published by the Directorate of Investment and Company Administration suggests that in recent years FDI in the sector has been growing by an average of 43 percent. The DICA data only goes back over four years to 2013, but an average growth rate of 43 percent from the $100 million estimated by MGI in 2010 would have resulted in a sector worth $1.2 billion in 2017 – slightly more than the $1 billion estimated in the study model.

Forecasting how this will develop over ten years in a “do nothing” scenario, the model includes two scenarios for growth in the ICT sector and wider digital economy over the next ten years, as shown in the Table B.6:

a) In the cautious scenario, the study assumed that the ICT sector grows only at the rate forecast for the whole economy.

b) In the high-growth scenario, the study used the same assumptions about compound annual growth rates that underlie McKinsey Global Institute’s (2013) forecast that the sector will grow from $100 million in 2010 to $6.4 billion in 2030.
Table B.6: Projected Growth of Myanmar’s ICT Sector

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low growth scenario</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual GDP growth rate</td>
<td>6.90%</td>
<td>7.20%</td>
<td>7.30%</td>
<td>7.1%</td>
<td>7.1%</td>
<td>7.1%</td>
<td>7.1%</td>
<td>7.1%</td>
<td>7.1%</td>
<td>7.1%</td>
<td>7.1%</td>
<td>7.1%</td>
</tr>
<tr>
<td>ICT sector contribution to GDP (Sm)</td>
<td>930</td>
<td>996</td>
<td>1,069</td>
<td>1,145</td>
<td>1,227</td>
<td>1,315</td>
<td>1,408</td>
<td>1,509</td>
<td>1,617</td>
<td>1,732</td>
<td>1,855</td>
<td>1,988</td>
</tr>
<tr>
<td>Wider digital economy (including ICT sector) $m</td>
<td>4,338</td>
<td>4,650</td>
<td>4,990</td>
<td>5,345</td>
<td>5,727</td>
<td>6,135</td>
<td>6,573</td>
<td>7,042</td>
<td>7,544</td>
<td>8,082</td>
<td>8,659</td>
<td>9,276</td>
</tr>
<tr>
<td><strong>High growth scenario</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAGR implied by McKinsey Global Institute estimate of $6.4 billion ICT sector in 2030</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>ICT sector contribution to GDP (Sm)</td>
<td>930</td>
<td>1,071</td>
<td>1,235</td>
<td>1,423</td>
<td>1,640</td>
<td>1,890</td>
<td>2,178</td>
<td>2,511</td>
<td>2,894</td>
<td>3,335</td>
<td>3,844</td>
<td>4,430</td>
</tr>
<tr>
<td>Wider digital economy (including ICT sector) $m</td>
<td>4,338</td>
<td>4,999</td>
<td>5,762</td>
<td>6,641</td>
<td>7,653</td>
<td>8,821</td>
<td>10,166</td>
<td>11,717</td>
<td>13,504</td>
<td>15,563</td>
<td>17,937</td>
<td>20,673</td>
</tr>
</tbody>
</table>

The McKinsey scenario is believed to be extremely optimistic. The very rapid growth of recent years in the ICT sector cannot be relied on to continue, in part because the “quick win” of opening up the Myanmar mobile telephony market has already been delivered, and in part because investment and growth are sensitive to geopolitical uncertainty. (For example, the Directorate of Investment and Company Administration (DICA) data shows that FDI in the sector has plummeted during the six months from March 2017 to September 2017 – equivalent on an annualized basis to a 72 percent reduction on investment the previous year.)

We have therefore used the “low growth” scenario shown above as the baseline against which to compare the impact of the digital investment. In developing a forecast for growth under the digital investment, our core assumption is based on analysis of Myanmar and peer country performance on the “Digital Adoption Index” (DAI) published by the World Bank in 2016. This compares countries against nine key indicators of progress in three domains: digital people, digital business and digital government. Myanmar scores significantly below peer countries on this index: with a score of 0.23 compared with an average for other Lower Middle Income countries in East Asia of 0.37. If Myanmar were to move to this average level, the strong statistical correlation between DAI performance suggests that this would be associated with an increase in GDP of 21.6 percent.

We believe that this is a reasonable assumption to make about the potential impact of a concerted effort by the Government of Myanmar in this market. Table B.7 shows show the impact on Myanmar GDP of closing this relative gap with peer group countries. In the interests of caution, the table assumes that:

- It will take ten years to close the gap
- This will happen in a phased way over time, with digital economy benefits increasing on the same “S curve” adoption profile as assumed for other benefit streams in this model and with zero impact in Year 1
- Not all of this growth should be attributable to the digital investment itself. The investment will not operate in isolation and many other elements will impact on the socioeconomic outcomes being targeted by the digital investment. To ensure caution in the economic analysis, this study has attributed only 10 percent of the economic gains from this increased growth in the digital economy to the hypothetical digital investment itself.\(^{15}\)
Table B.7: Impact on Myanmar GDP of Closing the Relative Gap with Peer Group Countries ($ million)

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total growth in Digital Economy from closing the digital gap with other East Asia Lower Middle-Income countries</td>
<td>1,070</td>
<td>2,006</td>
<td>3,343</td>
<td>5,081</td>
<td>8,825</td>
<td>11,365</td>
<td>12,702</td>
<td>13,370</td>
<td>13,370</td>
<td>13,370</td>
</tr>
<tr>
<td>Amount of this which is due to natural growth in “cautious baseline scenario”</td>
<td>791</td>
<td>1,224</td>
<td>1,687</td>
<td>2,183</td>
<td>2,714</td>
<td>3,283</td>
<td>3,893</td>
<td>4,547</td>
<td>4,547</td>
<td>4,547</td>
</tr>
<tr>
<td>Value of this growth that is above the level predicted in baseline scenario</td>
<td>-</td>
<td>278</td>
<td>782</td>
<td>1,656</td>
<td>2,898</td>
<td>6,110</td>
<td>8,081</td>
<td>8,809</td>
<td>8,824</td>
<td>8,824</td>
</tr>
<tr>
<td>Value of growth attributed to digital investment (10%)...</td>
<td>-</td>
<td>28</td>
<td>78</td>
<td>166</td>
<td>290</td>
<td>611</td>
<td>808</td>
<td>881</td>
<td>882</td>
<td>882</td>
</tr>
<tr>
<td>... of which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICT sector</td>
<td></td>
<td>5</td>
<td>14</td>
<td>29</td>
<td>51</td>
<td>108</td>
<td>143</td>
<td>155</td>
<td>156</td>
<td>156</td>
</tr>
<tr>
<td>Broader digital economy</td>
<td></td>
<td>23</td>
<td>64</td>
<td>136</td>
<td>239</td>
<td>503</td>
<td>666</td>
<td>725</td>
<td>727</td>
<td>727</td>
</tr>
</tbody>
</table>

The table also models how these gains will be split between growth of the ICT sector in Myanmar and growth of the broader digital economy. These assume the same proportion as estimated by Bukht and Heeks for developing countries globally.

Time Savings for People and Businesses

The increased use of digital self-service when accessing government services will not only reduce costs of service delivery for the government, but also saves time for people and businesses.

We have estimated the value of this impact by:

- Estimating the average economic value of a working hour in Myanmar, and the economic value of an hour of leisure time
- Using UN evaluation data to show the typical number of minutes saved for service users when a transaction shifts from manual to digital or assisted digital in an East Asian country

Using this data to estimate the amount of time freed up by the additional shift into digital and assisted digital channels described above. In total, the study estimation shows the digital investment freeing up over 1,200 person years of currently unproductive time each year in Myanmar, with an economic value of $1.3 million per year.

Reduction to Perceived Corruption

The effect of perceived corruption on macroeconomic growth remains contested, with the literature being divided between those who argue that it “greases the wheels” of economic growth and development, and those who argue that it “sands the wheels”. That said, there is a clear correlation between reduced perceived corruption and increased growth, even if causality is unclear. The most comprehensive metastudy of the links between perceived corruption and growth was published by Ugur and Dasgupta in 2011. They systematically review the costs of perceived corruption to economic growth at a macroeconomic level, providing a meta-analysis of 55 empirical studies and 596 estimates of costs. They conclude that a one-unit increase on the Corruption Perceptions Index (CPI) is associated with direct and indirect negative impacts on GDP per capita growth rates of 0.59 percent for Lower Income Countries and 0.86 percent across a mixed group of countries. There is also a clear correlation between e-government maturity and perceived corruption. As shown below, the performance of a country on the UN E-Government Maturity Index is
strongly correlated with low levels of perceived corruption in the country as measured by the Corruption Perception Index.

Figure B.8: Relationship Between e-Government Maturity and Perceived Corruption

Correlation does not imply causality. It is strongly likely that there are external factors, for example concerning institutional reform, which drive both e-government performance and perceived corruption reduction. Nevertheless, it is also strongly likely that there is at least some causal action at play: that streamlined and more transparent e-government processes squeeze out opportunities for corruption, and that this in turn contributes to economic growth. This study assumes it is reasonable to include at least some element of this within the benefits model for the digital investment.

A simplistic analysis of the correlations described above suggest that if the digital investment can shift Myanmar to the current median performance on the UN E-Government Maturity Index, this might be correlated with a 14.6-point improvement in levels of perceived corruption. And according to Ugur and Dasgupta’s analysis, this might have an 8.6 percent increase in GDP growth.

Given the significant uncertainties involved, the study has included only one per cent of this potential benefit in its assessment. And as with other benefit streams, the study has assumed it is introduced only gradually over a ten year “S” curve and with zero impact in Year 1.

Cost and Benefit Forecasts

The benefit forecasts that flow from the analysis described above are shown in Table B.8, along with the upfront investment costs for the hypothetical investment of 100 million.
### Table B.8: Benefit Forecasts and Costs from the Digital Investment

#### Annual savings/benefits being achieved by end of each year ($)

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Year 8</th>
<th>Year 9</th>
<th>Year 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Digital Government (value of increased public sector productivity)</td>
<td>7,776,036</td>
<td>12,777,509</td>
<td>25,386,769</td>
<td>44,685,239</td>
<td>69,602,828</td>
<td>120,537,888</td>
<td>158,140,700</td>
<td>181,270,586</td>
<td>190,566,075</td>
<td>196,278,424</td>
</tr>
<tr>
<td>1.1 Reduced ICT wastage</td>
<td>2,554,256</td>
<td>4,371,865</td>
<td>8,769,005</td>
<td>15,634,405</td>
<td>25,421,855</td>
<td>47,233,473</td>
<td>65,073,949</td>
<td>77,802,605</td>
<td>81,897,479</td>
<td>87,609,828</td>
</tr>
<tr>
<td>1.2 Channel shift</td>
<td>21,165</td>
<td>84,660</td>
<td>1,015,920</td>
<td>3,047,760</td>
<td>4,656,300</td>
<td>4,656,300</td>
<td>4,656,300</td>
<td>4,656,300</td>
<td>4,656,300</td>
<td>4,656,300</td>
</tr>
<tr>
<td>1.3 Streamlined back-office processes</td>
<td>5,200,615</td>
<td>8,320,984</td>
<td>15,601,844</td>
<td>26,003,074</td>
<td>39,524,672</td>
<td>68,648,115</td>
<td>88,410,451</td>
<td>98,811,681</td>
<td>104,012,296</td>
<td>104,012,296</td>
</tr>
<tr>
<td>2. Digital Economy (economic benefits for people and businesses)</td>
<td>5,912</td>
<td>32,120,718</td>
<td>86,497,866</td>
<td>179,814,830</td>
<td>311,426,016</td>
<td>647,626,012</td>
<td>854,889,188</td>
<td>912,945,130</td>
<td>1,015,174,244</td>
<td>1,019,722,043</td>
</tr>
<tr>
<td>2.1 Time savings to people and businesses</td>
<td>0</td>
<td>23,649</td>
<td>283,784</td>
<td>851,352</td>
<td>1,300,677</td>
<td>1,300,677</td>
<td>1,300,677</td>
<td>1,300,677</td>
<td>1,415,317</td>
<td>1,415,317</td>
</tr>
<tr>
<td>2.2 Economic benefit from reduced corruption</td>
<td>0</td>
<td>4,277,127</td>
<td>8,019,612</td>
<td>13,366,021</td>
<td>20,316,352</td>
<td>35,286,295</td>
<td>45,444,471</td>
<td>50,790,879</td>
<td>55,267,551</td>
<td>58,176,369</td>
</tr>
<tr>
<td>2.3 Growth of ICT sector</td>
<td>0</td>
<td>4,909,402</td>
<td>13,799,024</td>
<td>29,223,081</td>
<td>51,142,763</td>
<td>107,830,419</td>
<td>142,613,654</td>
<td>155,444,748</td>
<td>169,145,537</td>
<td>169,434,769</td>
</tr>
<tr>
<td>2.4 Impact of increased ICT adoption across the broader digital economy</td>
<td>0</td>
<td>22,910,541</td>
<td>64,395,446</td>
<td>136,374,376</td>
<td>238,666,225</td>
<td>503,208,621</td>
<td>665,530,387</td>
<td>725,408,826</td>
<td>789,345,839</td>
<td>790,695,588</td>
</tr>
<tr>
<td>Total benefits</td>
<td>7,781,948</td>
<td>44,898,226</td>
<td>111,884,636</td>
<td>224,500,069</td>
<td>381,028,844</td>
<td>768,163,900</td>
<td>1,013,029,889</td>
<td>1,114,215,716</td>
<td>1,205,740,319</td>
<td>1,216,000,467</td>
</tr>
</tbody>
</table>

#### Costs

| Costs*                                                                 | 6,885,246 | 10,163,934 | 16,721,311 | 29,836,066 | 36,393,443 |

Note: a. This row shows five-year costs of the project itself. Any ongoing costs of supporting the Digital Myanmar platform and services beyond project closure will be embedded in mainstream ICT budgets of ministries. Estimates for total expenditure on digital government by ministries over this period are significantly lower in the Digital Myanmar scenario because of reduced duplication.
### Table B.9: Assessment Metrics for 5 and 10 Years

<table>
<thead>
<tr>
<th>Assessment metric (with 9.95% discount rate)</th>
<th>5 years</th>
<th>10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benefit / Cost ratio (at net present value)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td>1.57</td>
<td>7.21</td>
</tr>
<tr>
<td>Economic</td>
<td>7.38</td>
<td>41.54</td>
</tr>
<tr>
<td><strong>Net Present Value</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td>$39,696,399</td>
<td>$436,172,710</td>
</tr>
<tr>
<td>Economic</td>
<td>$448,193,061</td>
<td>$2,850,149,677</td>
</tr>
<tr>
<td><strong>IRR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td>109%</td>
<td>134%</td>
</tr>
<tr>
<td>Economic</td>
<td>295%</td>
<td>302%</td>
</tr>
</tbody>
</table>

Figure B.9 illustrates this projection of costs and benefits for the hypothetical digital investment of 100 million over five years. This represents a Net Present Value for the investment over that period (calculated at the Bank of Myanmar’s discount rate of 9.95%) of:

- Nearly $40 million in terms of purely financial impact (that is, the impact on public sector productivity)
- $448 million in terms of total economic impact (that is, also including broader GVA impacts from time and cost savings, growth of the ICT sector and from increased digital innovation in the private sector).

**Figure B.9: Cost and Benefit Flows from Digital Investment**

The digital economy elements of this are shown in more detail in Figure B.10. Key components are:

- The economic benefit of time savings to people and businesses because of streamlined digital government processes and shift to digital self-service
- The economic benefit from a reduced level of corruption flowing from adoption of digital government services
- Growth of the ICT sector
- The impact of increased ICT adoption across the broader digital economy
The digital government gains are shown in more detail below. These include increased public-sector productivity driven by:

- Efficiency gains and avoided expenditure through elimination of ICT wastage and duplication
- Cost savings achieved by moving service delivery into lower-cost, digital, self-service channels
- More efficient and streamlined back office processes enabled by digital ways of working.
Of the ICT savings, it is estimated that about one-third of the cost savings will flow from infrastructure consolidation (for example, consolidation and cloud-enablement of data centers), and about two-thirds at the platform and software layers – with those two layers also providing the greatest scope for innovation and broader business benefits.

In assessing the public sector financial impact, it has been assumed that the overall productivity gains are equivalent to the potential cashable savings freed up through those project outcomes that reduce nonvalue adding activity in the public sector. In reality, ministries may choose to realize these productivity benefits in other ways, for example by shifting the freed-up resources into higher value-adding activity that generates even greater impact. Figure 20 below illustrates the range of ways in which OECD governments report that they are realizing productivity gains from digital government and which gains are most prevalent.

**Figure B.12 : Percentage of OECD Governments Reporting How Often their Agencies Choose Different Options for Realizing Productivity Gains from Digital Government**

References


Notes

1 Prepared with support from the Asian Development Bank in 2015.

2 These estimates come from the most comprehensive recent study of the global academic literature on the digital economy: Bukht and Heeks 2017.

3 See Appendix B for details.

4 OASIS is a not-for-profit global standards body, funded through membership subscriptions by government and private-sector organizations, that focuses on the standards and best practices needed to make e-business and e-government work. See www.oasis-open.org.

5 https://web.umang.gov.in/web/#/

6 http://indiastack.org/about/

7 No new data gathering from Myanmar people, business or government agencies has been feasible within the timeframe and resources for conducting this study. Local data used is therefore limited to that already published by the Government of Myanmar.

8 http://www.usa.gov.

9 No new data gathering from Myanmar people, businesses, or government agencies has been feasible within the timeframe and resources for developing this study. Local data used is therefore limited to that already published by the Government of Myanmar.

10 Both EU and Myanmar GDP figures for this calculation have been expressed in current international dollars at purchasing power parity.

11 Growth rates for 2016-19 are taken from World Bank forecasts for Myanmar in June 2017 (“Global Economic Prospects”). For 2020 onwards, the study assumes average growth rates from these first four years.


13 https://www.capgemini.com/consulting/.../backing_up_the_digital_front26_11_0.pdf

14 The study also conducted sensitivity analysis. If these targets were doubled, to 500,000 people and 10,000 businesses, then overall five-year financial IRR for the project would increase from 109% to 114 percent. Quadrupling the targets would increase IRR to 124 percent.

15 The study conducted sensitivity analysis on this assumption. If the investment was only able to achieve 1 percent of gains from closing this gap rather than 20 percent, this would reduce the economic IRR of the project from 295 percent over five years to 170 percent. If it were able to achieve 50 percent, this would increase economic IRR to 378 percent.