



LEVERAGING FINTECH TO EXPAND DIGITAL HEALTH IN INDONESIA, THE PHILIPPINES, AND SINGAPORE

LESSONS FOR ASIA AND THE PACIFIC

JUNE 2022

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Notes:

In this publication, “\$” refers to United States dollars.
ADB recognizes “China” as the People’s Republic of China; and “Hong Kong” as Hong Kong, China.

On the cover: New technology allows users to conduct financial transactions securely on their mobile devices, which opens up possibilities for completing steps related to use of health insurance or other payments for health services. This technology includes collection and synthesis of large quantities of data.

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This report presents an overview of innovations arising from the integration of financial technology or fintech (digital financial services) with health-care technology and services including digital health. It discusses existing applications of fintech and health, as well as future opportunities, in Singapore, the Philippines, and Indonesia. Aligned with the goals of universal health coverage, integrating fintech and digital health can help improve the quality, affordability, and access to services by low- and moderate-income populations in developing Asia.

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Abbreviations

A*STAR	Agency for Science, Technology and Research
BPJS	Badan Penyelenggara Jaminan Sosial (Social Insurance Administration Organization)
BSP	Bangko Sentral ng Pilipinas (Central Bank of the Philippines)
COVID-19	coronavirus disease
DICT	Department of Information and Communications Technology
DOH	Department of Health
DOST	Department of Science and Technology
DTI	Department of Trade and Industry
GDP	gross domestic product
ICT	information and communication technology
IDI	ICT Development Index
ITU	International Telecommunication Union
JKN	Jaminan Kesehatan Nasional (Indonesian National Health Insurance)
MCIT	Ministry of Communication and Information Technology
OJK	Otoritas Jasa Keuangan (Financial Services Authority)
P2P	peer-to-peer
PDPA	Personal Data Privacy Act
PEHSP	Philippine eHealth Strategic Plan
PHIE	Philippine Health Information Exchange
SMEs	small and medium-sized enterprises
UHC	universal health coverage
UHCA	Universal Healthcare Act
UN	United Nations

Currency Equivalents

Conversion rate used for figures in reports not in United States dollars is Pound Sterling Live's rate dated 1 September 2021.

Currency unit – Singapore dollar (S\$)

\$1.00 = S\$1.34

S\$1.00 = \$0.74

Currency unit – peso (₱)

\$1.00 = ₱49.83

₱1.00 = \$0.02

Currency unit – rupiah (Rp)

\$1.00 = Rp14,260.75

Rp1.00 = \$0.00007

Executive Summary

Since the coronavirus disease (COVID-19) was declared a pandemic, the world went from anticipating a “return to normal” to creating a “new normal.” It will be some time until vaccines are universally available, and everyone can move about freely. Until then, economies and industries must continue to deliver goods and services to people in the communities where they live and work. Consequently, the public and private sectors alike must assume that anything that can be delivered digitally, should be delivered digitally.

This report first examines the role of digital technologies in finance and health care that together can create a “Fintech for Health” approach. This can enable access to health-care financing, information, and services, and overall operational efficiencies for health systems. A Fintech for Health approach can be powerful in helping long-excluded low- and middle-income populations gain access to health care and buttress them against health-related bankruptcy. Digital access to finance for health care, whether in hospital settings or by telemedicine, is even more urgently required amid the COVID-19 pandemic.

The report then looks at three countries—Singapore, the Philippines, and Indonesia—to examine the current enabling environment and examples of a Fintech for Health approach in Southeast Asia. The differing health system contexts, digital maturity and adoption, and needs of these countries highlight the variety of challenges that a Fintech for Health approach can face and the flexibility with which it can respond.

This report illustrates how financial technology or fintech can be leveraged to improve health systems and health outcomes. It aims to provide information as a resource for (i) government officials and policymakers across sectors, particularly ministries of health, finance, and technology, who can spearhead a “whole of government” approach to tackling complementary national development goals; (ii) the financial services industry as it expands the use cases for embedded finance and open banking beyond the financial services sector; (iii) the health-care actors who are involved in health systems improvement and service delivery; and (iv) start-ups and entrepreneurial companies, the innovators with the agility to partner across sectors with ease and solve for specific health systems challenges that have eluded traditional players and approaches.

We hope this report provides inspiration and guidance to each of these audience groups, not individually but collectively, to help solve one of the biggest challenges in health care: paying for it.

Introduction

In developing countries, 52% of health-care costs are borne by patients, resulting in 100 million people pushed into extreme poverty every year due to high out-of-pocket health-care costs.¹ In Southeast Asia alone, health-care costs drive 65 million people into extreme poverty and account for one in three new cases of poverty every year.² The inability to access and afford health care leads to poor health and a reduction in income, feeding a cycle referred to as the “health-poverty trap.”³ At the global level, poor health is estimated to cost the world economy 15% in gross domestic product (GDP) growth every year.⁴

Universal health coverage (UHC) is the principle that every person has a right to access high-quality health care *without suffering financial hardship*. World leaders committed in 2015 to the achievement of UHC as one of the principal targets of the United Nations (UN) Sustainable Development Goals (SDG 3.8).⁵ In 2019, at the UN General Assembly meeting, heads of state from around the world recommitted to achieving UHC by 2030.⁶

Importantly, the vision of high quality and affordable health care for all people is being reinforced through national commitments and initiatives at the highest levels of government. Despite the strong political commitment, significant challenges remain in the achievement of sustainable UHC. Health-care needs—and their costs—have been sharply rising with the increasing prevalence of noncommunicable diseases due to longer life expectancies, and lifestyle and diet changes. The rate of medical inflation currently stands at 8% compared to an average inflation of 2% for general goods and services.⁷ Rising health-care costs put a tremendous burden on individuals in systems where out-of-pocket payments prevail.⁸ Under UHC, governments are increasingly helping households shoulder the burden of health-care costs, but in turn, are challenged to meet targets while maintaining financial sustainability. As such, until the goals of UHC are fully realized, we need supplementary measures to reinforce these goals that alleviate the financial and health burden on individuals and their families.

¹ World Bank. 2017. *Tracking Universal Health Coverage: 2017 Global Monitoring Report (English)*. Washington, DC.

² World Health Organization (WHO). 2018. *Universal Health Coverage (UHC): Everyone, Everywhere*. New Delhi: WHO Regional Office for South-East Asia.

³ G. C. Lopez, B. Rivera, and L. Currais. 2005. *Health and Economic Growth: Findings and Policy Implications*. Cambridge, MA: Massachusetts Institute of Technology Press.

⁴ J. Reemes et al. 2020. *Prioritizing Health: A Prescription for Prosperity*. McKinsey & Company. 8 July.

⁵ United Nations. 2015. *Transforming Our World: The 2030 Agenda for Sustainable Development*. Resolution adopted by the UN General Assembly, New York. 25 September.

⁶ United Nations. 2019. *Political Declaration of the High-Level Meeting on Universal Health Coverage*. Resolution adopted by the UN General Assembly, New York. 10 October.

⁷ Aon. 2019. *2020 Global Medical Trend Rates Report*. Chicago.

⁸ Out-of-pocket payments refer to “the portion of the bill that the insurance company does not cover and that the individual must pay on their own. Out-of-pocket health-care expenses include deductibles, co-pays, and coinsurance.” J. Kagan. 2021. *Out-of-Pocket Expenses*. Investopedia. 14 June.

COVID-19 is Driving a New Transformation Agenda

The coronavirus disease (COVID-19) pandemic has necessitated a rapid review and assessment of how health systems can deliver care in a socially distanced environment. Newly adopted regulations and reimbursement policies have enabled a growth in telehealth services, preventing patients' possible exposure to COVID-19 in a hospital setting, while allowing critically ill patients to get the in-person care they need.⁹

For health financing specifically, private insurance penetration has increased as consumers gained a greater awareness of the value of financial protection for unanticipated health events.¹⁰ Financial services and insurance companies also began to integrate health-care and wellness services into their platforms to better meet customers' needs.

The Intersection of Financial Inclusion and Universal Health Coverage

In recent years, digital financial services have helped to bring critical access to financing for underbanked and unbanked populations, an important principle known as “financial inclusion.” Financial inclusion is a development goal that seeks to reduce poverty by ensuring that individuals and enterprises have access to and use affordable financial products and services that meet their needs.¹¹

Financially excluded populations are the most vulnerable to catastrophic health-care expenses. For low- and middle-income people living in countries where UHC is weak, every health-care journey is accompanied by a financing journey. That financing journey, from accessing preventive health services to paying for diagnostics and treatment, can prohibit one from seeking care. Being able to access timely payments during a health shock can mitigate the negative economic impact of such an event.¹²

The UN Capital Development Fund recognizes financial inclusion as an enabler of both SDGs 1 and 3, to end poverty and to achieve good health and well-being.

The goals of **financial inclusion**—the ability of all people to access useful and affordable financial services—and **universal health coverage**—being able to access quality care without financial hardship—essentially serve the same population.¹³ The strategies employed to achieve financial inclusion and universal health coverage can reinforce each other.

⁹ J. Harper et al. 2020. Telehealth Use Surges Around the World Amid COVID-19. *Lexology*. 25 June.

¹⁰ M. H. Puttaiah, A. K. Raverkar, and E. Avramakis. 2020. All Change: How COVID-19 is Transforming Consumer Behavior. *Swiss Re Institute*. 10 December.

¹¹ World Bank. Financial Inclusion.

¹² W. Jack and T. Suri. 2011. Mobile Money: The Economics of M-PESA. *NBER Working Paper Series*. No. 16721. Cambridge, MA: National Bureau of Economic Research.

¹³ L. Morgan and C. Churchill. 2016. How Financial Inclusion Can Boost a Nation's Health & Well-Being. *Consultative Group to Assist the Poor (CGAP) Blog Series*. 5 October.

Leveraging Fintech for Health

Fintech for Health has emerged as an intersector approach that integrates digital financial services with health innovations to solve health-care affordability, quality, and access challenges.

A Fintech for Health approach, at the individual level, seeks to give people more options in how they pay for and access health care, especially in the face of high out-of-pocket payments, while becoming financially protected against catastrophic health events. At the systems level, Fintech for Health provides digital financial enterprise solutions that can be applied to health-care systems and national insurance programs to improve the efficiency, transparency, and effectiveness of paying for and delivering care.

Underlying the strength and effectiveness of a Fintech for Health approach are the digital technologies and innovations that make systems transformation possible. Core digital technologies, like cloud computing and big data analytics, and their infrastructure, i.e., mobile phones, computers, satellites and fiberoptic cables, provide the foundation upon which health-care services and health tech can merge with financial services and financial technology (or fintech). After the advent of the Internet, arguably no technology has shaped our daily lives more than the mobile phone. With the pervasiveness of mobile phones and the Internet of things that establish connectivity and interconnectivity, more people can, at the tap of a finger, access a range of information and services where and when they need it affordably.

In health care, the application of digital technologies has transformed how we access care and the kind of care we receive. Digital health tools, such as remote monitoring, health-tracking devices, and smart health apps have become a pervasive tool for clinicians as well as individuals to monitor their health. With the emergence of COVID-19, telemedicine solutions have accelerated to bring access to expert clinical advice to people in the safety of their own homes. Globally, it is estimated that telehealth use is 38% higher than before the pandemic and investment in digital health has almost doubled compared to 2019.¹⁴

In finance, the application of digital technologies has, in many parts of the world, standardized the digital access and management of financial services for individuals and enterprises. Digital technologies (e.g., digital platforms, digital ID, data integration and analytics) enable new solutions such as alternative credit scoring, digital wallets, and microinsurance that are serving the needs of traditionally financially excluded populations. Financial inclusion initiatives and policies have expanded during the COVID-19 pandemic to enable digitalization of wages,¹⁵ promote the uptake of e-payments to reduce people's exposure to the virus,¹⁶ and ensure continued economic activity through remittances¹⁷ and e-commerce.¹⁸

¹⁴ O. Bestsennyy et al. 2021. Telehealth: A Quarter-Trillion-Dollar Post-COVID-19 Reality?. *McKinsey and Company*. 9 July.

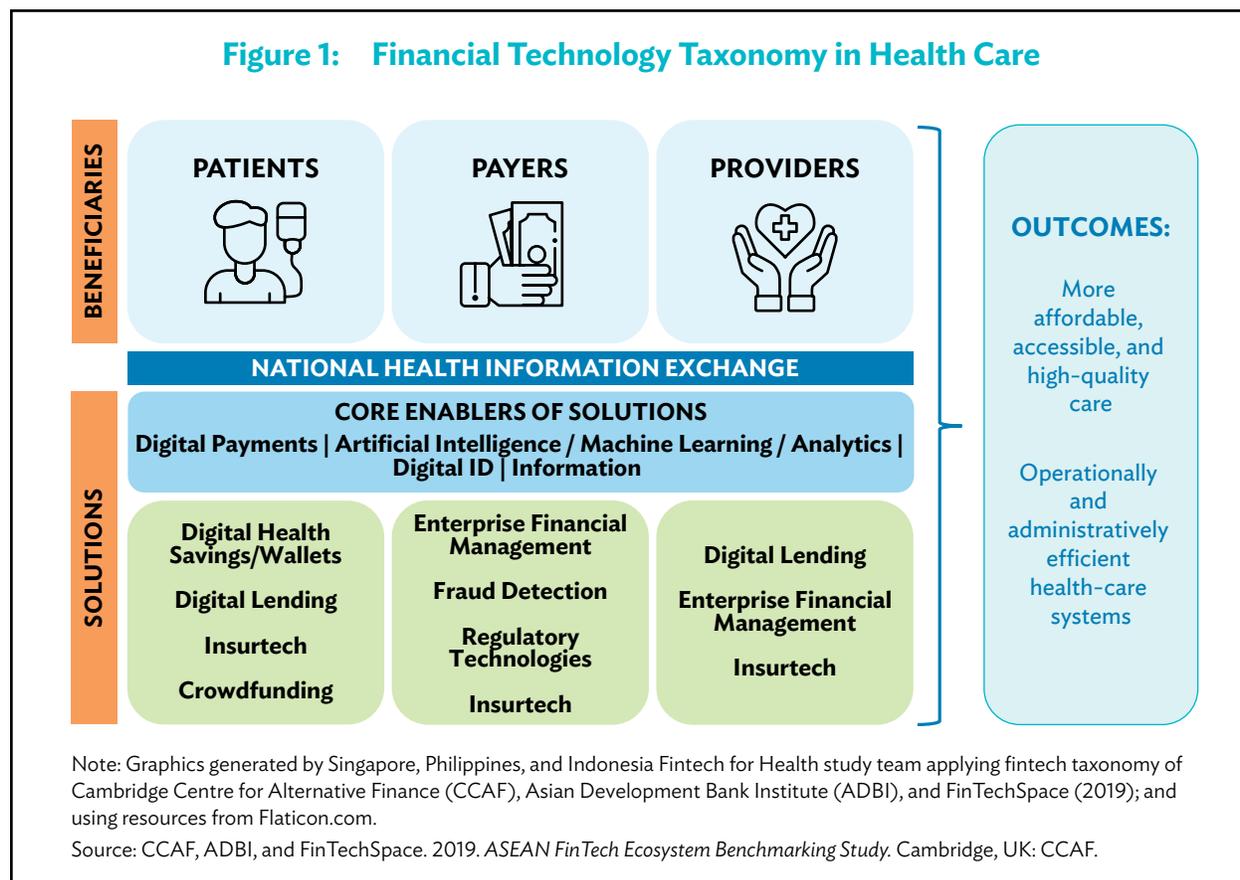
¹⁵ Business for Social Responsibility (BSR). 2020. *Digitizing for Inclusion: Insights from Wage Digitalization in the Garment Sector*. BSR HERproject.

¹⁶ J. Tan. 2021. Covid-19 a Game Changer for Digital Payments. *ASEAN Business*. 5 February.

¹⁷ A. Katakam and R. Gravesteyin. 2020. Remittances and Financial Inclusion: "Sending Money Home" in the COVID Era. *Center for Financial Inclusion*. 18 August.

¹⁸ A. F. Medina. 2021. Singapore Announces Strategy for E-Commerce Industry: Potential for Global and Regional Hub. *ASEAN Briefing*. 11 February.

We have applied and adapted a fintech taxonomy by the Cambridge Centre for Alternative Finance, Asian Development Bank Institute, and FinTechSpace (2019) to comprehensively and specifically assess how fintech business models can be applied in the health-care sector, both for individual health financing and for health systems operations and administration (Figure 1).¹⁹



Core Enablers of Solutions

Digital Payments

Digital payments, defined as transactions that take place online or via a mobile network, are important drivers of financial inclusion. Countries with high rates of digital payments adoption, along with the relevant safeguards for their use, are well poised to develop models specifically for the health-care sector. Digital payments benefit all three health system stakeholders: patients, health-care providers, and payers. Digitalization reduces costs related to the tracking and receipt of cash-based payments, which saves providers and payers human resources and administrative costs, provides a transparent financial record, and allows for integration with other digital platforms. In addition to cost savings, digital payments allow for substantial transparency and digital records that reduce the likelihood of fraud or misuse.

¹⁹ Cambridge Centre for Alternative Finance (CCAF), Asian Development Bank Institute, and FinTechSpace. 2019. *The ASEAN Fintech Ecosystem Benchmarking Study*. Cambridge, UK: CCAF.

Subcategories of digital payments include the following:

- (i) *Mobile money, e-wallets, and peer-to-peer (P2P) transfers* used to transfer and manage money.²⁰ Patients can directly pay for clinical care, insurance premiums, and health-care products or they can combine digital payments with savings and lending products. In Kenya, the Huduma card (Box 1) utilizes mobile money as well as the broader financial system to allow simplified government-to-person payment.

Box 1: Case Study—Huduma Card in Kenya

Fintech: Digital payments | Enterprise technology

In 2017, the Kenyan government launched a new fintech initiative called the Huduma card, aimed at bolstering government services in the country and financial inclusion. The Huduma Card was an initiative of Mastercard, the Government of Kenya, and four banks. Huduma Kenya showcases how governments can partner with the private sector to enhance financial inclusion and provide citizens with a safe, secure, and convenient way to make and receive social payments.^a

 WHAT IS IT?	 HOW DOES IT WORK?	 IMPACT TO DATE
<ul style="list-style-type: none"> • Government-to-person relationship that formalizes additional relationships with low-income individuals and other institutions (other banks, providers, etc.), when they transact through the Huduma card. • Transparency and accountability with all distribution and allocation of funds digitally locked, tracked, and auditable. • For many, Huduma could serve as their first formal bank account.^a 	<ul style="list-style-type: none"> • Huduma cards are a prepaid debit card that can be used for health-care expenditures. Cash can be added to Huduma cards using other mobile money wallets, such as M-PESA, Airtel Money, or Equitel; through its mobile application; via bank branches and agents; by cash transfers from other Huduma cards; or given by direct government programs.^b • Users are automatically registered for vital government services including the National Social Security Fund and the National Hospital Insurance Fund.^a 	<ul style="list-style-type: none"> • The high prevalence of M-PESA, and thus mobile money and financial inclusion in Kenya, made the adoption of the Huduma Card significantly smoother, since citizens across the socioeconomic spectrum were already familiar with “approaching agents for services prior to the Huduma Kenya launch.”^c

Note: Content organized by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

^a Accion International. 2021. Kenyan Government Expands Insurance and Social Security via Digital Finance. *Center for Financial Inclusion*. 15 February.

^b Government of Kenya. n.d. Huduma Smart Service and Payment Card Information Pack. Kenya: Ministry of Public Service, Youth and Gender Affairs Huduma Kenya Secretariat.

^c World Bank Group and Nordic Trust Fund. 2017. Citizen Service Centers in Kenya: The Role of Huduma Centers in Advancing Citizen-Centered Service Delivery in a Context of Devolution and Digitalization.

²⁰ P2P transfers or other forms of financing entails a decentralized platform whereby two individuals interact directly with each other, without intermediation by a third party. A. Hayes. 2021. Peer-to-Peer (P2P) Service. *Investopedia*. 15 August.

- (ii) *Remittances* are online and mobile solutions designed to send money to companies or people abroad. Family members often send money home to pay for health-care expenses; these payments can be combined with insurance coverage, paid directly into a health wallet or paid to hospitals directly.
- (iii) *Payment gateways and aggregators* are solutions to accept, authorize, and process payments on digital platforms such as telehealth platforms or as a mechanism to contribute to health wallets.
- (iv) *Mobile Point of Sales (mPOS) and Point of Sales (POS) terminals* can be used for card-based payments, storage of health information, and record of services received at clinics, hospitals, and pharmacies.

Artificial Intelligence, Machine Learning, and Big Data Analytics

Artificial intelligence, machine learning, and big data analytics are rapidly gaining traction in health care. Alternative risk scoring uses alternative data sources or methods to assess the risk for a person or company without a credit history. Meanwhile, consumer analytics are being used to provide personalized health care, financing options, and information. Artificial intelligence-driven chatbots are assisting patients in navigating eligibility for national insurance programs and subsidies, while big data analytics are being used to detect epidemiological trends from billing data and gain insights on health-seeking behavior.

Digital ID and Biometrics

Increasingly, access to goods and services vital to participation in the modern economy require some form of digital verification or identity. However, for the 3.4 billion people with some form of identification but no digital trail, this is a significant barrier.²¹ Digital ID and biometrics allow health-care systems and national health programs to verify a person's identity, integrate health information across care sites, ease the claims reimbursement process, and determine eligibility for national insurance programs.

Information Platforms

Information platforms are providing patients and health systems with the relevant information they need, when they need it, and in a form that is usable and actionable. Doctor booking sites, like Docosan in Viet Nam, compare physician consultation fees and average bill sizes, along with indicators for quality of care, while insurance comparison sites allow patients to compare health insurance products' inclusion and/or exclusion criteria, premiums, and coverage to find the most suitable product for their needs. Health systems platforms, such as Aseco in Serbia and Macedonia, are enabling systems planners to visualize service utilization, wait times, and supply constraints in real-time while facilitating data exchange between payers, providers, and patients.

National Health Information Exchange

Health information exchange refers to a process that enables doctors, nurses, pharmacists, other health-care providers, payers, and patients to appropriately access and securely share a patient's valuable medical information electronically. In this way, the speed, quality, and safety of patient care are greatly enhanced and costs are reduced.²²

²¹ O. White et al. 2019. Digital Identification: A Key to Inclusive Growth. *McKinsey Global Institute*. 17 April.

²² *HealthIT.gov*. 2020. What is Health Information Exchange (HIE)? 24 July.

Health information exchange has a myriad of benefits:

- (i) improvement in the completeness of a patient's records, which, in turn, affects the quality of care due to the involvement of a joint review of past history, current medications, and other information;
- (ii) better decision-making on the part of providers as they are able to avoid readmissions, medication errors, and duplicate testing, as well as improve diagnoses;
- (iii) standardization, which allows convenient transferring and integration of data into the patient's electronic health record, thereby, improving quality of care; and
- (iv) with the aid of electronic receipt of laboratory results and the electronic health record, it is also possible to generate a list of patients with diabetes. As a result, the provider can determine who among these patients have uncontrolled blood sugar and schedule necessary follow-up appointments.

Fintech for Health Solutions for Patients

As the ultimate beneficiary of health-care provision, health-care users (e.g., patients) care about how they can access the health care they need, how much it will cost them, and what they need to know about their condition and its management. Digital technologies are being used to right-site health information, services, and payments—including financial protection—so patients can access quality care, when they need it.

The key digital financial service technologies that can be employed to benefit health-care users include digital savings, digital credit and lending, digital insurance or insurtech, and crowdfunding.

Digital Savings

These accounts simplify savings management and expenditures. In some countries, health savings accounts have served as a simple, easy-to-understand health financing tool that leads consumers along a user journey to more sophisticated health financing products. Some health wallet companies contract only with approved clinics and hospitals to ensure not only digital integration but also a high standard of care. Additionally, digital health savings accounts and health wallets keep a digital record of all health transactions, enable family members to make remittances specifically for health-care costs, and provide a simple yet efficient way for patients to receive government health-care subsidies and donor-funded financial assistance. Box 2 provides an example of the M-TIBA health e-wallet in Kenya.

Digital Credit and Lending

Digital lending includes (i) balance sheet consumer lending, whereby the platform company assumes the risk; and/or (ii) P2P consumer lending, whereby the platform connects lenders and consumers. Combined with alternative risk scoring, ethical, low-cost digital lending solutions offer unbanked or underbanked patients a trusted, transparent source of funds to pay for unexpected or expensive health care and address household liquidity challenges. These measures can help prevent people from selling household assets, some of which may be income-generating, borrowing from informal lenders with high interest rates, or forgoing necessary care until it is urgent and more costly.

Box 2: Case Study—M-TIBA Health E-Wallet in Kenya

Fintech: Digital payments | Digital savings | Insurtech

M-TIBA is perhaps the most well-documented Fintech for Health model globally that has transformed the way that Kenyan health-care users can save and pay for health care. In 2015, PharmAccess, a nonprofit organization, and Safaricom, a national telecommunications company, created a joint venture, CarePay, that leveraged the popular Safaricom e-wallet, M-PESA, to offer the M-TIBA digital health savings program. M-TIBA has since expanded to become an insurtech platform, using its payments and data processing capabilities to streamline insurance claims and reimbursement processes and acts as a central data node between patients, payers, and providers.^a

 WHAT IS IT?	 HOW DOES IT WORK?	 IMPACT TO DATE
<ul style="list-style-type: none"> CarePay launched its platform M-TIBA in Kenya as a partnership between PharmAccess Safaricom and Investment Funds for Health in Africa in 2015. Launched through the leading digital wallet, M-PESA, M-TIBA is a platform that facilitates health-care payments between payers, patients, and health-care providers.^a 	<ul style="list-style-type: none"> A Safaricom (mobile platform) user signs up for an M-TIBA account. The M-TIBA subscriber can save, send, and receive funds for medical treatment through their phone. Family and friends can also send funds to loved ones exclusively for health-care expenditures. Donors can send subsidies or vouchers to beneficiaries. Subscribers can pay for medical treatment at any M-TIBA-approved health-care provider and clinic using their phone. Subscriber can use funds to pay premiums for registered health insurance policies.^b 	<ul style="list-style-type: none"> Over 4 million users and 3,000 health-care provider partners. Expanded beyond Kenya, e.g. to Nigeria, Tanzania, and Egypt. Expanded access to health-care financing to traditionally excluded communities. M-TIBA has also partnered with the National Hospital Insurance Fund to provide health-care insurance to 2,000 households under the SUPACover option that caters for families in informal settlements.^c

Note: Content organized by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

^a CarePay. About Us.

^b CarePay. The CarePay Platform.

^c K. Macharia. 2017. Mobile Health Insurance M-Tiba Partners with NHIF, Enlists Oserian Employees. *Capital Business*. 26 April.

Digital Insurance or Insurtech

Insurtech is a term to describe any insurance product that is applied for, purchased, claimed against, or reimbursed digitally. Insurtech platforms allow patients to make informed decisions, determine eligibility, and enroll online, while enabling companies to create tailored insurance plans for target markets. Fintech also creates efficiencies by connecting providers and payers for more seamless claims and reimbursement processes and data visibility.

Subcategories of insurtech include

- (i) *Microinsurance solutions and fractional insurance* as an introductory insurance product in markets with limited insurance penetration or to cover specific populations and therapeutic areas.

- (ii) *P2P insurance platforms* that provide insurance based on the contributions of a membership pool, and are also known as “mutual insurance” or “mutual aid” models. The specific natures of the insurance products created via P2P insurance models vary by user group; they can focus on specific therapeutic areas, geographic areas, or social or employment groups, among others.
- (iii) *Claims and reimbursement platforms* that allow patients to submit receipts digitally for health-care services paid for out-of-pocket and receive reimbursement directly into a mobile wallet or bank account. Such platforms enable quicker reimbursement of claims and, thus, greater financial stability and cash flow for patients.

Crowdfunding

Donations-based crowdfunding comprises platforms through which donors provide financial assistance directly to patients to cover high health-care costs. Crowdfunding campaigns often use social media platforms to solicit donations and can be combined with P2P insurance for greater reach.

Fintech for Health Solutions for Payers

Payers, both public and private, are using digital technologies to optimize the allocation and use of resources, introduce efficiencies, and eliminate fraudulent claims.

Enterprise Financial Management

Digital financial tools can help remove significant human resource costs and legacy administration processes. Through digitalization, payers can streamline processes, capture and analyze data for underwriting, and gain insights on opportunities for cost savings. These savings can be passed on to the consumer, thus lowering the cost of care.

Subcategories of enterprise financial management include

- (i) *Fraud prevention and risk management solutions* that focus on fraud prevention and operational risk management of financial institutions. They can be used by national insurance programs to rapidly detect fraudulent billing practices and payments.
- (ii) *Regulatory technologies (regtech) solutions* for regulatory compliance make it more efficient and effective to manage regulatory and compliance requirements. Payers can use regtech solutions to ensure that patients’ data security and privacy are protected and to comply with insurance regulations.

Insurtech

Insurtech platforms have the potential to vastly improve how public and private insurance programs operate. National insurers can employ automated claims processing and reduce the opportunity for human errors, save staff costs, and ensure payments are made on time to providers and patients alike. With digital ID and fraud detection technologies, insurtech platforms can reduce the amount of public funding lost to insurance leakage. They provide better payment and information exchange between payers, providers, and national insurers, thereby increasing overall transparency and satisfaction with national insurance programs.²³

²³ Zhong An Fintech Institute and Klynveld Peat Marwick Goerdeler (KPMG) China Insurance Service. 2019. *InsurTech: Infrastructure for New Insurance*. Beijing: KPMG Advisory (China) Limited.

Traditional private insurers are increasingly innovating and forming partnerships with insurtech platforms, laying the foundation for an expansion of insurance to provide everyday citizens with affordable and effective health protection and financial protection. By leveraging insurtech platforms, insurers are able to expand reach and scale, customize offerings catering to the specific needs of customers, and provide affordable insurance products for people who typically do not hold private health insurance.

Fintech for Health Solutions for Providers

Health-care providers, whether small community clinics or major tertiary hospitals, seek to balance and assure the delivery of high-quality care for their patients while remaining operationally and financially sustainable. Clinics, hospitals, and pharmacies are interacting with patients in new ways, including through e-referrals, e-appointments, and digital triaging, while relying on data analytics to make better clinical and operational decisions.

Digital Lending

Small- and medium-sized clinics, hospitals, and pharmacies often struggle to access credit for the upgrading of facilities, for working capital, and to purchase new equipment. Digital lending, either through loans or through cash advances, offers providers an opportunity to invest in improving the quality of care provided, pay staff, and ensure that essential medicines are in stock.

Enterprise Financial Management

Digital financial management platforms such as e-invoicing, digital accounting, digital payment collection, and business intelligence platforms provide greater efficiency, transparency, and sustainability for providers. They reduce the administrative burden of cash-based payments and accounting, ensure that accounts are up to date, reduce financial leakages, track payments received, and provide improved visibility on business performance. The resulting cost savings can be invested into the provision of health-care services, thus improving the quality and capacity of care.

Insurtech

Insurtech solutions provide convenience to providers by determining patient eligibility and coverage status at the point-of-care, streamlined data sharing and administrative processes with payers, and faster reimbursement when claims are filed directly from providers to payers. Additionally, when insurtech leads to increased financial protection and understanding of benefits, lower- and middle-income patients are more likely to access care, thereby increasing provider revenue.²⁴

Cedar in the United States (Box 3) offers patients a comprehensive, end-to-end “digital front door” that simplifies billing and payments, which has resulted in increased patient satisfaction and revenue for clinical systems using the Cedar platform.

²⁴ S. Holliday. 2019. How Insurtech Can Close the Protection Gap in Emerging Markets. *EM Compass Notes*. No. 70. Washington, DC: International Finance Corporation.

Box 3: Case Study—Cedar in the United States

Fintech: Digital payments | Enterprise technology |
Artificial intelligence | Machine learning | Big data analytics

 WHAT IS IT?	 HOW DOES IT WORK?	 IMPACT TO DATE
<ul style="list-style-type: none"> Cedar is one of the first health-care financial engagement platforms in the United States. In an age of high-quality consumer experiences on digital and e-commerce platforms from Amazon and Apple, Cedar brings the same experience to the patient journey.^a 	<ul style="list-style-type: none"> Cedar’s platform uses Electronic Health Record demographic, external, and behavioral data to accommodate the needs of patients to build highly personalized patient portals. Everything is done in one patient portal; no separate apps for appointments and/or payments. Patient portals are embedded with Cedar Pay, linked to credit/debit cards of patients. The portal integrates data from providers and insurers to make paying bills transparent and simple. It alerts patients to update insurance details to help resolve denied claims quickly. Data and predictive analytics from the portal help providers better understand and engage patients for follow-up visits.^b 	<ul style="list-style-type: none"> Front desk settlement and administrative paper-based tasks drastically reduced, allowing providers to focus resources on care provision. When Crystal Run Healthcare partnered with Cedar, its payment collection doubled and the satisfaction rate of patients who chose to use Cedar’s digital platform increased to 96%.^c Cedar has reported that coronavirus disease (COVID-19) led to more opportunities to provide an end-to-end “digital front door” experience (a reference to the sum of all ways medical providers digitally interact with patients outside the point of care).^d

Note: Content organized by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

^a Cedar Editorial. 2020. Healthcare Insights: The “Digital Front Door” and Why It Matters. *Cedar*. 21 October.

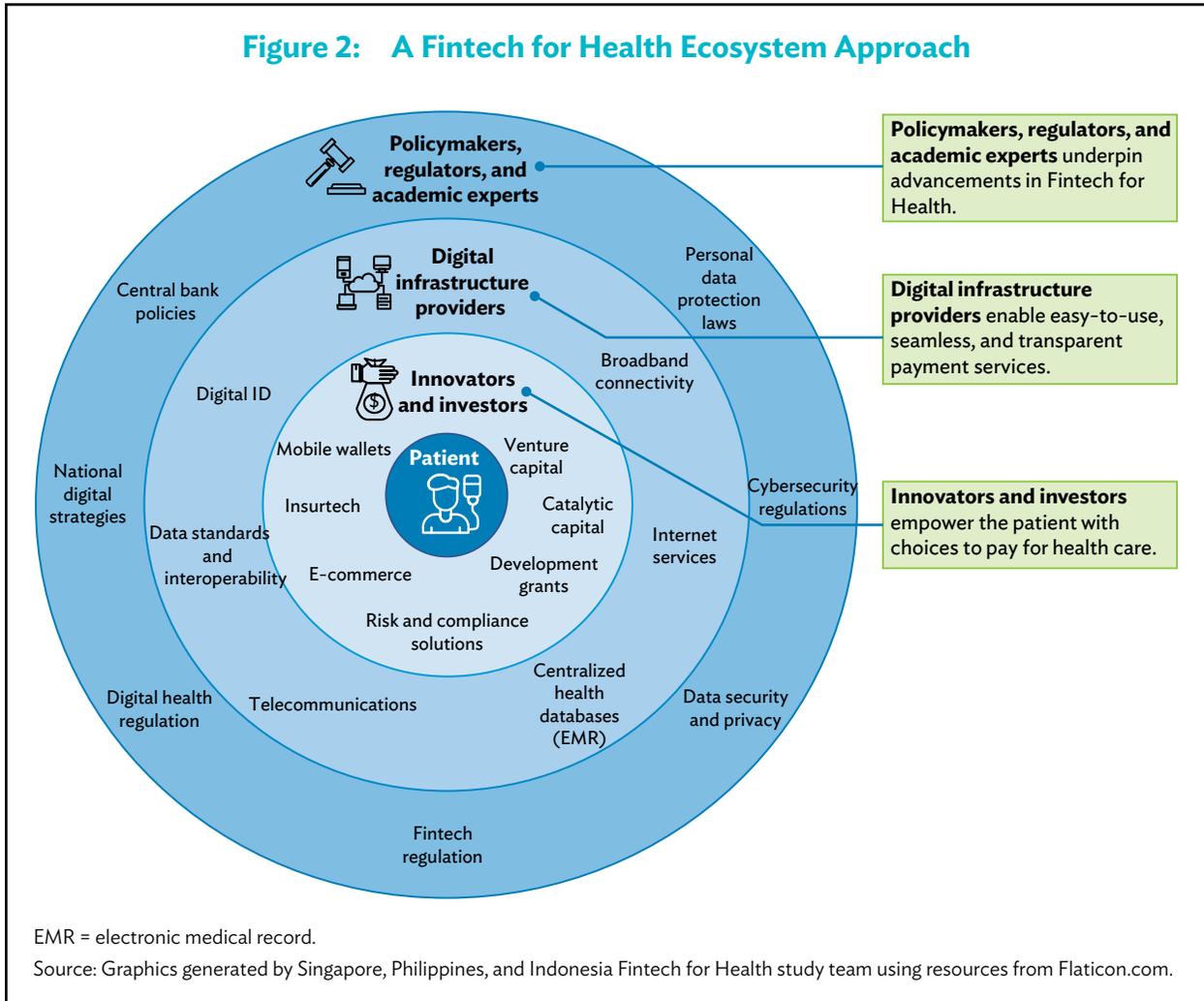
^b Cedar. Why Cedar.

^c Cedar Editorial. 2020. Case Study: How Crystal Run Healthcare Doubled Payments and Achieved 96% Patient Satisfaction. *Cedar*. 25 June.

^d Cedar Editorial. 2020. Optimizing Digital Front Doors with Patient-First Financial Engagement: Key Takeaways from a Virtual Event with the Advisory Board. *Cedar*. 10 August.

The Ecosystem Needed for a Fintech for Health Approach

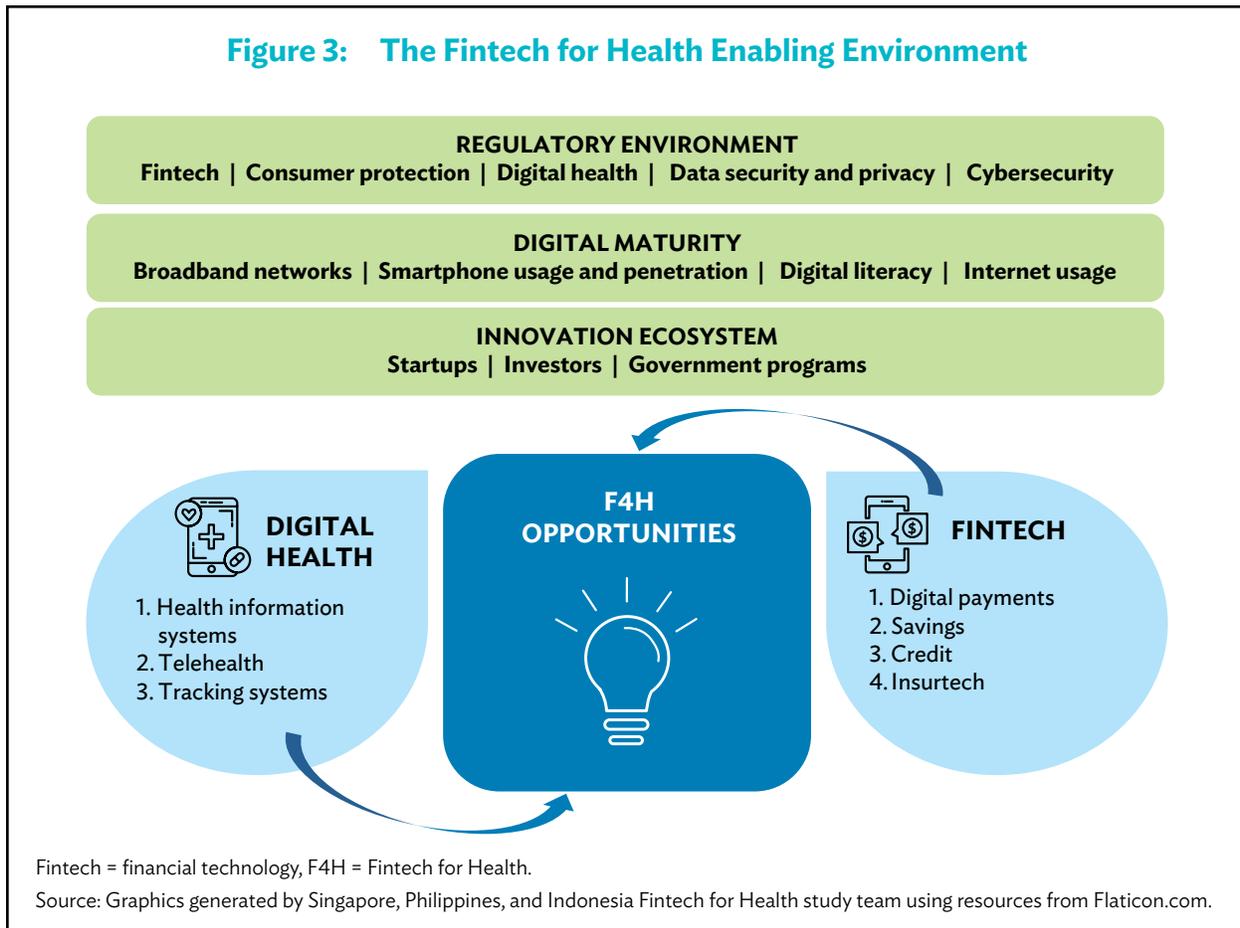
Fintech products and services can be combined with online and offline health-care services or with other digital platforms to create holistic, seamless patient-centered care and operationally efficient health systems. Yet, for these models to thrive and adapt, they require an ecosystem of public and private sector partners of (i) policymakers and regulators who provide enabling policies, regulatory clarity, and oversight; (ii) telecommunications, Internet, and other technology service providers on which solutions are built and run; and (iii) start-ups and investors who provide the capital and develop the technology behind Fintech for Health solutions (Figure 2).



Government can enable the use and integration of fintech in health by creating a strong regulatory environment, equipping populations with digital and financial literacy, enhancing consumer protection policies, strengthening data security and privacy policies, investing in equitable mobile connectivity, and infusing enthusiasm for cross-sector partnerships. Meanwhile, private industry, major mobile network operators, start-ups, and venture capital firms, as well as development sector institutions, can work in tandem with the government to invest in local and national-level digital capabilities and innovation.

The Fintech for Health Enabling Environment

More than a cross-sector innovation between the digital health and fintech, a Fintech for Health approach necessitates a foundation of clear, enforceable regulations and policies; equitable and mature digital connectivity; and a thriving innovation ecosystem. The following framework outlines the components and corresponding indicators of the Fintech for Health enabling environment (Figure 3).

Figure 3: The Fintech for Health Enabling Environment

Regulatory Environment

Health-care and financial data are among the most sensitive, personal, and exploitable of all industries. The regulation of such data—who has access, who has ownership, under what circumstances, and how they are accessed—requires government stewardship and private sector cooperation.

As a foundation, regulatory frameworks enable innovation while protecting consumers. By providing rules-based frameworks, companies benefit from clear guidance on how to develop products, share information, and partner with the government. Likewise, companies can invest in innovation with the assurance that parameters have been set.

In the assessment of Singapore, the Philippines, and Indonesia’s regulatory environment in the forthcoming chapters, we reviewed their legislation, regulations, and policies promoting innovation in digital health and fintech while ensuring consumer protection, data security, and cybersecurity in these sectors as well.

In the case of cybersecurity, we have included country scores from the International Telecommunication Union (ITU) Global Cybersecurity Index 2020 that assess countries’ progress on cybersecurity across five pillars: legal, technical, organizational, capacity, and cooperation.

- (i) *Legal parameters* – assess the existence of legislation to guide jurisdiction over online behavior, ensure online safety of users and user data, and protect online infrastructure.
- (ii) *Technical measures* – assess the existence of national and sector Cyber Incident Response Teams, Computer Emergency Response Teams, and Computer Security Incident Response Teams.
- (iii) *Organizational measures* – assess the presence of a national cybersecurity strategy, a responsible cybersecurity agency, and cybersecurity metrics.
- (iv) *Capacity development* – assess the awareness, training, and educational programs for both the public and cybersecurity professionals, research and development programs, and national cybersecurity industry.
- (v) *Cooperative measures* – assess the existence of bilateral and/or multilateral agreement with other activities and interagency partnerships.²⁵

The global score under the ITU Global Cybersecurity Index provides a global standard and comparison to inform each country of possible gaps with the hope to build capacity from there. The highest possible global score is 100.

Digital Maturity

Digital maturity is often defined as the combination of a country's information and communication technology (ICT) infrastructure; the skills or digital literacy of its population; and the extent to which governments, businesses, and individuals are using digital products and services in their day-to-day lives and workflows.

We assessed the digital maturity of each country using globally recognized measurements, including the ITU ICT Development Index (IDI) 2017, the most recent year in which the IDI was published. The IDI includes three subindexes—ICT access,²⁶ use,²⁷ and skills.²⁸ The highest possible IDI value is 10.²⁹

Recognizing that countries' progress on the three IDI subindexes would have advanced significantly in the 5 years since the IDI 2017 was published, recent data on smart phone usage, broadband connectivity, mobile phone usage, and Internet usage have been included to reflect current ICT access and use.

Innovation Ecosystem

The innovation ecosystem in each country is determined by the number and growth of start-ups, their access to capital, and the enabling government strategies designed to spur entrepreneurship. For each country, we have described the growth in the number of new start-ups, their reach and valuation, along with rise in investments in these markets and the relevant enabling government policies and initiatives. Governments are increasingly using regulatory sandboxes (Box 4) to drive innovation and explore use cases for specific technologies or challenge areas.

²⁵ ITU. 2020. *ITU Global Cybersecurity Index 2020, 4th Edition Weightage Recommendations*. Summary Statistics. 29 June; and ITU. 2019. *ITU/BDT Cyber Security Programme Global Cybersecurity Index (GCI): Guidelines for Member States*. Geneva.

²⁶ Access subindex: This pertains to readiness to ICT accounted for by five infrastructure and access indicators: fixed-telephone subscriptions, mobile-cellular telephone subscriptions, international Internet bandwidth per Internet user, households with a computer, and households with internet access. ITU. The ICT Development Index (IDI): Conceptual Framework and Methodology.

²⁷ Use subindex: This pertains to intensity of ICT usage captured by three indicators: individuals using the Internet, fixed broadband subscriptions, and mobile-broadband subscriptions. ITU. The ICT Development Index (IDI): Conceptual Framework and Methodology.

²⁸ Skills subindex: This pertains to level of ICT-relevant capabilities or skills represented by three proxy indicators: mean years of schooling, gross secondary enrolment, and gross tertiary enrolment. Since these are proxy indicators, rather than direct measure of ICT-related skills, this subindex is given less weight in the computation of the IDI. ITU. The ICT Development Index (IDI): Conceptual Framework and Methodology.

²⁹ ITU. The ICT Development Index (IDI): Conceptual Framework and Methodology.

Box 4: Regulatory Sandboxes

Regulatory sandboxes are controlled testing environments for digital solutions or digitally driven business models that are not yet regulated.^a Through sandboxes, governments can balance innovation and risk while ensuring that regulations keep pace with and enable innovation.^b

In a survey conducted by the Consultative Group to Assist the Poor and the World Bank of financial regulatory authorities in 50 countries, 80% of respondents reported that they set up sandboxes to understand and learn about emerging innovations. A majority of regulatory sandboxes (70%) emphasized consumer protection through safeguards in the testing phase. However, less than 25% of these sandboxes focused on financial inclusion. The authors recommended that governments design thematic sandboxes to test or advance specific policy goals such as inclusion.^c

Taking inspiration from the Monetary Authority of Singapore's fintech sandbox, the Singapore Ministry of Health was a global leader in announcing a telehealth regulatory sandbox in 2018.^d In line with the oft-quoted adage, "necessity is the mother of invention," the coronavirus disease (COVID-19) pandemic and accompanying safe distancing restrictions required that, globally, regulators fast-track the use of telehealth, although often through the temporary suspension of telehealth restrictions rather than through a tested and evaluated regulatory policy.

Similarly, several other countries in the region have launched regulatory sandboxes. For example, the International Financial Services Centres Authority in India introduced a framework for a regulatory sandbox;^e Bank Negara Malaysia published a Financial Technology Regulatory Sandbox Framework;^f the Bank of Thailand established a regulatory sandbox;^g and the Otoritas Jasa Keuangan in Indonesia released guidelines for fintech companies to register and participate in a regulatory sandbox.^h

Through regulatory sandboxes, ministries of health can design mobile health (mHealth) or digital health sandboxes to specify the health information, tracking, and telehealth needs of a population to meet new health-care service delivery models under COVID-19 and define evaluation metrics accordingly. Such an approach helps governments to conduct multiple mHealth experiments simultaneously and scale those that reach the desired impact.^b

Given the evolving intersecting nature of a Fintech for Health approach, ministries of health and finance can set up a Fintech for Health regulatory sandbox to better understand how digitally enabled financial protection models and tools, such as mutual aid or cross-sector data integration, can enable universal health coverage.

^a Banco Bilbao Vizcaya Argentaria (BBVA). 2018. What is a Regulatory Sandbox? 26 April.

^b A. Bhatia et al. 2020. Regulatory Sandboxes: A Cure for mHealth Pilotitis? *Journal of Medical Internet Research*. 22 (9).

^c I. Jenik, S. Duff, and S. de Monfort. 2019. Do Regulatory Sandboxes Impact Financial Inclusion? A Look at the Data. *Consultative Group to Assist the Poor (CGAP) Blog Series*. 30 April.

^d P. Bhunia. 2018. First Healthcare Regulatory Sandbox Launched in Singapore for Telemedicine Services. *OpenGov Asia*. 19 April.

^e International Financial Services Centres Authority. 2020. Framework for Regulatory Sandbox. Press release. 19 October.

^f Bank Negara Malaysia. 2016. *Financial Technology Regulatory Sandbox Framework*. Kuala Lumpur. 18 October.

^g Finextra Research. 2016. Thailand Sets Up Fintech Sandbox. 22 September.

^h Government of Indonesia, Financial Services Authority. 2018. *Peraturan Presiden Tentang Inovasi Keuangan Digital Di Sektor Jasa Keuangan* [Presidential Regulation on Digital Financial Innovation in the Financial Services Sector]. No. 13/POJK.02/2018. Jakarta.

Digital Health and Fintech Enabling Environments

The strength of the digital health innovation environment and fintech innovation environment will be important precursors to any blended approach. This report examines the public and private sector landscape and trends of digital health in each country. Similarly, it examines the fintech environment including the maturity of the sector and the uptake of fintech by the general population.

Fintech for Health Country Studies

This report explores the cases of three countries—Singapore, the Philippines, and Indonesia—that represent varied levels of economic development, health systems structures, levels of financial inclusion, and digital maturity. However, they share fast-growing innovation ecosystems and a strong commitment to universal health coverage that warrant consideration of Fintech for Health strategies.

It looks at how each country's health system context and the enablers—regulatory environment, innovation ecosystem, and advancements in the fields of digital health and fintech—set the stage for a Fintech for Health approach. It also considers specific opportunities to develop Fintech for Health models given each health system's development priorities and country context.

Singapore

Key Points

- **Innovation leader:** Singapore leads the region in key indexes of health-care and fintech development, innovation, and delivery. The island nation provides good examples of how concerted, strong government commitment can drive a successful innovation ecosystem across sectors.
- **Progressive and pragmatic regulators:** Singapore's regulatory sandboxes demonstrate that government support for innovation can go beyond grants and the funding of institutions, to actively cooperating with industry to refine regulations as products are developed, tested, and assessed in real world scenarios.
- **Fintech for Health innovation in Singapore primarily focuses on digital transactions or combined banking, insurance, and telehealth services:** The overlap between the fintech and the health-care industries to date has focused on making traditional transactions more convenient through digitalization. Initial progress in this space has been led by large banks and insurers and addresses three main challenges:
 - (i) new channels of access to telehealth and other digital health services,
 - (ii) management of chronic diseases through “concierge offerings” by banks and insurance companies, and
 - (iii) innovative financing models—enabled by digital technology—that increase the affordability and accessibility of care.
- **Government-led initiatives:** A new government-led initiative seeks to streamline the claims and reimbursement process and paves the way for increased cooperation between the Ministry of Health and the Monetary Authority of Singapore.

Health-Care System Context

Singapore's health-care sector has rapidly developed into one of the most progressive and exemplary health systems globally in the space of half of a century. It was ranked sixth in the world in 2000 by the World Health Organization. The public health-care sector currently serves around 70%–80% of the population, with the remainder of care provided by the private health-care sector.

Funding in the public sector is comprehensive. Singapore spends 4.46% of its GDP on health, with government expenditure making up 50.35% of total health expenditure.³⁰ Out-of-pocket expenditure stands at 31.04% of total health expenditure.³¹ It uses a mixed financing system that includes a compulsory national insurance program called MediShield Life and a compulsory health savings plan known as Medisave that is administered by the Central Provident Fund. MediShield Life provides a basic health insurance plan that helps to pay for large hospital bills and selected costly outpatient treatments such as dialysis and chemotherapy in public hospitals. Singaporeans can top up this scheme by purchasing additional coverage from selected private insurers in a scheme known as Integrated Shield Plans, providing patients with financial protection for more treatment options and for care in private hospitals. Funds from MediSave can be used to pay for individual and family health-care expenses and health insurance premiums. All citizens and permanent residents are entitled to government subsidies on a means-tested basis.

Public and private sector hospitals both provide high-quality care. Singapore General Hospital, for example, consistently ranks in the top 10 of hospitals globally.³² The private sector typically provides an avenue to reduce wait times to see specialists and supports medical tourism. Singapore's achievements in its health-care system have been well described elsewhere.³³

Regulatory Environment

Data Security and Privacy

The Personal Data Privacy Act (PDPA) in Singapore provides rules for the collection, use, and disclosure of personal data, access to and correction of personal data, and the care that should be taken of personal data, including how long it should be retained. The PDPA applies to all industries, including the health-care and financial industries.

Under the PDPA, an organization collecting personal data is required to notify the data owner of the purpose of the collection, who they are going to share the data with, and for how long they will be securing the data; in the event when there have been data breaches and consent given, the above terms from the data owner must be acquired before collection. The organization is expected to uphold the agreement with the data owner and is given the responsibility to secure and protect the data from any breach or unauthorized disclosure. Additionally, overseas transfer is restricted. The PDPA gives the data owner autonomy over their data, and organizations are required to respect their request for access and correction.³⁴

Cybersecurity

Singapore is recognized for its commitment to cybersecurity and is ranked among the highest globally with a score of 98.52, just short of the maximum of 100 (Figure 4). The ITU has deemed Singapore to be strongest in the areas of legal measures, capacity development, and bilateral and multilateral cooperation.

³⁰ World Bank. 2021. Current Health Expenditure (% of GDP) – Singapore. World Bank Open Data (accessed 15 September 2021); and World Bank. 2021. Domestic General Government Health Expenditure (% of Current Health Expenditure) – Singapore. World Bank Open Data (accessed 15 September 2021).

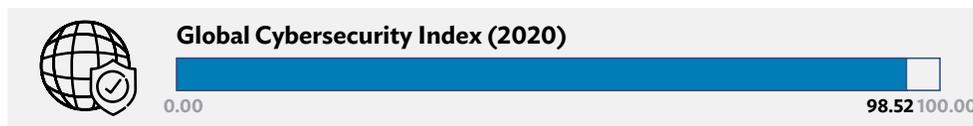
³¹ World Bank. 2021. Out-of-Pocket Expenditure (% of Current Health Expenditure) – Singapore. World Bank Open Data (accessed 15 September 2021).

³² S. Khalik. 2020. Singapore General Hospital (SGH) Ranked 8th and National University Hospital (NUH) 31st in Newsweek's World's Best Hospitals List. *The Straits Times*. 15 June.

³³ W. Haseltine. 2013. *Affordable Excellence: The Singapore Healthcare Story*. Illinois: Versa Press.

³⁴ Government of Singapore, Personal Data Protection Commission. 2021. *Data Protection Obligations under the Personal Data Protection Act (PDPA)*. Singapore.

Figure 4: Global Cybersecurity Index of Singapore, 2020



Note: Graphics generated by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com. Source: International Telecommunication Union. 2020. *ITU Global Cybersecurity Index 2020, 4th Edition Weightage Recommendations*. Summary Statistics. 29 June.

However, major lapses can occur even with the most secure health systems. In 2018, a SingHealth data breach highlighted that, despite progress in integrating digital technologies into the health-care system, blind spots remained in cybersecurity.³⁵

Box 5: Case Study—2018 SingHealth Data Breach

Date: 27 June 2018–4 July 2018

Key players: Singapore Health Services (SingHealth) and unidentified state actors

 WHAT HAPPENED?	 HOW WAS IT DISCOVERED?	 AFTERMATH OF THE CYBERATTACK
<ul style="list-style-type: none"> The 2018 SingHealth data breach was initiated by unidentified state actors between 27 June and 4 July 2018. During that period, personal particulars of 1.5 million SingHealth patients, including the Prime Minister’s records, and records of outpatient dispensed medicines belonging to 160,000 patients were stolen. Data about patients who visited specialist outpatient clinics and polyclinics between 1 May 2015 and 4 July 2018 were accessed and copied. This included the patient’s name, National Registration Identity Card number, address, date of birth, ethnic group, and gender. It affected about 20% of Singapore’s population.^a 	<ul style="list-style-type: none"> The database administrators for Integrated Health Information Systems, the public health-care information technology (IT) provider, detected unusual activity on one of SingHealth’s IT databases on 4 July, and implemented precautions against further intrusions. Having ascertained that a cyberattack occurred, administrators notified the ministries and brought in the Cyber Security Agency on 10 July to carry out forensic investigations. The agency determined that perpetrators gained privileged access to the IT network by compromising a front-end workstation, and obtained login credentials to access the database, while hiding their digital footprints.^b 	<ul style="list-style-type: none"> A Committee of Inquiry was convened on 24 July 2018 to investigate the causes of the attack and identify measures to help prevent similar attacks. On 10 January 2019, the Committee of Inquiry released a report on the SingHealth breach. The aftermath of the attack led to new cybersecurity platforms and guidelines. New and innovative digital health technologies are now subject to a greater level of review and scrutiny, and a review of current cybersecurity protocols and regulatory guidelines led to deeper scrutiny and assessments of new policies.^c

Note: Content organized by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

^a I. Tham. 2018. Personal Info of 1.5m SingHealth Patients, including PM Lee, Stolen in Singapore’s Worst Cyber Attack. *The Straits Times*. 20 July.

^b *Today Online*. 2019. Hackers Stole Data of PM Lee and 1.5 Million Patients in ‘Major Cyberattack’ on SingHealth. 17 September.

^c F. Lam. 2020. New Cybersecurity Platform in Singapore to Groom Talent, Run Annual Summit. *The Business Times*. 3 September.

³⁵ I. Tham. 2018. Personal Info of 1.5 Million SingHealth Patients, including Prime Minister Lee, Stolen in Singapore’s Worst Cyber Attack. *The Straits Times*. 20 July.

Digital Health and Fintech Regulation

Medical devices in Singapore, including digital health products and services such as screening and diagnosis, telemonitoring, teletreatment, and digital therapeutics, are regulated under the Health Products Act and its Health Products Guidelines (Medical Devices) 2010. The Government of Singapore has been developing guidance for the design, development, and use of digital health devices and services specifically since 2017, the year in which national telehealth guidelines were announced. Since then, the Health Sciences Authority launched a pathway for the immediate registration of software or mobile health devices while regulatory review is underway. Additionally, the Health Sciences Authority supports digital health innovation through consultation and regulatory review early in the development lifecycle.³⁶

With respect to fintech regulations, as early as 2016, the Monetary Authority of Singapore championed open banking as a gateway to payments digitalization and integration across the economy. In August 2020, the Monetary Authority of Singapore pledged to invest \$182 million over the next 3 years to drive technology innovation in the financial services sector, with added focus on artificial intelligence.³⁷ In December 2020, it announced the launch of the Singapore Financial Data Exchange, a digital infrastructure that allows users to access and retrieve their financial data across government agencies and private sector organizations.³⁸

Singapore is a leader in using the sandbox approach (Box 6) to study regulatory challenges and enable innovation. Sandboxes allow fintech companies and other innovators to test new products and services in a controlled environment under regulatory supervision.

In a landmark announcement made by the Monetary Authority of Singapore in December 2020, digital banking licenses would be awarded for the first time to four different applicants:³⁹

- (i) a joint venture between Grab Holding Inc. and Singapore Telecommunications Ltd. (Singtel);
- (ii) an entity wholly owned by Sea Limited, the parent company of the fastest growing e-commerce platform in the region, Shopee;
- (iii) a consortium comprising Greenland Financial Holdings Group Co. Limited, Linklogis Hong Kong Limited, and Beijing Co-operative Equity Investment Fund Management Co. Limited; and
- (iv) an entity wholly owned by Ant Group, subsidiary of Alibaba Group.

The first two examples, the Grab/Singtel consortium and Sea Limited, are eligible for the digital full bank license, so they can serve retail customers; whereas, the Greenland/Linklogis/Beijing Co-operative Equity Investment Fund Management consortium and Ant Group are eligible for the digital wholesale bank license, allowing them to serve small and medium-sized enterprises (SMEs) and other nonretail segments.

³⁶ Health Sciences Authority. Consultation Schemes.

³⁷ E. Yu. 2020. Singapore Parks \$182M for Fintech Innovation, With Special Focus On AI. *ZDNet*. 13 August.

³⁸ F. Ali and E. Wee. 2020. Open Banking Ecosystems Hold the Key to What Banking Looks Like in the Future. *The Straits Times*. 17 December.

³⁹ Government of Singapore, Monetary Authority of Singapore. 2020. MAS Announces Successful Applicants of Licences to Operate New Digital Banks in Singapore. Media release. 4 December.

Box 6: Regulatory Sandboxes in Singapore

MONETARY AUTHORITY OF SINGAPORE	MINISTRY OF HEALTH'S LICENSING, EXPERIMENTATION AND ADAPTATION PROGRAMME REGULATORY SANDBOX
<p>In November 2016, the Monetary Authority of Singapore (MAS) launched the fintech regulatory sandbox, amid a rapidly evolving and increasingly sophisticated landscape of financial services. As a global fintech hub, and to continue to encourage this innovative ecosystem and vibrancy, the MAS launched this sandbox, which includes appropriate safeguards to contain the consequences of failure and to maintain the overall safety and soundness of the financial system.</p> <p>Depending on the financial service to be tested, the fintech firm involved, and the application made, the MAS will determine the specific legal and regulatory requirements it is prepared to relax for each case. Upon approval, the fintech firm becomes the entity responsible for deploying and operating the sandbox, with the MAS providing the appropriate regulatory support by relaxing specific legal and regulatory requirements. Upon successful experimentation and on exiting the sandbox, the fintech firm must fully comply with the relevant legal and regulatory requirements.^a</p> <p>Sandbox Express</p> <p>In August 2019, the MAS launched a fast-forward track called Sandbox Express to provide firms with a faster option to test innovative financial products and services in the market. Eligible applicants can begin market testing in the predefined environment of Sandbox Express within 21 days of applying to the MAS instead of taking a longer time to customize their sandboxes under the original track.^b</p>	<p>The Licensing Experimentation and Adaptation Programme (LEAP) sandbox was launched in 2018 by the Ministry of Health (MOH), partnering mostly with early entrants into telehealth and mobile medicine focused on teleconsultation services. The sandbox concept was inspired by the MAS fintech sandbox developed 2 years prior. The goal of the sandbox is to eventually be able to regulate telehealth as a licensed health-care service on a par with existing traditional health-care providers. The sandbox allows providers to develop their innovative telehealth models within well-defined patient safety parameters. It also allows the MOH to make informed decisions about how to regulate telehealth after the sandbox has ended. Currently, the target date for telehealth to be fully incorporated into the Healthcare Services Act is by the end of 2022. The principle of the regulatory sandbox is that doctors should provide the same standard of care via telehealth as in person. They also must refer patients for in-person consultations if they are unable to make sufficient judgments online. However, telehealth companies do not need to be in the sandbox in order to operate in Singapore. They are still permitted to operate so long as they adhere to the same principles set by the regulatory sandbox.^{c,d}</p>

^a Government of Singapore, Monetary Authority of Singapore. 2016. *Fintech Regulatory Sandbox Guidelines*. Singapore.

^b Government of Singapore, Monetary Authority of Singapore. 2019. MAS Launches Sandbox Express for Faster Market Testing of Innovative Financial Services. Media release. 7 August.

^c Government of Singapore, Ministry of Health. Licensing Experimentation and Adaptation Programme (LEAP) - A MOH Regulatory Sandbox.

^d Government of Singapore, Ministry of Health. 2018. MOH Launches First Regulatory Sandbox to Support Development of Telemedicine. Press release. 18 April.

Digital banking licenses bring increased competition to traditional banks and challenge the status quo on customer experience and product offerings. Digital banks with experience in e-commerce, such as Grab and Shopee, understand customer purchasing behavior for consumer goods, user experience on digital platforms, and user-generated data and feedback. This allows them to create simple financial products that are easy for customers to understand.

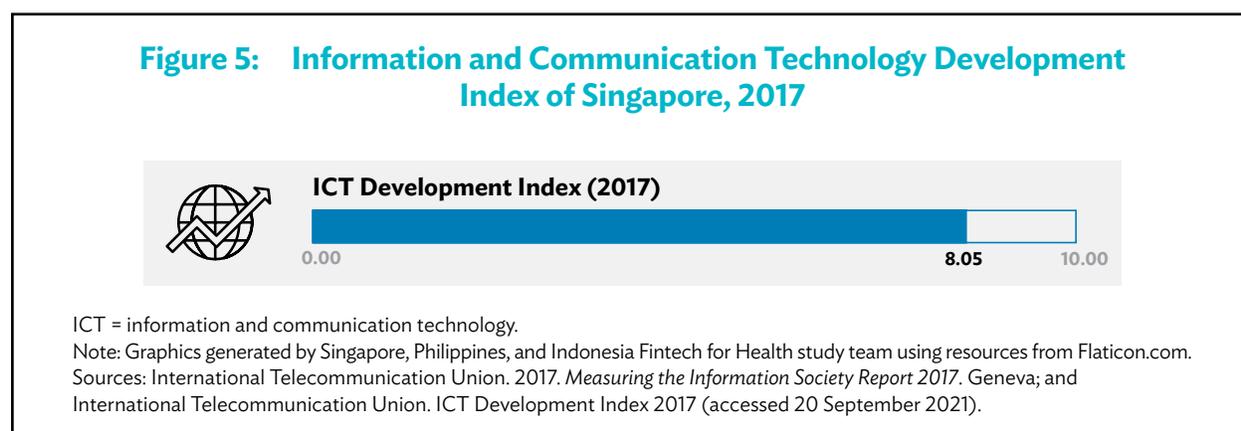
Consumer Protection

The Consumer Protection (Fair Trading) Act (Cap.52A) or CPFTA is the overarching regulation that protects consumer rights against unfair transactions. This law has been implemented since 2004 and updated in 2012 to incorporate the Lemon Law, which provides additional rights to consumers against contract nonconforming transactions. This was further amended in 2016 to act against persistently violating suppliers and paved the way to appointing the Standards, Productivity, and Innovation Board Singapore to be the implementing agency of this provision. The implementation was, however, taken over by the Competition and Consumer Commission of Singapore in 2018.⁴⁰

Some of the trade practices considered unfair under the CPFTA are misrepresentation of goods or services in terms of quality, characteristics, newness, and price; fraudulent promotion of a discount or voucher; and conscious concealment or omission of a material fact to a consumer using fine print.⁴¹

Digital Maturity

Singapore is a highly connected city-state where most citizens have a smartphone and are participants in the digital economy. With an ICT Development Index (IDI) score of 8.05 out of a maximum score of 10 (Figure 5), the IDI ranked Singapore 18th globally and 6th regionally in 2017 in terms of digital maturity.



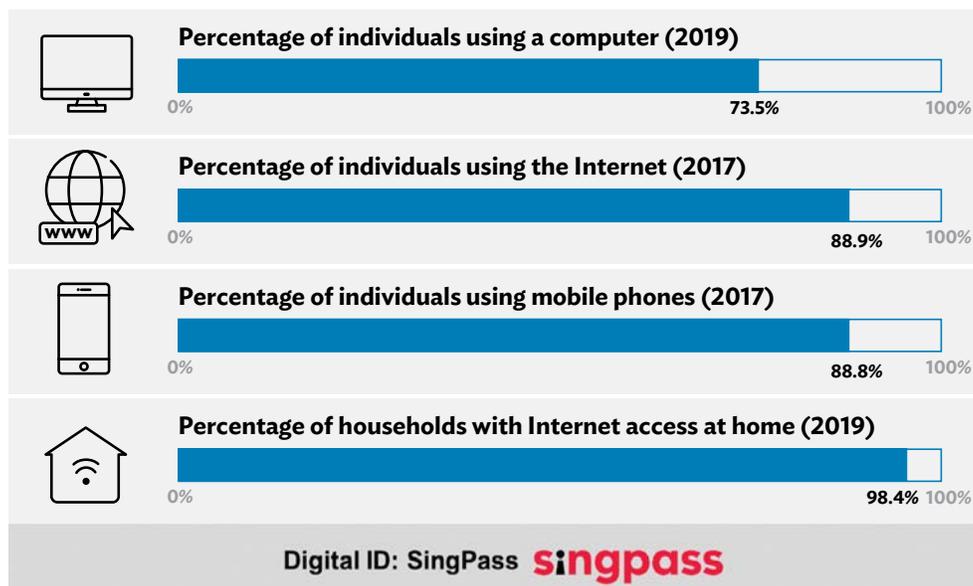
The Government of Singapore has prioritized investments in broadband connectivity and fiber optics to ensure that all citizens are connected digitally (Figure 6). A person's national identity number, together with a digital two-step authentication system known as SingPass, acts as a gateway for digital services and secures access to personal records, demonstrating Singapore's vision of being a "Smart Nation."

The **Smart Nation and Digital Government Group** was established to harness the fourth industrial revolution as a driver of economic growth, while ensuring that Singaporeans benefited from advancements in digital technologies.

⁴⁰ Consumers Association of Singapore. 2018. *Fair Trading & You*. Singapore.

⁴¹ Government of Singapore, Ministry of Trade and Industry. 2020. *Consumer Protection (Fair Trading) Act*. Singapore: Competition and Consumer Commission of Singapore.

Figure 6: Digital Technology Penetration by Percentage of the Population in Singapore



Note: Graphics generated by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.
Sources: International Telecommunication Union. Core indicators on access to and use of ICT by households and individuals. (accessed 20 September 2021).

The government set out three pillars that define Singapore as a Smart Nation:⁴²

- (i) **Digital economy** – leveraging a business-friendly environment, technology, and connectivity to drive business growth and job opportunities;
- (ii) **Digital government** – setting a goal to digitalize government services and embrace user-centered design to public services; and
- (iii) **Digital society** – positioning digital inclusiveness at the center of Singapore’s digitalization strategy, including equipping citizens to become digitally literate.

A recent initiative called “Seniors Go Digital,” by Singapore’s Infocomm and Media Development Authority, aims to expand digital inclusion to ensure older adults benefit from Singapore’s digital transformation.⁴³ One program it embarked on is setting up digital community hubs that provide one-on-one guided sessions to onboard senior citizens on commonly used digital services and applications.

Complementarily, nongovernment organizations such as the Citi-Tsao Foundation Financial Education Program for Women in Singapore target specific populations with knowledge and skills development in financial planning, budgeting, and savings. Additionally, these community-based programs offer important venues for gathering population-level data to inform financial literacy policies.⁴⁴

⁴² Smart Nation Singapore. Three Pillars of a Smart Nation.

⁴³ Infocomm Media Development Authority. About Seniors Go Digital.

⁴⁴ Tsao Foundation. Citi-Tsao Foundation Financial Education Programme for Women.

Innovation Ecosystem

Innovation today is a buzzword; but, for Singapore, it is an existential question. Its economic planning agencies have long taken an innovation-driven approach in positioning Singapore as a business hub in Asia.

Since before its founding, Singapore has taken a carefully thought-out, long-term approach to being competitive on the global stage. In the late 1990s, Singapore assessed whether the economic strategies that had brought it from the Third World to the First World would be sufficient to thrive and adapt as a modern economy. It responded with two long-term initiatives:

- (i) *Expanding research capabilities:* In addition to the strong research capabilities of its local universities, Singapore established the Agency for Science, Technology and Research (A*STAR). A*STAR is one of the few publicly funded research agencies whose sole purpose is to drive research for economic growth. It is under the purview of the Ministry of Trade and Industry, rather than residing under the Ministry of Education or domain-specific agencies relevant to its research foci.
- (ii) *Encouraging entrepreneurship:* At the same time, it was also critical to foster a vibrant entrepreneurship ecosystem to take research ideas to commercialization. The key goal was to create new intellectual property and new avenues for expansion of high-tech industries, and, ultimately, job creation. The innovation DNA is not just sown in scientists and engineers but in doctors as well. To develop a medical technology, it is critical to have a doctor's lens to it, a fact well-recognized by government agencies, the Singapore Economic Development Board, and A*STAR Singapore.⁴⁵ To this end, the National Healthcare Innovation Centre Singapore was set up in 2014 as an innovation and enterprise office for the clinical community of the publicly funded health-care institutions. Housed under the purview of the Ministry of Health, it seeks to accelerate the translation of health-care innovation toward a commercial endpoint. As a system integrator, it works closely with the clinical and research community, accreditation boards, policymakers, and appropriate end-users, setting up a network that is critical to supporting the research translation pathway.

Digital Health

Public Sector Initiatives for Digital Transformation

The public health-care system in Singapore is highly digitalized. A patient visiting a hospital-based outpatient clinic would typically already have arranged an appointment through an app. When they arrive at a hospital, they would be greeted by automated kiosks, which scan national IDs and provide queue numbers and approximate waiting times. After seeing the doctor, patients can pay bills digitally at kiosks on the way out of the hospital or clinic.

Health Information Systems

Singapore's journey to create an integrated health information system, the National Electronic Health Record, was launched in 2011 as a response to public regional health systems each procuring their own electronic health records that could not share patient information across platforms. The National Electronic Health Record was launched with the vision of "one patient, one health record" that all clinicians could access. All public medical facilities are required to integrate health information with the national electronic health record. This enables any doctor within the public health system to access one unified record for the patient and avoids additional investigation and procedures when a patient sees a new doctor.

⁴⁵ A*STAR Singapore. Medical Technology.

In 2015, the Ministry of Health launched Health Hub, an app and online portal that acts as a one-stop shop for patients to access health information, rewards, and e-services. Patients use their SingPass to log in and view their and their dependents' health records, manage appointments, locate doctors, make payments, and submit claims against MediSave and Medishield Life Integrated Shield Plans.

Telehealth

While at present there is no single regulatory framework for telehealth in Singapore, the National Telehealth Guidelines were developed with guidance from the National Telehealth Advisory Committee and issued by the Ministry of Health in 2015 to establish best practices in implementing telehealth solutions, including clinical standards and outcomes, human resources, organization, technology, and equipment.

The Government of Singapore aims to decrease hospital wait times by increasing telehealth and self-monitoring services.⁴⁶ Currently, telehealth is mostly used for primary care. In light of COVID-19, the Ministry of Health announced in early 2020 that they would increase efforts to educate patients on telehealth.⁴⁷

National Initiatives for Health and Wellness

The Health Promotion Board is partnering with the wearable companies, Fitbit and Apple Watch, to promote and incentivize Singaporeans to adopt healthy behaviors. This information is captured in Healthy 365, an app owned by the Health Promotion Board. Insights show that 58% of Singaporean consumers find the vision of digital health exciting and 97% are willing to try one or more digital health innovations.⁴⁸

Private Sector Innovation in Digital Health

In the first half of 2020, there were about 400 healthtech start-ups in Singapore with \$252 million in funding, in contrast to \$169 million in the previous year.

Some notable health-tech start-ups are Igloohome and Zenyum, which had an estimated combined funding of \$29 million, around half of the total funding.⁴⁹ Igloohome specializes in providing smart lock technology to homes, which proved to be useful especially during the height of the COVID-19 pandemic and lockdowns since contactless delivery can be made and access for health-care workers can be made exclusive, especially for patients under home care.⁵⁰ On the other hand, Zenyum specializes in invisible braces but enabled telemedicine dental consultation through their app.⁵¹

Enabled by the Ministry of Health telehealth regulatory sandbox and accelerated with the rise of COVID-19, there has been a proliferation of telemedicine start-ups in Singapore. A few notable names in the telemedicine market include MyDoc, Doctor World, CommHealth, C+, WhiteCoat, MaNaDR, and HiDoc. While most offer teleconsultation with general practitioners, value-adding services such as medicine delivery, 24/7 availability, and platform flexibility make these new companies stand out.⁵²

⁴⁶ Government of Singapore, Ministry of Health. 2018. MOH Launches First Regulatory Sandbox to Support Development of Telemedicine. Press release. 18 April.

⁴⁷ J. Teo. 2020. MOH Will Step Up Efforts to Educate Patients on Telehealth. *The Straits Times*. 7 January.

⁴⁸ K. Lee, M. Zafra, and J. Bay. 2020. COVID-19 Makes Singapore's Digital Health "On Demand." *Oliver Wyman*. 6 August.

⁴⁹ PricewaterhouseCoopers (PwC). 2020. *Tech Start-ups Funding Trends and Outlook: Singapore*. PwC Singapore.

⁵⁰ K. Lin. 2020. The Role of Smart Locks in the Midst of Social Distancing. *Igloohome*. 1 April.

⁵¹ Zenyum. 2020. What is Telemedicine and How Does it Work? *Zenyum Smile Academy*. 15 December.

⁵² *Consultancy.asia*. 2020. Telemedicine and Digital Health an Opportunity for Singapore. 20 August.

As a hub of insurtech innovation in Southeast Asia and home to the largest concentration of insurtech start-ups in the region, Singapore has been welcoming to insurtech players to collaborate with traditional insurers and innovate. Digital life insurance services such as Singapore Life, insurance plan comparison sites such as GoBear, and on-demand corporate insurance solutions such as Inzsure are some examples of the varied services that insurtechs offer. Some Singapore-based insurtechs are increasingly operating at the regional level, such as Symbo and Igloo.⁵³ Larger insurers are also leveraging insurtech to provide health and wellness benefits. An example is Pulse by Prudential, which is packed with personalized artificial intelligence-powered and data-driven insights to support clients to live healthier lives.

Fintech

Figure 7: Percentage of Account Holders in Singapore, 2017



Note: Graphics generated by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

^a Pertains to account with bank or other types of financial institutions or mobile money.

Source: A. Demirgüç-Kunt et al. 2018. *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*. Washington, DC: World Bank.

According to a 2020 report, approximately 65% of the fintech funding in Southeast Asia was directed to Singapore from 2015 to 2019.⁵⁴ The rise of fintech enterprises in Singapore is mirrored by the growth in domestic jobs in the sector, accounting for an estimated quarter of all new jobs in the finance industry in 2017.⁵⁵ There were \$861 million worth of deals carried out in 2019, and the Singapore Fintech Festival is the largest in the world, with participants from 127 countries.⁵⁶ Being a major financial hub in the region, and given the government's emphasis on technology adoption, the Monetary Authority of Singapore focused on alignment of technology developments with financial services.

The robust regulatory and supportive fintech policies have led at least four unicorns (start-ups valued at \$1 billion and above) to call Singapore home: Garena (now Sea), Razer, Lazada, and Grab.

Fintech for Health Opportunities

Both the health-care and finance sectors in Singapore have benefitted from enabling policies supporting innovation, the development of a strong talent pool, and the rapid pace of technological development. These led to the early integration between the fintech and digital health sectors.

⁵³ *Fintechnews Singapore*. 2020. Insurtech Picking up Steam in Asia. 29 June.

⁵⁴ B. Balzer et al. 2020. *Singapore Fintech Landscape 2020 and Beyond*. Singapore: Oliver Wyman and Singapore FinTech Association.

⁵⁵ *Fintechnews Singapore*. 2018. Fintech Plays a Crucial Role in Singapore's Economy; Be Part of it. 7 August.

⁵⁶ *International Finance*. 2020. Global Fintech Deals Fall by 4% as China Suffers. 21 February; and *Singapore FinTech Festival*. 2019. Inaugural SFF x SWITCH Sees over 60,000 Participants from 140 Countries; Event to Return on 9-13 November 2020. 19 November.

Patients are increasingly able to pay for online (telehealth) and in-person consultation fees and medicines using digital payments, including through mobile banking, digital banking, or with a credit or debit card. The Integrated Health Information Systems, the technical agency for public health-care systems in Singapore, includes health-care financial excellence as one of its seven programs intended to transform the health-care system. Under this program, the Integrated Health Information Systems launched a “one queue, one payment” system whereby patients receive one queue number that is used to access all points of service, such as registration, diagnostics, and consultation, during that visit, with all costs consolidated into one payment at the end that patients can make using point-of-sale terminals, online banking, peer-to-peer payments, or via a QR code.

The Government of Singapore additionally leverages its agencies to enable a patient’s financial management for health care and incentive healthy behaviors. SingPost, the national post office, offers bill payment services, including for hospital bills, at its community-based branches. Citizens and permanent residents can use an e-cashier service to top up their MediSave accounts, while national identity numbers are used to access government services online. Additionally, the Health Promotion Board began incentivizing healthy behaviors through its National Steps Challenge, through which participating Singaporeans could earn e-vouchers.

The HealthHub app and similar regional health systems apps, such as SingHealth HealthBuddy, allow patients to view diagnostics results, schedule doctor appointments, track progress on wellness initiatives, pay bills, and access information on health conditions, showcasing a user-centered design approach to the health-care consumer experience.

Banks Partnering with Health-Care Companies

Banks in Singapore are venturing into the health-care sector by partnering with telehealth and insurance companies. In 2020, Overseas Chinese Banking Corporation announced a HealthPass app that connects users with doctors and allows them to schedule an appointment or a teleconsultation directly through the app, receive medical certificates and referrals, and have medications delivered directly to their doorstep (Box 7). The same year, DBS Bank announced a partnership with Alliance Healthcare and Make Health Connect to offer critical care coverage, preferential rates for in-person and teleconsultations, and wellness services.⁵⁷

Insurtech Platforms that Ease Claims Processing and Reimbursement

In December 2020, two leading insurance associations and the Integrated Health Information Systems jointly announced a call for proposals to develop an end-to-end claims reimbursement platform. This project is an example of a public-private partnership and is supported by both the Ministry of Health and the Monetary Authority of Singapore. It will allow health-care providers to conveniently access a patient’s insurance policy details, enable faster claims processing, empower patients to authorize via SingPass the use of their medical and insurance data, and create a timelier exchange of data, thus improving both patient experience and operational efficiency. The platform will be piloted in three public hospitals and with Great Eastern, a private insurer; technology applications are still under review at the time of this publication.

Considered together, these initiatives demonstrate that a Fintech for Health approach, whether led by the public or private sector, can provide efficiencies and value to patients, providers, and payers and promote partnerships with external stakeholders serving these three groups.

⁵⁷ L. Lai. 2020. Alliance Healthcare and DBS to Collaborate on Marketing Activities. *The Business Times*. 9 September.

Box 7: Case Study—HealthPass by the OCBC Bank

Fintech: Digital payments | Online consultation

Singapore's Oversea-Chinese Banking Corporation (OCBC) is collaborating with seven medical groups to launch the HealthPass by OCBC mobile app.^a The application provides telehealth services from more than 150 general practitioners and specialist doctors to address health-care needs of all Singaporean residents over the age of 18, including non-OCBC Bank customers.^b

Starting with a fintech platform, OCBC's app provides access to primary care telehealth services, diagnostic procedures, and medication delivery from across its medical partners.^b

 HOW DOES IT WORK?	
<ul style="list-style-type: none"> • Patients pay a flat fee of around \$74 (S\$100) for their first telehealth consultation or in-clinic visit with a general practitioner. • Subsequent consultations cost about \$15 (S\$20). • Medication and diagnostic procedures are charged based on current practices.^a 	<p>Users of the application can do the following:</p> <ul style="list-style-type: none"> • Book and have video consultations with both general practitioners and specialist doctors through the app. • Have access to doctors that can refer them to specialists seamlessly through the app. • Securely receive digital medical certificates, clinic invoices, and laboratory results through the app. This also allows for fully digitized medical record keeping. • Receive medications at their doorstep, based on a medical consult or medicine refill. • Access wellness products and services at preferential rates.

Note: Content organized by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

^a D. Koh. 2020. OCBC Bank Launches Healthcare App to Provide Access to Telehealth Services. *Mobihealthnews*. 24 June.

^b OCBC Bank. Overview.

Singapore banks have recognized that health care is of high priority to their customers—both patients and provider groups—and thus they have a role in easing information and access bottlenecks; whereas, traditional and startup insurance companies are experimenting with new partnership models across health care and wellness are investing in tools that give patients increased visibility of their insurance options. Meanwhile, the public health-care system has recognized the importance of seamless transactions for patients, providers, and payers alike and is spearheading user-centered design for patient-centered care and financing.

While there has been significant progress in the adoption and use of digital financial services in the Singaporean health-care sector, there remain opportunities to use digital tools for innovative financing.

In addition to existing models, Singapore financial services companies may consider developing digital lending options for patients to pay for high-cost health-care services, backed by a fund that decreases the financial and reputational risk of lenders. The public sector may consider how it bundles packages of chronic disease management and care with affordable, installment-based payments and incentivization of healthy behaviors for value-based care.

Philippines

Key Points

- **Early stages for Fintech for Health but strong universal health coverage commitment and a growing fintech environment will hasten its emergence:** The Philippines is at an early stage in its digital health-care and fintech journey yet shows promise for Fintech for Health, given recent health-care reforms as well as growing foreign and local investments to develop its fintech sector.
- **Working with conglomerates could be a good point of entry:** Near-term progress in leveraging fintech for digital health could come from aligning interests with local conglomerates that have synergies and first-mover advantages in operating both major health-care and fintech platforms in the country. They may have the interest and ability to work across health care and fintech to build a solution that supports their business and social impact goals and leverages a strong and ready customer base.
- **Remittance opportunity:** There is an opportunity to channel the global inflow of the remittance market and apportion a fraction of it for health-care use and insurance, providing a safety net for benefactors.

Health System Context

The Philippine health system has experienced significant improvements in population service coverage and affordability in recent decades through the national health insurance system, administered by the Philippine Health Insurance Corporation or PhilHealth. The progress made by the Philippine health system was further bolstered in 2019. With strong presidential and legislative support, the Universal Health Care Act (UHCA) was passed, with the goal to “ensure that all Filipinos are guaranteed equitable access to quality and affordable health-care goods and services and protected against financial risk.”⁵⁸

As of 2020, the national insurance system has covered approximately 88% of the population for inpatient and outpatient health care, no small feat for a country composed of over 7,000 islands.⁵⁹ Premium contributions and benefit payments through PhilHealth have both been pro-poor. In 2019, the poorest 63% of the population received 80% of all PhilHealth benefits, while they only represented 53% of all premium contributions. The richest 37% of the population, on the other hand, only received 20% of all benefits paid, while providing 47% of all premium contributions in the same year.⁶⁰

As the Philippines progresses toward the goal of universal health coverage (UHC), significant logistical, financial, and epidemiological challenges impede its full achievement.

- (i) **Logistics** – With the logistical challenges in providing health-care supplies and services for a population of 109 million people across over 7,000 islands, the target of full population coverage remains elusive. In remote and rural areas, the Philippines faces a significant shortage of medical personnel, highlighted by an overall physician-to-patient ratio of 0.6:1,000, compared to an Organisation for Economic Co-operation and Development average of 3.5:1,000 (or an East Asia and Pacific regional average of 1.7:1,000).⁶¹

⁵⁸ Government of the Philippines. 2019. *Republic Act No. 11223: Universal Health Care Act*. Manila.

⁵⁹ PhilHealth, Corporate Planning Department. 2020. *Stats and Charts 2020*. Pasig; and Government of the Philippines. 2021. *Proclamation No. 1179: Declaring as Official the Population Count of the Philippines by Province, City/Municipality and Barangay based on the 2020 Census of Population and Housing Conducted by the Philippine Statistics Authority*. Manila.

⁶⁰ M. R. M. Abrigo. 2020. Who Wins and Who Loses from PhilHealth? Cost and Benefit Incidence of Social Health Insurance in a Lifecycle Perspective. *PIDS Discussion Paper Series*. No. 2020-51. Manila: Philippine Institute for Development Studies.

⁶¹ Organisation for Economic Co-operation and Development (OECD). 2019. *Health at a Glance 2019: OECD Indicators*. Paris; and World Bank. 2021. Physicians (per 1,000 people) – Philippines. World Bank Open Data (accessed 15 September 2021).

- (ii) *Financial* – Despite strong political commitment, the financial sustainability of UHC in the Philippines is of significant concern. As of 2019, it is estimated that UHC faces a deficit of \$1.71 billion.⁶² Ultimately, national UHC budget shortfalls translate into a shortage of health-care services and goods. In effect, this means that services not covered by PhilHealth, or supply-side issues of covered services, must be paid out-of-pocket or foregone entirely by individuals. At 53.8% of total health expenditures, out-of-pocket payments represent the largest proportion of health financing in the Philippines.⁶³
- (iii) *Epidemiological* – The Philippines faces a demographic and epidemiological transition marked by a high and increasing burden of noncommunicable diseases, which are estimated to result in annual losses equivalent to 4.8% of GDP.⁶⁴ The growing noncommunicable disease burden has led to a demand for specialist care, higher medical costs, and significant overcrowding of higher-level hospitals resulting in delays or obstacles to health-care access.⁶⁵

Regulatory Environment

Data Security and Privacy

The Data Privacy Act in the Philippines protects data subjects from any form of unauthorized processing of personal information and sensitive personal information, including health information. The act is an important safeguard for use of mobile health (mHealth) services and technologies, as mHealth providers typically require users to provide sensitive information such as personal and health details.

Specifically, the Privacy Guidelines for the Implementation of the Philippine Health Information Exchange were issued to balance public health goals with the data privacy rights of each Filipino, while the Health Privacy Code contains detailed and sector-related procedures and guidelines to ensure data privacy.

Cybersecurity

In the Global Cybersecurity Index 2020 of the International Telecommunication Union, among Asian and Pacific countries, the Philippines ranked 13th out of 37 countries with a score of 77 out of 100 (Figure 8). It gained a perfect 20 score in legal measures, meaning the Philippines has complete legislation in terms of jurisdiction over online behavior, ensuring online safety of users and user data, and protecting online infrastructures. However, it needs improvement in implementation, especially in organizational measures—implementing a national cybersecurity strategy, accountability of a responsible agency, and setting national cybersecurity standards.⁶⁶

The Cybercrime Prevention Act of 2012 (Republic Act [RA] No. 10175) is the foundation of cybercrime legislation in the Philippines. It aims to address existing concerns on cyber threats and attack to the safety of citizens, the government, and companies operating in the Philippines. These include provisions punishing offenses against data confidentiality and integrity (e.g., illegal access, illegal interference to data, and cybersquatting), against computer-related offenses (e.g., computer-related forgery, fraud, and identity theft), and against unlawful content (e.g., cybersex for favor, child pornography, and libel).

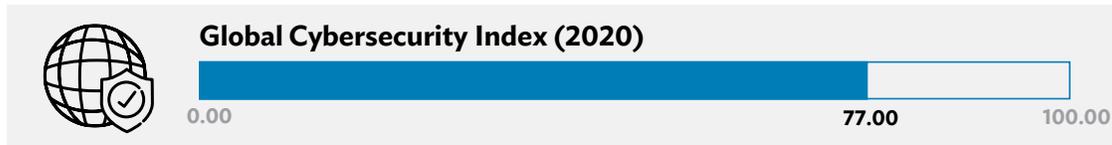
⁶² CNN Philippines Staff. 2019. Universal Health Care Program to Continue Next Year Despite “Diminished Budget”. *CNN Philippines*. 25 October.

⁶³ World Bank. 2021. Out-of-Pocket Expenditure (% of Current Health Expenditure) – Philippines. World Bank Open Data (accessed 15 September 2021).

⁶⁴ WHO and United Nations Development Programme. 2019. *Prevention and Control of Noncommunicable Diseases in the Philippines: The Case for Investment*. Geneva: WHO.

⁶⁵ M. M. Dayrit et al. 2018. *The Philippines Health System Review*. New Delhi: WHO Regional Office for South-East Asia. p. 234.

⁶⁶ ITU. 2021. *Global Cybersecurity Index 2020: Measuring Commitment to Cybersecurity*. Geneva.

Figure 8: Global Cybersecurity Index of the Philippines, 2020

Note: Graphics generated by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.
 Source: International Telecommunication Union. 2020. *ITU Global Cybersecurity Index 2020, 4th Edition Weightage Recommendations*. Summary Statistics. 29 June.

Apparent losses or breaches of data from government databases reported in the media have included passport information in 2019⁶⁷ and documents from the Office of the Solicitor General in 2021.⁶⁸ A recent large-scale data breach in a private firm concerned Cebuana Lhuillier, a pawnshop operating nationwide, which in 2019 reported that personal data of 900,000 customers had been compromised.

In 2017, to expand the vigilance towards cybersystems, the Department of Information and Communications Technology (DICT) and the Cybercrime Investigation and Coordinating Center launched “Cybersecurity Plan 2022.” This focuses on securing critical public and military digital infrastructure, increasing resilience to cybersecurity threats and attacks, initiating coordination with law enforcement agencies, and educating society on cybersecurity.

Digital Health and Fintech Regulations

The UHCA mandates all health-care providers and insurers to maintain a health information system consisting of enterprise resource planning, human resource information, electronic health records, and an electronic prescription log, which shall be electronically uploaded on a regular basis through interoperable systems.

Existing eHealth regulations in the Philippines are primarily focused on the creation of an interoperable health database. The Department of Health (DOH)–Department of Science and Technology (DOST)–PhilHealth Joint Administrative Order No. 0001-16 implements the Philippine Health Information Exchange (PHIE), which is a platform for secure electronic access and efficient exchange of health data and/or information among health facilities, health-care professionals, health information organizations, and government agencies.

Consistent with the constitutional right to privacy and the provisions of the Data Privacy Act Regulations, the Privacy Guidelines for the Implementation of the Philippine Health Information Exchange (Joint Administrative Order No. 0002-16) was issued to implement guidelines to balance the public health goals of the Philippines, with the data privacy rights of each Filipino. The administrative order also provides for more relevant and more specific security measures to be observed by participants in the PHIE. Further, it also regulates the use of cloud services and social media, and provides for the management of human resources, in relation to handling of health information.

It is worth noting that, in the absence of a law regulating telemedicine, various health-care service providers and groups are currently offering telemedicine services. While health-care providers can employ telehealth during COVID-19, they require regulatory clarity to make long-term investments in telehealth capabilities.

⁶⁷ CNN Philippines Staff. 2019. PNP: Passport Data Breach a Threat to Identity, National Security. *CNN Philippines*. 15 January.

⁶⁸ CNN Philippines Staff. 2021. “Data Breach” Reportedly Exposes 345k Sensitive SolGen Documents. *CNN Philippines*. 3 May.

Fintech regulations in the Philippines are governed by the central bank of the Philippines, Bangko Sentral ng Pilipinas (BSP). BSP has attributed growth in the utilization of fintech for digital payments to improved policies and regulations governing digital payments between 2013 to the present.⁶⁹ These policies focus on streamlining payment system operators, including digital payments, leading to an increase in the number of payment system operators and increased competition in the payment ecosystem. In 2019, the National ICT Ecosystem Framework was launched to support digital payments through improved infrastructure, connectivity, e-Governance, and user protection and information security, among others.

Consumer Protection

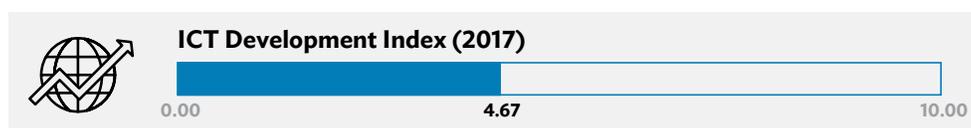
In 2000, the Electronic Commerce Act (RA 8792)⁷⁰ ensured that guidelines set forth in the Consumer Act (RA 7394)⁷¹ were upheld online. Legislation is currently underway in the House of Representatives that proposes the creation of an eCommerce Bureau under the Department of Trade and Industry (DTI). This new bureau will oversee all Internet commercial transactions as well as virtual merchants, the creation of specific grievance desks for online consumer complaints, and the prohibition of ride hailing providers against discriminatory practice.

The Truth in Lending Act (RA 9474) requires loan providers and credit-granting agencies to properly inform their borrowers with information related to any transaction.⁷² A similar policy for the credit card industry, the Philippine Credit Card Industry Regulation Law, requires credit card issuers to properly disclose finance charges, interests, penalty fees, and other information that affects the cardholder.⁷³ As lending can be an important instrument for patients to pay for expensive health-care costs, governments must ensure that such lending is conducted in a manner that is ethical.

Digital Maturity

The 2017 ITU ICT Development Index (IDI) ranks the Philippines 101 out of 176 countries in terms of its digital maturity and connectivity (Figure 9).

Figure 9: Information and Communication Technology Development Index of the Philippines, 2017



ICT = information and communication technology.

Note: Graphics generated by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

Sources: International Telecommunication Union. 2017. *Measuring the Information Society Report 2017*. Geneva; and International Telecommunication Union. ICT Development Index 2017 (accessed 20 September 2021).

⁶⁹ K. N. Massally et al. 2019. *The State of Digital Payments in the Philippines*. New York: Better than Cash Alliance.

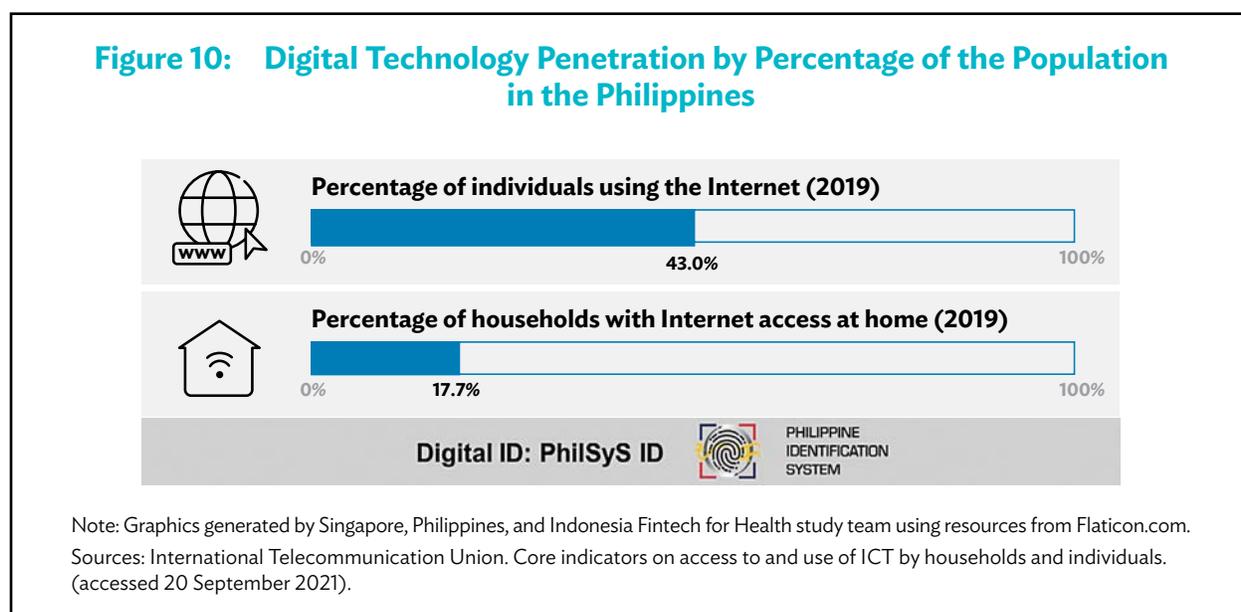
⁷⁰ Government of the Philippines. 2000. *Republic Act No. 8792: Electronic Commerce Act*. Manila.

⁷¹ Government of the Philippines. 1992. *Republic Act No. 7394: Consumer Act of the Philippines*. Manila.

⁷² Government of the Philippines. 2007. *Republic Act No. 9474: Lending Company Regulation Act of 2007*. Manila.

⁷³ Government of the Philippines. 2015. *Republic Act No. 10870: Philippine Credit Card Industry Regulation Law*. Manila.

In 2019, it was estimated that nearly 59.6 million Filipinos were Internet users, yet representing just 43% of the population (Figure 10). This growing Internet usage has led to a high penetration of e-commerce in Philippines. Approximately 47 Million (34%) Filipinos have recently purchased goods through online stores, more than 30 million (22%) uses mobile payments, and more than 40 million (30%) use banking applications.⁷⁴



While commercial activity is largely digital, government processes are still mainly pen-and-paper. The DICT has been leading efforts to digitalize governance since 2011. The latest iteration of the E-Government Masterplan 2022 aspires for “One Digitalized Government,” echoing the priorities of previous policies to enhance interoperability, provide ICT services for the public, and enable digitalization of the private sector.

Similar priorities of embedding digitalization firmly within policy and regulation frameworks is seen within the Philippine banking sector. In 2020, the BSP approved a framework that recognizes digital banks as a distinct category from existing bank classifications.⁷⁵ This new regulation is a part of the Monetary Board’s greater Digital Payments Transformation Roadmap, a framework that outlines the regulatory environment needed to cultivate digital innovation and transformation within the country.⁷⁶ This policy is an integral step toward building the Philippines’ digital maturity, as it sets up the necessary environment for improved customer experiences, greater efficiency and transparency, and increased accessibility of a wider range of affordable financial products that can also meet the needs of underserved members of society.⁷⁷

⁷⁴ We Are Social and Hootsuite. 2019. *Digital 2019: The Philippines*; and International Telecommunication Union. Core indicators on access to and use of ICT by households and individuals. (accessed 20 September 2021)

⁷⁵ Government of the Philippines, BSP. 2020. *Circular No. 1105: Guidelines on the Establishment of Digital Banks*. Manila.

⁷⁶ Government of the Philippines, BSP. 2020. *BSP Digital Payments Transformation Roadmap 2020–2023*. Manila.

⁷⁷ A. A. Papa. 2021. The Philippine Banking Industry’s Digital Era Begins. *The Manila Times*. 8 March.

This move toward digital transformation, furthered by government policies and public-private partnerships, is seen in the case of PhilHealth. Through collaborations with Microsoft, PhilHealth has been able to use business analytics to compile member data across their 17 regional offices and develop a national outlook on health care, which helps design more effective programs. The increased use of technology has helped the organization move toward including greater foresight into their decisions and implement a wide range of preventive health measures, such as expanding its network of primary care responders to make it more accessible and reduce eventual claims. This shift to a data and technology-centered approach has also established the groundwork for further collaborations across ministries and government offices, such as the Department of Social Welfare and the National Anti-Poverty Commission, where offices can swap data sources to co-create programs providing more comprehensive health care.⁷⁸

Innovation Ecosystem

The Philippines is gaining recognition for its fast-growing innovation ecosystem. In 2020, Manila was ranked 36th in the Global Startup Ecosystem Report in its first ranking of the world's top 100 emerging ecosystems. The Philippines is currently home to 500 start-ups, nearly 100 angel investors and venture capitalists, and 35+ incubators and accelerators. Lured by the ability to hire a pool of well-educated, English-speaking young professionals and strong government support that is prioritizing SMEs, investment is being drawn to the Philippines. Between 2018 and 2020, the Foxmont Capital Partners estimated that total investments into start-ups in the Philippines totaled approximately \$547 million.⁷⁹

The government support for innovation has manifested through a series of legislative actions and policies across government agencies in the Philippines. In 2019, the President signed into law the Philippines Innovation Act (RA 11293) to create the National Innovation Council and launched a strategy to spur innovation, remove regulatory barriers, and ensure coordination among government ministries.⁸⁰ Additionally, the Innovative Startup Act of 2019 (RA 11337) offers direct and practical support from participating ministries to fast-track business permits, subsidize facilities and equipment, and provide grants for research and development.⁸¹ Notably, in 2017, the DICT developed a National Broadband Plan to extend access to high-speed telecommunications nationwide, in particular for remote and rural populations.⁸²

The government has also continued to invest in innovative SMEs and start-ups during COVID-19. Small businesses were offered wage subsidies for employees, loans to continue operations, and continued subsidies for incubation and acceleration. During the signing of the joint administrative order between DICT, DTI, and DOST, Undersecretary Rowena Cristina Guevara of DOST stated that, “Clearly, innovation is needed (for businesses) to survive,” as she shared DOST initiatives on start-up grants, including incubator programs. DICT Secretary Gregorio Honasan and DTI Secretary Fortunato De La Peña likewise acknowledged the importance of start-ups to stir innovation, employment, and economy, calling them “digital entrepreneurs,” especially amid the pandemic.⁸³

⁷⁸ Microsoft Enterprise. 2018. Technology Partners Vital to Philippines Government's Digital Quest. *Microsoft Industry Blogs – Asia Pacific (APAC)*. 9 July.

⁷⁹ B. Cahiles-Magkilat. 2020. Philippines Rises in Global Startup Ecosystem. *Manila Bulletin*. 8 December; and Foxmont Capital Partners. 2020. The Sunrise of Industry of the Philippines. 23 November.

⁸⁰ Government of the Philippines. 2019. *Republic Act No. 11293: Philippine Innovation Act*. Manila.

⁸¹ Government of the Philippines. 2019. *Republic Act No. 11337: Innovative Startup Act*. Manila.

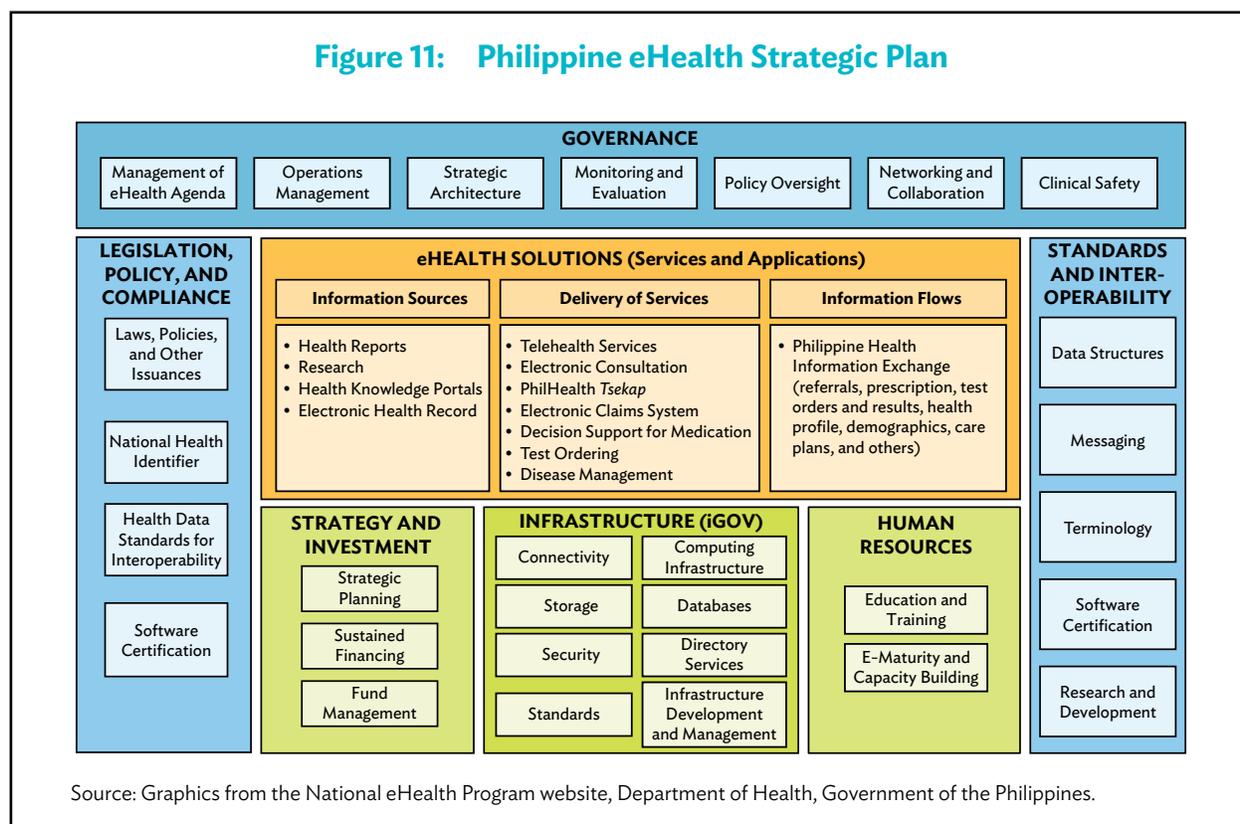
⁸² Government of the Philippines, DICT. 2017. *National Broadband Plan: Building Infrastructures for a Digital Nation*. Quezon City.

⁸³ M. C. Arayata. 2021. DICT, DOST, DTI Join Hands to Develop PH Startup Ecosystem. *Philippine News Agency*. 22 March; and DOST Philippines. 2021. Virtual Presser: Joint DICT-DOST-DTI Administrative Order Under the Innovative Startup Act. 22 March.

Digital Health

Public-Sector-Led Health System Transformation

Digital health-care transformation has been bolstered by a focus on eHealth innovations to promote interoperability, information exchange, and efficiencies to transform the sector. The Philippine eHealth Strategic Plan (PEHSP), jointly prepared by the DOH and DOST in 2014, depicts how public eHealth initiatives may support and facilitate UHC. The PEHSP envisions delivering telehealth and e-consultation solutions (Figure 11).⁸⁴



The eHealth strategy highlights three key solutions for which an enabling environment and supporting infrastructure are needed:

- (i) *Information sources*: Perhaps no health information source has generated as much interest and attention than the electronic medical record. Anticipating an eventual transition to digital health records, the UHCA mandates all health-care providers and insurers to maintain a health information system consisting of enterprise resource planning, human resource information, electronic health records, and an electronic prescription log, which shall be electronically uploaded on a regular basis through interoperable systems linked to the national PhilHealth and PhilSys ID registry. Also anticipating this transition, the Data Privacy Act of 2012 emphasizes patients’ rights to protection of their health records through ensuring its confidentiality and disclosure only to intended parties.

⁸⁴ Government of the Philippines, Department of Health. National eHealth Program.

- (ii) *Delivery of services*: The UHCA mandates that the distribution of health-care and national insurance benefits provided for in the law shall be equitable. Since the emergence of COVID-19, access to health care in the Philippines became an order of national and global importance. As lockdown orders restricted Filipinos' mobility and access to all services, teleconsultations became a powerful means of alternative access to clinical consultations. The Medical Act of 1959 considers “diagnosis, treatment, operation or prescription” for “human disease, injury, deformity, physical, mental or physical condition” may it be by “means of signs, cards, advertisements, written or printed matter, or through the radio, television or any other means of communication” as a practice of medicine and, therefore, can only be undertaken by licensed medical practitioners.⁸⁵ However, no guidelines specific to telehealth or digital health practice have been mentioned. Although there were house and senate bills proposed since 2012, there are currently no laws passed regulating telehealth or digital health in the Philippines.⁸⁶ The DOH issued a circular in April 2020 entitled “Guidelines on the Use of Telehealth in COVID-19 Response” in light of the pandemic. Despite its brevity, the document provides an initial outline that sets the stage for future telehealth guidelines. In particular, the memo supports the implementation of community quarantine by providing access to primary care providers using telehealth through online or mHealth platforms.
- (iii) *Informational flows*: In 2015, a memorandum of agreement between the DOH, DOST, and PhilHealth established the interoperable PHIE platform for secure electronic access and efficient exchange of health data and information among health facilities, health-care providers, health information organizations, and government agencies.⁸⁷ The PHIE was created with the intent to integrate and harmonize health data collected from various electronic medical record systems and private and public hospital information systems. The PHIE is a major component of the PEHSP that encompasses a range of functions across public and private sectors. These functions include confidential sharing of health records, financing and payments processing, and telehealth and/or e-consultation services.⁸⁸

Private Sector Innovation in Digital Health

Digital health innovations such as telemedicine, smart health apps, and wellness platforms are proliferating in Southeast Asia, including the Philippines.

Private service providers such as Medgate, Medifi, and Hello Health are providing on-demand telehealth services (Box 8). These three players have a multimarket presence and are applying industry best practices across their global markets, including in the Philippines. Medgate is a telehealth provider with operations in Switzerland, Australia, India, Middle East, and the Philippines, and claims that over 80% of their callers can receive remote support without being referred to a medical facility for further assessment or needing to enter an emergency facility.⁸⁹ Additionally, the University of Manila National Telehealth Centre aims to address the inequity in health, and to utilize the advancements in ICT to further improve the health-care services in targeted areas. Since COVID-19, there has been an increase in teleconsultations in the Philippines. Medgate and KonsultaMD are two of the leading telemedicine platforms in the country; the estimated increase in e-consultations in these platforms were 170% and 450%, respectively.⁹⁰

⁸⁵ Government of the Philippines. 1959. *Republic Act No. 2382: The Medical Act of 1959*. Manila.

⁸⁶ DivinaLaw. 2021. Remote Healing: Laws on Telemedicine. 19 February.

⁸⁷ M. Calimag. 2015. DOST, DOH Ink Deal for PH Health Info Exchange. *Newsbytes.PH*. 18 March.

⁸⁸ Government of the Philippines, Department of Health. Philippine Health Information Exchange (PHIE)—Overview.

⁸⁹ The Healthcare Insights. Philippines's Most Trusted Remote Medical Solution Provider.

⁹⁰ T. Gunasegaran. 2021. Telemedicine Provider Reports High Teleconsultation Uptake in the Philippines. *Healthcare IT News*. 26 May; and T. Maghirang. 2020. Mainstreaming Telemedicine in the Philippines. *The Manila Times*. 25 October.

Box 8: Case Study—Medifi Philippines

Fintech: Digital payments | Online Consultation

Medifi is an online consultation service, which advertises having over 3,000 doctors available online to consult with patients, thereby providing access to health care through secure and meaningful medical consultations. Medifi also facilitates digital prescriptions, lab tests, and medical certificates through its online platform. Despite being launched in 2015, the platform users grew exponentially during the COVID-19 pandemic. In 2020, the app averaged 6,261 patients with over 120 consultations per day and over 300 daily new sign-ups.^a

Medifi doctors need only sign-up through the app. Patients pay a flat rate of ₱699 (\$14) for general physicians and custom rates per specialist for doctors. Additionally, the platform recognizes health cards of health maintenance and/or health insurance organizations, which also serve to set the standard rates for some doctors.^b

Medifi emphasizes patient confidentiality by being compliant with the United States' Health Insurance Portability and Accountability Act standard.^c



HOW DOES IT WORK?

- Patients explain their health issue in a form in the application.
- Through its “Consult Now” feature, connection to a doctor costs a flat rate of ₱699 (\$14). Otherwise, a patient is able to choose from a list of doctors who are on the app with their consultation fee and specialization displayed.
- A consultation request is then generated, to which the doctor replies.
- Consultations proceed through chat, exchange of images, or a video call to receive medical help through Medifi’s platform.
- After the consultation is performed, the patient’s credit or debit card is charged.^b

Being online, Medifi can be accessed abroad. Aside from Philippines-based consultations, the service notes that clients have called in from places such as the United States and Viet Nam—likely migrant Filipinos consulting with doctors from “back home.”^d

Note: Content organized by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

^a J. Fenol. 2020. The Virtual Doctor Is In: Contactless Consultations in the Time of COVID-19. *ABS-CBN News*. 16 April.

^b Medifi. Frequently Asked Questions (FAQ).

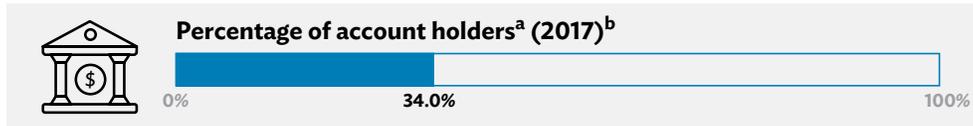
^c Medifi. Terms of Service for Patients.

^d Medifi Telemedicine On-Demand. 2021. Most Likely Migrant Filipinos Consulting with Doctors from Back Home. *Twitter*. 26 May.

On the health and wellness front, digital technologies are being used to prevent the onset of poor health or illness. Health insurance companies such as Pru Life UK are digitally integrating wellness programs into their insurance products. Pru Life UK launched the “Pulse” initiative in February 2020 to better understand user behavior, gain insights into different population groups, and build optimized risk analytics that may improve underwriting processes and provide more customized products for the end user. While its main features are the artificial intelligence-facilitated Healthcheck and Symptom Checker, it is also programmed to have supporting features such as a meal tracker, a workout plan, and a marketplace for insurance products, which nudge the users towards health-seeking behaviors as well as increase their health awareness.

Fintech

Figure 12: Percentage of Account Holders in the Philippines, 2017



Note: Graphics generated by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

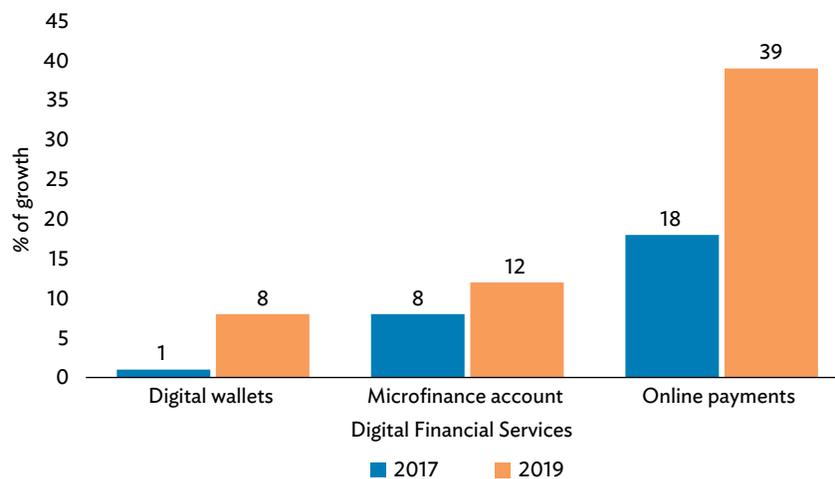
^a Pertains to account with bank or other types of financial institutions or mobile money.

^b There is a 27% difference between richer and poorer segments of the population.

Source: A. Demirgüç-Kunt et al. 2018. *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*. Washington, DC: World Bank.

The BSP annual Financial Inclusion Survey found that measures of financial inclusion and the use of fintech markedly increased between 2017 and 2019 (Figure 13).⁹¹ The BSP reports that 8%–11% of all financial transactions are now digital, compared to 1% in 2013. Most of these transactions are comprised of payments from individuals to merchants, contributing to an estimated \$10 billion in transactions in 2019. This rate was expected to grow by 24% in 2020 due to COVID-19.

Figure 13: Two-Year Growth in Financial Inclusion in the Philippines, 2017 and 2019



Source: Government of the Philippines, Bangko Sentral ng Pilipinas. 2019. *Financial Inclusion Survey*. Manila: Center for Learning and Inclusion Advocacy.

⁹¹ Government of the Philippines, BSP. 2019. *Financial Inclusion Survey*. Manila: Center for Learning and Inclusion Advocacy.

Moreover, the central bank has established the BSP Digital Payments Transformation Roadmap, 2020–2023 in line with its goals to promote financial inclusion and digitalization of payments. Specifically, the BSP aims to convert 50% of the total volume of retail payments into digital form, considering that payment services are the gateway of most Filipinos to the formal financial system, and in turn, expand the financially included to 70% of Filipino adults by onboarding them to the formal financial system through the use of payment or transaction accounts (footnote 76). To this end, the BSP encourages the growth and development of payments innovations through complementary policies and regulations such as using consumer data to better meet the needs of underserved Filipinos. The COVID-19 pandemic appears to hasten the shift from cash to digital payments amid quarantine and social distancing measures that have negatively impacted in-store purchases as well as handling of cash.

Remittances from overseas Filipino workers provide an important source of income to households in the Philippines and to the overall economy. The Philippines is the recipient of the largest flow of remittances in the region—and fourth globally—from the Filipino diaspora working abroad, according to a 2018 World Bank report.⁹² In 2020, remittances totaled \$29.9 billion even if 400,000 Filipinos were repatriated during the global pandemic, dropping only 0.8% and defying expectations of the Asian Development Bank of a 20.2% decline and of the BSP of a 2.0% decline.⁹³

Currently, there is still ample room for digitalization of the remittance market. It is estimated that 80% of all remittances are still made over the counter and entail high fees and inconvenience to the individual as of 2018. Of social benefit transfers, 55% are undigitalized and received through cash, checks, or limited use cash cards. Fintech applications like Rewire, an online international bank and remittance platform, have made it more efficient and inexpensive to facilitate these transactions back home compared to traditional means, which consume time and money from sending and transfer to claiming.⁹⁴

In line with national ambitions on financial inclusion, fintech represents a significant source of innovation in the Philippines. As of 2020, 190 fintech companies were in operation in the Philippines, representing 15% of all start-ups in the country. The prevailing fintech business models as of 2020 were digital lending (24%), payments (21%), and digital wallets (12%). Since 2017, foreign investors such as Ant Financial, GoJek, Tencent, and International Finance Corporation led a surge in fintech investments, estimated to reach \$400 million. These investments translated into growth for the leading e-money applications that Filipinos have come to rely on such as GCash, Coins.ph, and PayMaya.

Fintech for Health Opportunities

Adoption of Digital Financial Services by Health-Care Service Providers and Payers

Regulatory bodies from the financial sector and health sector can come together to support PhilHealth and private health providers to adopt mobile money and, in general, accelerate the digital transformation of payment processes in health systems. Such alignment would enable digital health financing models and increase transparency, traceability, and public trust, benefiting patients and payers alike. It would additionally create rich data sets that, when combined with big data, artificial intelligence, and machine learning, can support improvements in workflow, enhance design of value-based care, and underpin epidemiological surveillance systems.

⁹² World Bank. 2019. Record High Remittances Sent Globally in 2018. Press release. 18 April.

⁹³ C. Venzon. 2021. Philippine Remittances Come in at \$29.9bn, Defying COVID. *Nikkei Asia*. 15 February.

⁹⁴ Rewire Inc. About Rewire.

International Remittances and Social Benefit Transfers

BSP lists four other key areas where digital payments can flourish: supplier payments by businesses, remittances, utility payments, and social benefit transfers (footnote 69). Among these, supplier payments by businesses, remittances, and social benefit transfers can have a significant impact on the Philippines health-care sector.

Leading fintech wallets, such as GCash and PayMaya, could channel the global flow of remittances for health-care specific uses, including microinsurance and health savings purposes. Fintech companies can create economies of scale that allow for discounts or rebates on microinsurance or supplemental insurance cover, which would lower the financial barrier for a user to access those plans. Although GCash pioneered sending international remittances through mobile platforms, others have followed by offering advantages such as more favorable exchange rates, lower fees, or not requiring a mobile phone account, such as Rewire. Currently, however, remittance services have not yet been integrated into Philippine Fintech for Health offerings, posing an opportunity for service providers.

Additionally, fintech companies can partner with the government to support national-level improvements in financial inclusion through government-to-person payments, particularly for Social Security System benefits, Government Service Insurance System benefits, and the *Pantawid Pamilyang Pilipino* Program (4Ps).

Conglomerates Can Play a Catalytic Role in Leveraging Fintech for Health

The largest Philippine conglomerates lead in fintech innovation and have made significant investments in health care and, as such, are starting to play an important role in integrating the two sectors.

For example, the Pangilinan Group owns Metro Pacific Hospital Holdings Inc. (one of the largest private hospital operators in the Philippines),⁹⁵ SMART telecommunications and PLDT (two of the telecommunications companies in the Philippines), and the e-payment service PayMaya.⁹⁶ In 2021, Metro Pacific Hospital Holdings made a move towards integrated and bundled fintech and health services through the launch of the “mWell” health app, which includes a 24-hour teleconsultation service, COVID-19 assessment and testing, and a digital marketplace to purchase over-the-counter medicines as well as health and wellness products.⁹⁷ The combination of health-care services and e-commerce delivered by smartphone provides the ease and convenience that has often eluded health care.

Similarly, the Ayala Corporation’s diversified interests include Globe Telecom (the second largest telco in the Philippines) and Healthway (one of the nation’s largest clinic networks). With Ayala Corporation’s dominance in health care and telecommunications, it has been well poised to develop in-house or through investments and partnerships with health and fintech companies to integrate their offerings. In the digital health-care space, Ayala owns HealthNow, a major telehealth provider, and recently made a major investment in MedGrocer, the Philippines’ largest e-pharmacy store. Given recent trends toward digital integration of health services, Ayala Corporation may consider integrating services such as HealthNow and MedGrocer.

Ayala Corporation’s Globe Telecom also owns GCash, one of the country’s leading e-wallet services and which allows, among other services, overseas workers to remit money back to the Philippines. As the pandemic struck in 2020, Globe Telecom began offering three new bundled eHealth services, indicating significant interest in this market. In May 2020, it introduced the KonsultaMD app, combining online consultation and health-care information technology (IT) by facilitating prescriptions, lab tests, and referrals.⁹⁸ In August 2020, Globe Telecom

⁹⁵ Metro Pacific Hospitals. Our Company.

⁹⁶ R. Mercurio. 2020. Voyager Prepares for Entry of New Investors. *Philstar Global*. 1 January; and PayMaya. User Quick Guide.

⁹⁷ mWell. Features.

⁹⁸ Globe Telecom, Inc. 2020. *KonsultaMD Releases Video App for 24/7 Medical Consultation*. *Globe Newsroom*. 22 May.

launched HealthNow in collaboration with AC Health (under Ayala Corporation), which is touted as an all-in-one health solution combining online consultation, e-pharmacy, and offline consultation through physician visits.⁹⁹ Lastly, in October 2020, it introduced its GoHealth health microinsurance plans for subscribers to cover accidents as well as contracting dengue or COVID-19.¹⁰⁰

Expansion of Social Enterprise Models

While the developments above cater to emerging low-middle income groups residing in urban centers, there is also an opportunity to better target rural and remote populations who still face a significant digital divide.

Social enterprises that leverage digital capabilities, such as reach52, provide integrated digital community-based solutions. Reach52 provides primary care, via access managers (community health workers) to people living in rural, underserved areas who do not otherwise have access to health care. It operates across Southeast Asia and South Asia, with offices in Philippines, India, and Cambodia, and with head offices in Singapore and the United Kingdom.

Indonesia

Key Points

- **UHC foundations are in place for greater health-care inclusivity:** Despite its geographical challenges and the sociodemographic divide between urban and rural areas, Indonesia has set the foundations for UHC (established in 2014) and for expanded health-care coverage through Badan Penyelenggara Jaminan Sosial or the Social Insurance Administration Organization (BPJS), one of the world's largest health insurers.
- **The digital boom is supporting more integration of lifestyle, retail, and health services:** Indonesia's rapid growth in the digital space includes strong integration across different services, providing more convenience for the user's everyday experiences and indicating a favorable environment for testing more integrated solutions in the market.
- **Progress is continuing in the regulation of health-care fintech:** Indonesia continues to prioritize developing strong regulatory frameworks to support the implementation of new and innovative technologies. This is another key factor that supports a move to explore new pilots at the intersection of fintech and health with a strong value proposition for the Indonesian market.

Health System Context

Indonesia is one of the world's fastest growing economies, with the third-highest growth rate in the G20 and currently the 16th-largest economy in the world. At the current trajectory, it is poised to become one of the five largest economies in the world by 2030. Despite this economic success, its current state of health care presents an impediment to achieving its full growth potential.¹⁰¹

Being the largest archipelago in the world, Indonesia's geography presents unique challenges for the planning and provision of health-care services and is a driving factor in its policy development. There are just 2,813 hospitals serving a population of 260 million people across 17,000 islands. With a physician-to-patient ratio of 3:10,000, far

⁹⁹ HealthNow. For Healthcare Customers.

¹⁰⁰ Globe Telecom, Inc. GoHealth.

¹⁰¹ Oliver Wyman. 2018. *The Future of the Indonesian Healthcare Ecosystem: The Outlook to 2030*. New York.

below the World Health Organization recommended ratio of 1:600, there are simply not enough doctors and other skilled health-care workers to meet Indonesians' health-care needs.

In 2014, President Joko Widodo enacted UHC for all residents¹⁰² through a single-payer national insurance program known as Jaminan Kesehatan Nasional (JKN) [Indonesian National Health Insurance].¹⁰³ The system was designed to accommodate the provinces' diverse needs, while focusing on equity and improved access to health-care services.¹⁰⁴ JKN is financed through a mix of taxes and mandatory premiums paid by formal workers and their employers, voluntary premiums by informal workers, and government-paid premiums for low-income members. As of March 2021, 82.3% of the total population had enrolled in JKN, and 60% of its members were either nationally or regionally subsidized by the government.¹⁰⁵

Under JKN, residents are entitled to receive services in public health facilities, including routine antenatal care, with primary care facilities acting as a gateway for more specialized care. JKN coverage has increased demand for inpatient and outpatient health-care services,¹⁰⁶ increased use of skilled birth attendants by low-income mothers,¹⁰⁷ triggered growth in the number of private hospitals, and supported an expanding pharmaceutical and medical device market. However, the long-term sustainability of JKN remains uncertain because of lapses in enrolment and reduced contributions by informal workers, while the rising prevalence and associated costs of noncommunicable diseases, particularly in urban areas, have driven up health-care expenditures. Box 9 discusses the additional considerations in the process of increasing equity in the effects of health sector reform, including in deepening JKN coverage.

The Ministry of Health is increasingly looking to public-private partnerships to meet the country's health-care needs. BPJS Kesehatan regulation permits a private health insurance product to supplement JKN coverage for costs that are not covered by the UHC scheme in an arrangement known as "coordination of benefits."¹⁰⁸ This encourages private insurance companies to innovate and create targeted products for different market segments. Coordination of benefits is an important mechanism to align public and private insurance financing for the sustainability of UHC. However, in practice, coordination of benefits still lacks sufficient clarity to determine "who pays first," which disincentivizes private insurers and private providers from its use.¹⁰⁹ Currently, private insurance covers 8% of the population, but insurance sales have been gaining traction through increased awareness of insurance since the onset of COVID-19 and through the concurrent proliferation of digital sales and distribution platforms.

Regulatory Environment

Data Security and Privacy

In Indonesia, the Personal Data Protection Bill is in the House of Representatives' review process. This bill is envisioned to act as the overarching privacy law in Indonesia and has been based on the European Union's General

¹⁰² Government of Indonesia, Ministry of Law and Human Rights. 2018. *Peraturan Presiden Tentang Jaminan Kesehatan* [Presidential Regulation on Health Insurance]. No. 82/2018. Jakarta.

¹⁰³ Government of Indonesia, Ministry of Health, Center for Health Financing and Insurance Secretariat General. *Apa itu Jaminan Kesehatan Nasional (JKN)?* [What is National Health Insurance (JKN)?]. FAQ.

¹⁰⁴ R. Agustina et al. 2018. Universal Health Coverage in Indonesia: Concept, Progress, and Challenges. *The Lancet*. 393 (10166). pp. 75–102.

¹⁰⁵ J. Mawardi. 2019. Peserta dan Provider JKN [JKN Participants and Providers]. Tableau Software, LLC (accessed 18 June 2021); and D. E. Muthiariny. 2021. 82.3% of Population Registered under BPJS Kesehatan as of March. *Tempo.Co*. 22 April.

¹⁰⁶ D. Erlangga, S. Ali, and K. Bloor. 2019. The Impact of Public Health Insurance on Healthcare Utilisation in Indonesia: Evidence from Panel Data. *International Journal of Public Health*. 64 (4). pp. 603–613.

¹⁰⁷ L. Teplitskaya and A. Dutta. 2018. *Has Indonesia's National Health Insurance Scheme Improved Access to Maternal and Newborn Health Services?* Washington, DC: Palladium, Health Policy Plus.

¹⁰⁸ R. Effendy. 2016. Analysis—Indonesia's Healthcare Sector: Coordination of Benefits (COB) Rescue. *The Jakarta Post*. 24 November.

¹⁰⁹ K. Britton, S. Koseki, and A. Dutta. 2018. *Expanding Markets While Improving Health in Indonesia: The Private Health Sector Market in the JKN Era*. Washington, DC: Palladium, Health Policy Plus; and Jakarta: National Team for the Acceleration of Poverty Reduction (TNP2K).

Box 9: An Opportunity to Close Equity Gaps

THE URBAN-RURAL DIVIDE	THE WESTERN-EASTERN DIVIDE			
<p>Indonesia is witnessing a rapid increase in urbanization at a rate of 2% per year, a trend that is expected to accelerate as its economy continues to grow. More than half—152 million—of Indonesians live in urban centers, while 119 million Indonesians live in rural areas.^a</p> <p>These urban settings have higher incomes per capita, leading to increased prevalence of noncommunicable diseases and obesity; while in rural and remote provinces, the prevailing health conditions are maternal and child health problems, undernutrition, and communicable diseases, resulting in higher rates of neonatal mortality, low birth weight, and stunting.</p> <p>This preference to live in urban areas and metropolitan cities also applies to health-care workers. The lack of infrastructure, continuing education opportunities, and transportation collectively disincentivize health workers from living in rural areas, further impacting rural dwellers’ access to quality health care.^b</p>	<p>Although Jaminan Kesehatan Nasional (JKN)[Indonesian National Health Insurance] has improved access to maternal health services and increased its hospital expenditure on maternal health, inequities persist, particularly between the poor and the rich, and between Eastern Indonesia and other island groups. Provinces in the western regions of Indonesia tend to have higher overall Public Health Development Index scores (a composite index of public health infrastructure, services, behavioral risk factors, and health outcomes) compared with the eastern regions. Provincial variations were particularly noticeable for noncommunicable diseases, environmental health, and infectious diseases.^c</p> <tr> <th colspan="2" data-bbox="776 842 1386 890">OPPORTUNITIES FOR INVESTMENT</th> </tr> <td data-bbox="776 890 1386 1115"> <p>JKN hospital expenditure—accounting for 80% of the total—is becoming increasingly inequitable across islands as well as socioeconomic groups. To tackle this problem, it would be beneficial to geographically target financing for infrastructure and human resources for health to rural and disadvantaged island groups and to ensure that the enrollees, particularly the poor, understand and can benefit from JKN enrollment.^d</p> </td>	OPPORTUNITIES FOR INVESTMENT		<p>JKN hospital expenditure—accounting for 80% of the total—is becoming increasingly inequitable across islands as well as socioeconomic groups. To tackle this problem, it would be beneficial to geographically target financing for infrastructure and human resources for health to rural and disadvantaged island groups and to ensure that the enrollees, particularly the poor, understand and can benefit from JKN enrollment.^d</p>
OPPORTUNITIES FOR INVESTMENT				

^a Macrotrends LLC. Indonesia Population 1950–2021 (accessed 9 September 2021).

^b Y. Mahendradhata et al. 2017. The Republic of Indonesia Health System Review. *Health Systems in Transition*. 7 (1). New Delhi: World Health Organization Regional Office for South-East Asia.

^c Suparmi et al. 2018. Subnational Regional Inequality in the Public Health Development Index in Indonesia. *Global Health Action*. 11 (sup1: Monitoring Health Inequality in Indonesia). pp. 41–53.

^d Health Policy Plus (HP+) and National Team for the Acceleration of Poverty Reduction (TNP2K) Indonesia. 2018. *Has Indonesia’s National Health Insurance Scheme Reached the Most Vulnerable? A Benefit Incidence Analysis of JKN Hospital Expenditure*. Washington, DC: Palladium, HP+; and Jakarta: TNP2K.

Data Protection Regulation. It puts the control of personal data sharing and management to individuals. The bill further mandates that companies demonstrate compliance.

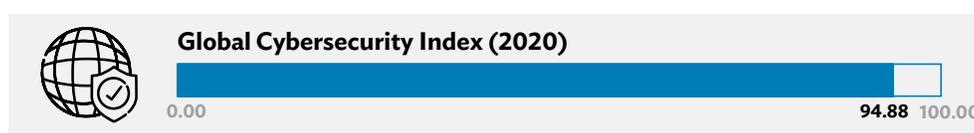
There are existing provisions in the Ministry of Communication and Information Technology (MCIT) Regulation No. 20 of 2016 and Government Regulation No. 71 of 2019 on the Provision of Electronic Systems and Transaction, which stipulate that

- (i) consent be mandatory from anyone whose personal data is processed;
- (ii) cross-border transfer of personal data is not restricted, as long as coordinated with the MCIT or other relevant authorities and subjected to the same data privacy laws of the country; and
- (iii) upon the occurrence of a data breach, electronic systems operators to report the breach to the MCIT and law enforcement agencies immediately at the first opportunity and notify the data subject within 14 days of the discovery of the breach.

Cybersecurity

In ITU's Global Cybersecurity Index 2020, Indonesia ranked 6th out of 37 countries in Asia and the Pacific, with a score of 94.88 out of 100 (Figure 14). Its highest rated pillar is cooperative measures (20), followed by an almost perfect capacity development (19.48), and technical measures (19.08). This shows strong international, interagency, and public–private partnerships, as well as human resources and systems ready for implementation. On the other hand, organizational measures need improvement, meaning a unified cybersecurity strategy, clear-cut accountability between agencies of the implementing agency, and setting national cybersecurity standards could be done.

Figure 14: Global Cybersecurity Index of Indonesia, 2020



Note: Graphics generated by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.
Source: International Telecommunication Union. 2020. *ITU Global Cybersecurity Index 2020, 4th Edition Weightage Recommendations*. Summary Statistics. 29 June.

Three pieces of legislation guide cybercrime vigilance in Indonesia: (i) Electronic Information Transactions Law No. 11/2008 (revised into Law No. 19/2016), (ii) Implementation of the Electronic Systems and Transactions Government Regulation No. 71/2019, and (iii) the Ministry of Defence Regulation No. 82/2014. The Electronic Information Transactions Law includes regulation on actions considered as cybercrime: distribution of illegal content; breach of data protection; and unauthorized access, interception, or wiretapping of computers, computer systems, or electronic systems.¹¹⁰

Government Regulation No. 71/2019, on the other hand, focuses on security of personal information against fraudulent websites and misused electronic information and transactions (e.g., unauthorized electronic signatures, spread of malicious viruses, among others). The Ministry of Defence Regulation No. 82/2014 focuses on national efforts to secure information and supporting infrastructure of national scope (footnote 110). As of 2020, two relevant bills are being lobbied—Cybersecurity Bill and Personal Data Protection Bill—to hopefully fill the gap on regulation of personal data, especially in sector-specific laws.¹¹¹

In October 2020, the Indonesian National Cyber and Crypto Agency (*Badan Siber dan Sani Negara* or BSSN) reported 324 million cases of cyberattacks targeting Indonesia for the past 3 months—33.7 million cases more compared to the whole of 2019. Types of cyberattacks include the spread of malware through email, phishing emails, and spyware. Targets were citizens, but there have also been particular attacks on financial institutions such as the spread of malware through “affmote.com.”¹¹²

In May 2021, a set of data appeared for sale on the RaidForums site, with the seller claiming it contained personal information of more than 200 million Indonesians from the database of the BPJS Kesehatan—the national health insurance implementer.¹¹³

¹¹⁰ N. H. Anjani. 2021. Policy Brief: Cybersecurity Protection in Indonesia. *Center for Indonesian Policy Studies*. 11 July.

¹¹¹ D. Kobrata and R. Atika. 2021. The Privacy, Data Protection and Cybersecurity Law Review: Indonesia. *The Law Reviews*. 5 November.

¹¹² N. Amadea. 2020. 2020 Cyber Attacks in Indonesia. *Horangi*. 23 November.

¹¹³ A. M. Ibnu Aqil. 2021. Alleged Breach of BPJS Data Points to Indonesia's Weak Data Protection: Experts. *The Jakarta Post*. 23 May.

Digital Health

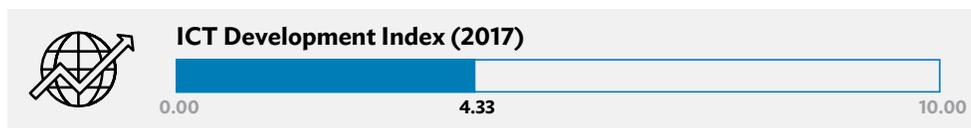
Organizations deemed to be “electronic service providers” for digital health are required by the Indonesian Investment Coordination Board to register for a corporate general license. Electronic service providers are mandated to (i) secure and maintain confidentiality of patient data, (ii) manage risk or damage that may arise out of the system, and (iii) protect the system from any unauthorized interference attempts. These measures are taken both for consumer protection and to ensure a minimum level of cybersecurity at the enterprise level.

Consumer Protection

In Indonesia, the Health Act, the Hospital Act, and the Medical Practice Act mandate that patients have the right to receive comprehensive information and give informed consent for any prescribed medical procedures or treatment. It is also within the patients’ rights to ask for a second opinion, receive proper treatment according to their medical needs, and refuse any medical treatment or procedure. Doctors and medical professionals can face disciplinary sanctions if they do not provide, or if they withhold, adequate information to patients and their families.

Digital Maturity

Figure 15: Information and Communication Technology Development Index of Indonesia, 2017



ICT = information and communication technology.

Note: Graphics generated by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

Sources: International Telecommunication Union. 2017. *Measuring the Information Society Report 2017*. Geneva; and International Telecommunication Union. ICT Development Index 2017 (accessed 20 September 2021).

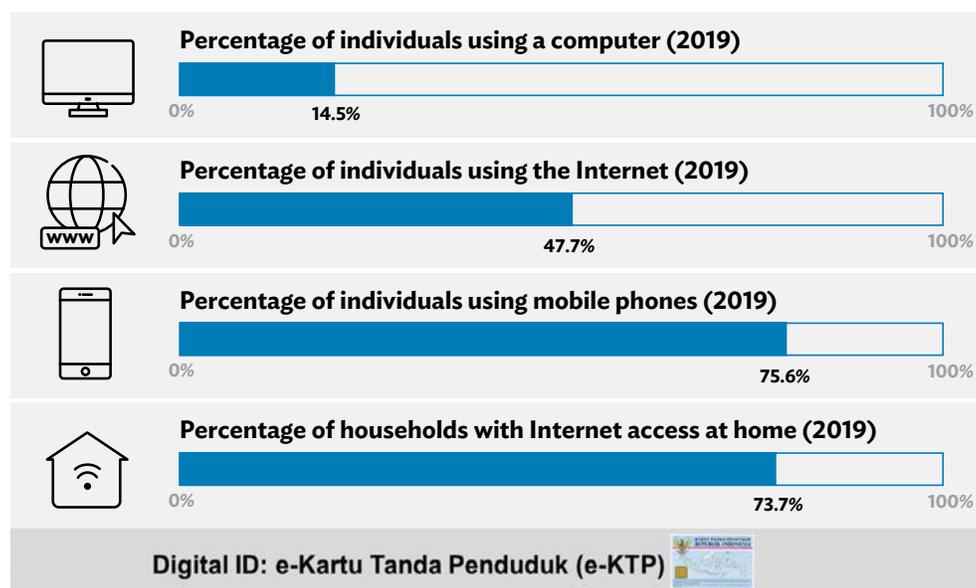
As the fourth-most populous nation in the world, Indonesia’s digital citizens are among the world’s most active. Approximately 175 million people in Indonesia use the Internet, while 160 million Indonesians access the social media.¹¹⁴ Despite the high rate of Internet use, connectivity continues to be underdeveloped in rural areas, contributing to disparities between urban and rural settings in how people use technology (Figure 16).

Commercially, Indonesia is embracing the benefits of digital technology. E-commerce businesses, such as Alfacart.com and MatahariMall.com, and financial services companies Kartuku and HaloMoney were proliferating both before and during the pandemic. More than 88% of Internet users aged 16–64 have purchased a product online, contributing to a \$19 billion e-commerce market that grew 58% between 2018 and 2019.

As with other countries, the global pandemic spurred an already frequent usage of e-commerce platforms in Indonesia. The government partnered with the Indonesia E-Commerce Association to support SMEs with training and digital literacy to avail of e-commerce platforms such as Warung Pintar, which links *warungs* (small shops)

¹¹⁴ We Are Social and Hootsuite. Digital 2020: Indonesia.

Figure 16: Digital Technology Penetration by Percentage of the Population in Indonesia



Note: Graphics generated by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.
Sources: International Telecommunication Union. Core indicators on access to and use of ICT by households and individuals. (accessed 20 September 2021).

and roadside restaurants (that act as the convening point in a community) with customers, and GudangAda, which links *warungs* with wholesalers.

Beyond e-commerce, the shift towards digital maturity in Indonesia is at the center of President Widodo's vision for a *Pemerintahan Digital Melayani* (a digitalized service government) that distinctly prioritizes citizens' perspectives. This policy is targeted to be achieved by 2025 through the establishment of a national portal on e-service, which will include all services offered by the central and local governments in Indonesia. While Indonesia does have a long way to go in setting e-governance as a norm, as reflected in its 2018 ranking of 107 out of 193 member states on the UN's e-governance survey, policy measures such as these are an impactful way forward.¹¹⁵

Indonesia's recent economic growth has also been greatly shaped by the digital economy, which currently accounts for more than 4% of Indonesia's GDP and more than 10% of its stock market capitalization.¹¹⁶ Indonesia features the largest digital economy in Southeast Asia and was valued at \$27 billion in 2018. It is also the fastest-growing digital economy in the region, with a compound annual growth rate of 49% during 2015–2018.

Innovation Ecosystem

Entrepreneurism is central to the Indonesian economy, where 95% of companies are SMEs. The result is a vibrant startup ecosystem that is attracting venture capital and talent, including Indonesians who have studied and lived

¹¹⁵ H. Rohman. 2020. Indonesia's Vision for Digital Government in 2025. *GovInsider*. 25 February.

¹¹⁶ R. Kramadibrata. 2021. Digital Policy in Indonesia: The Missing Public Sector Link. *World Economic Forum*. 9 March.

abroad and are returning home to avail of a tech-driven economy. This ecosystem is largely driven by investments in “superapps” that address pain points in more than one industry.

In 2016, President Joko Widodo announced the goal of creating 1,000 start-ups by 2020. Half of that goal was attained; 525 digital start-ups were launched in 3.5 years. The government renewed its commitment in 2019 and set a goal to launch 5,000 start-ups by 2025 through focused incubation support. That same year, the communication and information technology minister launched the Next Indonesian Unicorns Foundation (NextICorn) to coordinate public and private resources toward supporting digital start-ups in Indonesia.

In less than 5 years, from 2017–2021, Indonesia has bred seven digital unicorns, i.e., companies with a market valuation of \$1 billion, that have seized upon Indonesia’s large population with a fast-growing, digitally savvy middle-class population. In May 2021, two unicorns, GoJek and Tokopedia, merged to become GoTo, one of the highest valued start-ups in the world.

President Joko Widodo has also set a goal to digitalize government services by 2025 and, through the One Data initiative, establish data standards that enable interoperability and improve data quality. The government has identified these enabling policies as prerequisites for the successful implementation of e-budgeting, e-procurement, e-payment, and e-services, which, together, are enterprise technologies that can improve functionality and effectiveness of JKN.

Digital Health

In Indonesia, the public sector is embracing digital technology to achieve national UHC goals, while the private sector focuses on providing convenience and access to health-care needs of the fast-growing middle-class segment. Indonesia, composed of 260 million people spread across an archipelago of 6,000 inhabited islands (out of a total 17,000 islands that make up the country), has long faced health-care access issues.

Digitally enabled health-care solutions, such as teleconsultations (synchronous and asynchronous) and remote monitoring and diagnostics are now playing an important role in bridging the health-care access gap for rural and remote populations. Reflecting worldwide trends, the COVID-19 pandemic has further accelerated the push for digitalization of the health sector in Indonesia. This is reflected in the increasing popularity of a wide variety of digital health initiatives. GrabHealth, for instance, saw its daily consultations nearly double as well as log a 400% increase in the usage of its question-and-answer services in the first few months of the pandemic.¹¹⁷ In July 2021, Indonesia, facing one of the world’s largest COVID-19 epidemics, announced free telemedicine consultations for anyone exhibiting symptoms in partnership with teleconsultation provider, Halodoc.

Public Sector Support for Digital Transformation in Health Care

Indonesia has implemented a series of measures to leverage the use of digital technology to reinforce JKN’s outreach, coverage, and affordability. Public sector digital solutions, like JKN mobile, are making it easier for Indonesians to access critical health information, e.g., where to find the right specialist, age-appropriate health screening, and making it easier to pay health bills online.

Notably, the government has actively sought and worked with private sector health tech leaders like Halodoc and Alodokter, to develop and refine innovative solutions to strengthen the administration of the program.

¹¹⁷ Government of Indonesia. 2018. *Presidential Regulation on e-Government*. No. 95/2018. Jakarta.

We highlight several initiatives and innovations led by the public sector:

- (i) **Promoting health information systems interoperability in a decentralized public sector:** Indonesia has established a national health information system, *Sistem informasi kesehatan nasional*, that is directly linked to district-level health information systems, *Sistem informasi kesehatan daerah* (SIKDA). However, as a result of national decentralization strategies, each hospital, district or municipality, and province built its own SIKDA with its own format software and datasets.

To promote interoperability and reduce fragmentation, the Ministry of Health's 2012 Roadmap Action Plan for Strengthening Health Information Systems in Indonesia (Minister of Health Decree No. 192/MENKES/SK/VI/2012) has set the goal for all public sector community health clinics (*puskesmas*) and hospitals to have an interoperable central online health information system.¹¹⁸ The Ministry of Health introduced the *SIKDA Generik* as a generic local health information system to consolidate information at the district or municipality level and link it to a central human resource database. The government is further investing in Internet connectivity at the *puskesmas* level so that data can be linked and updated on a real time basis.

- (ii) **Telehealth and remote diagnostics to bridge health access gaps:** The Ministry of Health of Indonesia (MOH Reg 20/2019) has defined telemedicine as “the provision of long-distance health services by health professionals utilizing information and communication technology, consisting of information exchange on diagnosis, medication, disease and injury prevention, research and evaluation, and sustainable education of health service providers to improve individual and public health.” This includes, not only real-time (synchronous) consultations, but postponed (asynchronous) medical advice through teleradiology and imaging services. As described in Box 10, public sector telemedicine solutions can provide critical support to primary health care systems in

Box 10: Case Study—Makassar

24-hour-homecare | Telemedicine and teleradiology



WHAT IS IT?

Located in eastern Indonesia, the city of Makassar introduced a 24-hour homecare service and telemedicine through homecare service. Upon request, health-care personnel are deployed to a patient's home in the geographically isolated and disadvantaged areas. In executing the telemedicine, a vehicle is provided to take the patients to the health-care service. The vehicle is equipped with medicines, medical devices, oxygen tanks, and a patient condition monitoring tool that connects patients directly to a consultant.^{a,b}

In 2015, Makassar launched a teleECG service comprised of 30 primary care clinics that referred electrocardiogram recordings for diagnosis to Makassar Cardiac Centre. A 2020 study of Makassar provided evidence of the effectiveness of teleECG consultations in resource-constrained settings that resulted in earlier clinical intervention for patients when needed.^c

^a D. Indria, M. Alajlani, and H. Fraser. 2020. Clinicians Perceptions of a Telemedicine System: A Mixed Method Study of Makassar City, Indonesia. *BMC Medical Informatics and Decision Making*. 20 (233).

^b Deloitte Indonesia. 2019. *21st Century Health Care Challenges: A Connected Health Approach*. Jakarta.

^c I. Mappangara, et al. 2020. Tele-ECG Consulting and Outcomes on Primary Care Patients in a Low-to-Middle Income Population: The First Experience from Makassar Telemedicine Program, Indonesia. *BMC Family Practice*. 21 (247).

¹¹⁸ Government of Indonesia, Ministry of Health. 2012. *Minister of Health Decree on a Roadmap Action Plan for Strengthening Health Information Systems in Indonesia*. No. 192/MENKES/SK/VI/2012. Jakarta.

reaching remote and rural populations of Indonesia, and, in an era of COVID-19, to the general population, where mobility restrictions and lockdowns keep the general population from accessing standard health services.

- (iii) **Digitally enabled efficiencies for operations and management:** The BPJS has undertaken a series of innovations to strengthen the uptake and outreach of JKN to the Indonesian population, including the facilitation of patient registration, digital claims verification, digital waiting in hospital queues, and providing critical health information. Notably, BPJS Kesehatan is working closely with private sector companies to enhance and extend the reach of the public sector health system (Box 11).
- (iv) **Private sector innovation bringing convenience and access to the masses:** Indonesia has a growing digital health-care ecosystem led by several technology leaders. Health care is increasingly being presented as an end-to-end service offering—a “superapp” approach—that provides convenience and a user experience on

Box 11: Public and Private Sector Innovation in Digital Health Care

Jaminan Kesehatan Nasional Mobile

Badan Penyelenggara Jaminan Sosial Kesehatan (BPJS-K), Indonesia’s health social security agency, launched Jaminan Kesehatan Nasional (JKN) Mobile in 2017 in a bid to digitalize the national health system to serve all citizens. The JKN Mobile system allows users to locate nearby health facilities, check their hospital invoices and payments, and receive tailored health information based on a set of health screening questions. In particular, the system has greatly improved the access to health-care facilities in the context of the coronavirus disease (COVID-19) restriction, where patients can queue for health facilities online, even while social distancing.^a

Halodoc

Halodoc is built on the GoJek platform and integrates primary care services, insurance claims, e-pharmacy services, and an online-to-offline health-care experience with cashless visits.^b It works with over 20,000 doctors and more than 4,000 pharmacies in Indonesia. Halodoc currently boasts about 18 million monthly active users on the patient side. The value proposition for the medical professional is extremely powerful: newly onboarded physicians can consult up to 150 patients a day online.^c

Badan Penyelenggara Jaminan Sosial Kesehatan and Halodoc

BPJS-K signed a memorandum of agreement with Halodoc in 2019 to support the movement toward equitable health-care access in the country. This allows BPJS-K members and JKN Mobile users to access digital services that Halodoc offers, including but not limited to telemedicine, medicine purchase, and appointment setting.^d

Alodokter

Alodokter is another contender in this space. With over 28 million active users, its platform connects over 30,000 doctors and 1,400 hospitals and clinics with its users, integrating a wide array of services around telemedicine such as off-line doctor booking, insurance services, and digital health-care content. Alodokter also offers e-pharmacy services where medicines prescribed during in-app consultation will be delivered within major cities in Indonesia.^e

^a CNN Indonesia. 2021. Antre Daring di Faskes, Mudah dan Aman Lewat Mobile JKN [Queue Online at Health Facilities, Easy and Safe Via Mobile JKN]. 21 July.

^b Halodoc. Halodoc User Terms and Conditions.

^c Indo Tekno Podcast. 2020. The Patient is Paramount: Jonathan Sudharta of Halodoc. *KrAsia*. 2 October.

^d Halodoc. 2019. Indonesia’s Largest Single-payer System BPJS Kesehatan Teams up with Local Health Apps Startup Halodoc to Improve Equal Access to Health Care Across the Country. *Cision PR Newswire*. 11 October.

^e Technology Info. 2021. [Alodokter] Health Digital Platform with 28 Million Users per Month in Indonesia. *Asia Business Creation (ABC) Platform*. 28 May.

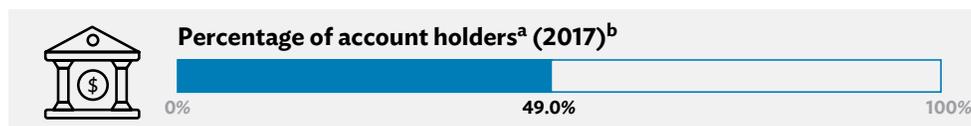
par with e-commerce, ride-sharing, and other digital services. Market leaders in telemedicine, Halodoc¹¹⁹ and Alodokter,¹²⁰ have quickly grown from providing teleconsultation services toward building a health ecosystem. Through their integrated digital health platform, these companies allow for e-prescriptions through pharmacies and delivery of medicines through a partnership with the dominant domestic ride-hailing company, GoJek.

The rise of digital health insurance and insurtech platforms are also changing the face of Indonesian health care from a payer perspective. Digitally savvy urban Indonesians are now taking up health insurance, an area that has had very low penetration in the country. Since the COVID-19 pandemic, insurance sales have increased by 17%.¹²¹ Insurtech companies, such as Pasarpolis and Qoala, provide tailored products and microinsurance to the masses that make it convenient, simple, and affordable for users (Box 12).

The most successful start-ups in Indonesia have developed highly integrated systems that address multiple pain points across different industries, which align with Indonesia's unique logistics and operational challenges described earlier.

Fintech

Figure 17: Percentage of Account Holders in Indonesia, 2017



Note: Graphics generated by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

^a Pertains to account with bank or other types of financial institutions or mobile money.

^b There is a 20% age-point difference between richer and poorer segments of the population.

Source: A. Demirgüç-Kunt et al. 2018. *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*. Washington, DC: World Bank.

Indonesia has the third-largest unbanked population in the world, after the People's Republic of China and India, and the second-largest cash-based economy.¹²² The government, through the Otoritas Jasa Keuangan (OJK) [Financial Services Authority] and the National Center for Financial Inclusion (chaired by President Joko Widodo), has promoted financial inclusion as a key strategy for economic development and equitable access to the digital economy.¹²³

Notably, in 2018, OJK has created a favorable environment for fintech innovation, including the formation of Infinity, a digital financial innovation center to foster a friendly fintech ecosystem in Indonesia. The government has also published the Revised National Strategy on Indonesian Financial Literacy in 2017, which aims to raise national financial literacy and inclusion, including accelerating insurance inclusion.

¹¹⁹ Indo Tekno Podcast. 2020. The Patient is Paramount: Jonathan Sudharta of Halodoc. *KrAsia*. 2 October.

¹²⁰ D. Koh. 2020. Indonesia's Alodokter Successfully Raises Series C Extension Funding. *Mobihealthnews*. 12 November.

¹²¹ Y. Prasidya. 2020. Otoritas Jasa Keuangan (OJK) Sees Insurance Industry Growing Amid Pandemic. *The Jakarta Post*. 30 June.

¹²² World Bank. 2018. The Unbanked. In A. Demirgüç-Kunt et al. 2018. *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*. Washington, DC.

¹²³ Asian Development Bank. 2016. *Financial Inclusion in Indonesia: Summary Sector Assessment*. Manila.

Box 12: Case Examples of Fintech for Health Insurtech Partnerships in Indonesia

<p>PasarPolis is a one-stop digital insurance platform startup established in Indonesia in 2015 that allows individuals and businesses to connect with insurers to compare insurance products. It leverages its distribution partners and agents to enable companies to distribute and democratize innovative health insurance products so they can be accessed more quickly and easily via the use of innovations in technology.^a Some of its insurance provider partners include Allianz, AXA, AIA, and Prudential. Such insurtech platforms are also trying to reach those underserved by the traditional insurance sector with affordable and simple microinsurance products that are available on-demand in order to supplement the Jaminan Kesehatan Nasional (JKN) [Indonesian National Health Insurance]. The platform intends to build its health proposition by trying to link wellness and preventive care to encourage healthier lifestyles, in addition to distributing its own and other companies' insurance products.^b</p> <p>USER REACH</p> <ul style="list-style-type: none"> Partners with more than 30 insurance providers. As of 2020, PasarPolis had sold policies to more than 35 million customers in total.^c <p>LINES OF BUSINESS</p> <ul style="list-style-type: none"> Offers highly customized and modular insurance products that are integrated with partners' systems. Specializes in microinsurance (low-priced coverage for low-income communities against specific risks such as accidents) sold across partner digital channels such as Indonesian ride-hailing apps, ecommerce firms, energy companies, and travel platforms.^d 	<p>OVO (E-Wallet) is a “smart” application that allows users to experience greater convenience in making payments and the chance to collect points when transacting with OVO partner merchants, which can in turn be used as a means of payment at these outlets. A survey in 2020 by global fintech organization Rapyd revealed OVO to be the most preferred payment method in Indonesia.^e The company has ventured into the underserved Indonesian life insurance market with its partnership with Prudential. The product PROtect Care - Hospital Cash, a digital sharia life insurance product featuring affordable premiums, is provided by Prudential Indonesia and can be accessed via the OVO digital application. Prior to this, OVO played a role in the insurance landscape with its long-term partnership with Prudential to improve access to life insurance for Indonesians as a financial services application with a large user base nationwide.^f</p> <p>USER REACH</p> <ul style="list-style-type: none"> Indonesia's largest digital wallet and financial services platform with a nationwide user base that spans all of Indonesia's 34 provinces.^g Over 110 million people currently use OVO, which is spread across 300 Indonesian cities.^h <p>LINES OF BUSINESS</p> <ul style="list-style-type: none"> Offers digital payments through partnerships with Kudo; it can convert its transactions to offline mediums via agents and through Tokopedia; and it can tap into Indonesia's largest e-commerce platform.^h
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^a Bloomberg. PasarPolis Indonesia PT.

^b *International Finance Corporation*. 2021. IFC and PasarPolis Partner Amid Pandemic to Boost Microinsurance Safety Nets for Indonesia's Most Vulnerable. 4 February.

^c C. Shu. 2020. Indonesian Insurtech Startup PasarPolis Gets \$54 Million Series B from Investors Including Leapfrog and SBI. *Tech Crunch*. 2 September.

^d Google Cloud. PasarPolis: Closing the Insurance Gap in Southeast Asia with More Affordable and Flexible Coverage.

^e *The Jakarta Post*. 2020. E-Wallet OVO Indonesia's Most Popular Payment Option: Survey. 15 June.

^f *The Asian Banker*. 2021. OVO Partners Prudential to Enter Underserved Indonesian Life Insurance Market. Press release. 28 April.

^g *Asia Insurance Review*. 2021. Indonesia: E-wallet Company OVO Offers Affordable Motorcycle Insurance. 30 July.

^h P. Singh. 2019. How Ovo Has Grown to be Indonesia's Largest Digital Payments Platform. *Entrepreneur Asia Pacific*. 28 March.

Now, with over 300 companies, Indonesia accounts for approximately 20% of all fintech companies in Southeast Asia.¹²⁴ Owing to Indonesia's high level of digital literacy and supportive government policies, fintech adoption has increased markedly in recent years. Moreover, the pandemic spurred a nearly 40% increase in digital wallet transactions of approximately \$14 billion.¹²⁵

Fintech for Health Opportunities

In Indonesia, the robust political commitment to UHC and reach of the national insurance system, JKN, as well as the fast-growing innovation environment of the private fintech and digital health industries, provide enormous opportunities for cross-sector collaboration. We outline two approaches that leverage Indonesia's strengths.

Public-Private Fintech Solutions to Strengthen UHC

Indonesia has already taken significant steps to strengthen UHC through fintech, although a specific strategy for cross-sector collaboration does not yet exist. Such collaborations include (i) embedding private sector fintech solutions to the administration of JKN to facilitate conveniences and access, and (ii) providing digital financial services to BPJS-affiliated health facilities.

As early as 2017, the OJK has encouraged BPJS Kesehatan to integrate fintech solutions into the health systems. At the time, BPJS collaborated with leading national banks to facilitate payments through mobile banking and ATMs. The integration of fintech into BPJS health sector payments and private insurance are now embracing start-up-driven solutions. BPJS now facilitates access to health-care information and payments by allowing citizens to pay and check their bills online. Through leading e-commerce platforms like Tokopedia and digital wallets Ovo and Gopay, which are commonly used in Indonesia, the public sector program has recognized the importance of convenience and integrating public health services into the habits and lifestyles of the population.

Beyond the technology solutions themselves, BPJS partnered with fintech company Modalku in 2020 to provide critical digital loans to health facilities that have partnered with BPJS Kesehatan.¹²⁶ The solution helps reduce cash flow gaps of these facilities while they await BPJS Kesehatan reimbursements for health-care services provided. These facilities can receive early payments from Modalku for their bills until they are settled with BPJS Kesehatan.

A concerted approach to bringing fintech into the administration of BPJS and JKN strategic goals can be crystalized through further dialogue between OJK and BPJS to encourage cross-sector pilots.

Well-Positioned Tech Giants to Bundle and Simplify Health Care Through Nontraditional Means

Indonesian technology companies are well positioned to create holistic, ecosystem-based approaches to digitally deliver and finance health care. Beyond sector-specific finance and health-care companies, the growing dominance of all-encompassing “superapps” can provide a bundled convenient approach to health care. This can include a package of services including teleconsultations, a digital savings wallet or digital lending options, and information on health conditions or where to find the nearest specialist, in addition to extending e-pharmacy and insurance marketplace products. These products may be offered as a “digital health package” or simply bundled with other services that consumers care about like ridesharing or telecom data packages.

¹²⁴ A. F. Medina. 2021. Opportunities in Indonesia's Financial Technology Sector. *ASEAN Briefing*. 7 April.

¹²⁵ J. M. Crisanto. 2021. Indonesia E-Wallet Transaction to Reach \$18.5 Billion in 2021 Amid Fierce Competition. *The Asian Banker*. 9 April.

¹²⁶ *IDN Financials*. 2020. Modalku and BPJS Kesehatan Announces Partnership to Expedite Cash Flow for Health Facilities. 14 April.

These products also provide an opportunity for partnership with the public health-care system by offering digital payments, appointment booking, and telehealth integration with a hospital electronic health record. Early in the pandemic, Halodoc and GoJek partnered with local authorities to launch a COVID-19 service that coordinated and triaged patients for efficient screening and medication disbursement, reducing the workload of medical professionals and minimizing a patient's exposure to the virus.¹²⁷

Digital technologies have the potential to transcend geographical and resource barriers by giving patients immediate access to health-care services and financing tools. There is a strong foundation for exploring Fintech-for-Health-related models by leveraging Indonesia's rapid digitalization of the economy and its progress developing new regulatory frameworks.

¹²⁷ N. A. Loasana. 2020. COVID-19: Halodoc, GoJek to Offer Some Jakartans Free Drive-Through Rapid Testing. *The Jakarta Post*. 10 April.

Key Considerations in a Fintech for Health Approach

Despite these advances and the opportunities to build highly integrated systems, key challenges lie ahead. Addressing these challenges requires concerted investments and actions from the entire Fintech for Health ecosystem (Figure 18).

Figure 18: Summary of Key Considerations in a Fintech for Health Approach

REGULATORS AND POLICYMAKERS



1. Pass legislation for a strong regulatory environment that enables innovation.
2. Invest in equitable mobile connectivity.
3. Require appropriate impact measurements.
4. Empower patients with digital, financial, and health literacy.
5. Infuse enthusiasm for cross-sector partnerships through regulatory sandboxes, fintech for UHC, and a digital ecosystem for care.

FINTECH AND DIGITAL HEALTH STARTUPS, INVESTORS, GOVERNMENT INCUBATORS



1. Adopt an equity lens for vulnerable and underserved groups.
2. Invest in Fintech for Health market opportunities.
3. Focus on the mutual achievement of financial inclusion and UHC.

MULTINATIONAL DEVELOPMENT BANKS AND FOUNDATIONS



- Commit long-term funding to a Fintech for Health agenda.
1. Prioritize funds that strengthen the regulatory environment and digital maturity of developing countries.
 2. Require health impact measurements and an equity lens for infrastructure projects.
 3. Fund grants for Fintech for Health pilot projects that support developing countries' national insurance programs and overall UHC goals.
 4. Provide technical assistance for governments to articulate Fintech for Health strategies.

UHC = universal health coverage.

Source: Graphics generated by Singapore, Philippines, and Indonesia Fintech for Health study team using resources from Flaticon.com.

Regulators and Policymakers

Ultimately, government can enable the use of digital financial services, or fintech, in health systems as a means to achieving universal health coverage (UHC). Examples from Singapore, the Philippines, and Indonesia, along with global use cases of how fintech is being used to improve health care, suggest that governments take the following actions:

1. Pass legislation for a strong regulatory environment that enables innovation.

Clearly articulated and strongly enforced regulations remain the cornerstone of innovation. In order to design and enable a Fintech for Health approach, particularly toward highly integrated models such as national health data exchanges and health wallets, governments must assess potential gaps in their current regulatory environment. Identification of these gaps, particularly those around consumer protection (Box 13), cybersecurity, and data security and privacy, can lead to opportunities for transparent co-investment and cooperation with the private sector. This can promote digital maturity while also ensuring that the broader innovation ecosystem advances national UHC commitments.

Box 13: Avoiding Medical Debt and Predatory Lending

Of particular importance is the intersection of health-care costs and poverty. Countries whose health expenditures are largely paid out-of-pocket—as is the case in most of Asia—remain vulnerable to catastrophic health-care costs and predatory lending. People often turn to family and friends or money lenders to pay for critical health-care costs, sometimes borrowing at exorbitant rates and through illegal channels. In other cases, they sell income-generating assets such as land, a tractor, cows, etc. Digital lenders can provide a seemingly benign channel for indebtedness to a population unfamiliar with these new services. In Indonesia, for example, the digital revolution has led to an increase in online peer-to-peer loan sharks driving people to suicide and many illegal lenders operating under the radar.

Governments can create stronger regulatory and consumer protection rules specifically for medical debt collection. In the Philippines, the Truth in Lending Act requires loan providers and credit-granting agencies to properly inform their borrowers with information related to any transaction.^a A similar policy for the credit card industry, the Philippine Credit Card Industry Regulation Law, requires credit card issuers to properly disclose finance charges, penalty fees, and other information that affects the cardholder.^b As lending can be an important instrument for patients to pay for expensive health-care costs, governments must ensure that such lending is conducted in a manner that is ethical.

For example, in the United States, the Model Medical Debt Protection Act was passed in 2019 and requires financial assistance policies to cover more patients at for-profit hospitals, establishes specific financial guidelines for charity care and discounted care, and adds procedural safeguards to protect consumers from aggressive or unfair debt collection practices.^c

^a Government of the Philippines. 2007. *Republic Act No. 9474: Lending Company Regulation Act of 2007*. Manila.

^b Government of the Philippines. 2015. *Republic Act No. 10870: Philippine Credit Card Industry Regulation Law*. Manila.

^c C. C. Wu, J. Bosco, and A. Kuehnhoff. 2019. *Model Medical Debt Protection Act*. Boston, MA: National Consumer Law Center.

2. Invest in equitable mobile connectivity.

To ensure that the benefits of the digital economy are available for all, including the benefits of a Fintech for Health approach, governments must adequately invest in information and communication technology (ICT) connectivity and infrastructure. As in Indonesia, there can be a geographically stark divide between who is and is not digitally connected. These chasms can be bridged with online/offline service models, such as agent banking models or the reach52 access managers model. However, to achieve the development goals of financial inclusion and UHC, populations must be digitally connected and digitally literate.

3. Require appropriate impact measurements.

As the saying goes, that which gets measured, gets done. Governments can mandate or encourage ministries to measure infrastructure investments such as broadband or Internet connectivity by their impact on health-care affordability, access, and quality.

4. Empower patients with digital, financial, and health literacy.

Digital literacy is defined as the ability to find, evaluate, and apply information digitally. Singapore adds “create” to convey a need to be able to “produce digital products and collaborate online.”¹²⁸ Meanwhile, financial literacy is having the knowledge and skills to confidently manage personal finances. Health literacy is defined as “the degree to which an individual has the capacity to obtain, communicate, process, and understand basic health information and services in order to make appropriate health decisions.”¹²⁹ Together, these definitions stress the importance of information and empowerment in order to leverage advancements in digitally-enabled health-care services and financing.

5. Infuse enthusiasm for cross-sector partnerships, such as the following:

- (i) *Regulatory sandboxes.* Governments can create regulatory sandboxes that encourage public health-care systems and national insurance programs to partner with the private sector to (a) adopt digital payments, enterprise technologies, and insurtech; and (b) support the development of digital health wallets, ethical digital lending models, and personal financial management tools for health financing.
- (ii) *Fintech for UHC.* As a minimum, governments can encourage health systems and national insurance programs to integrate digital payments, digital ID, and enterprise technology for fraud detection, operational efficiency, and improved patient satisfaction.
- (iii) *A digital ecosystem for care.* Governments can enable an ecosystem-based approach to health-care provision—the integration of health information, health financing, and health-care services delivery. Public and private agencies can partner with social enterprises or conglomerates to develop, test, and scale these models nationally.

¹²⁸ Government of Singapore, Ministry of Education. Strengthening Digital Literacy.

¹²⁹ Government of the United States, Department of Health and Human Services, Health Resources & Services Administration. Health Literacy.

Fintech and Digital Health Startups, Investors, and Government Incubators

The innovation ecosystem, consisting of tech and digital health start-ups, investors, and government incubators, has a substantive role in ensuring that Fintech for Health models are impact-driven, while being commercially viable and successful enterprises.

1. Adopt an equity lens for vulnerable and underserved groups.

While the scope of this paper does not focus specifically on the issues of equity, innovations should deliberately integrate an inclusive approach toward traditionally underserved and vulnerable populations, such as migrants, ethnic minorities, and women. Specifically, women represent 56% of unbanked adults globally. Gender inclusion across financial and health-care services can help women move out of poverty. Equity does not trickle down; it must be concertedly designed for and prioritized. Similarly, government must adopt an equity lens for investments in digital technologies and innovation. This can include innovation hubs that are targeted to underserved populations.

2. Invest in Fintech for Health market opportunities.

Fintech companies without prior experience in the health-care sector can hire a person or small team with health-care and insurance expertise to drive a Fintech for Health strategy. The health-care industry is strictly regulated. As such, fintech companies will be most successful in the health-care market if they understand the particular patient data security and privacy laws along with digital health regulations and guidelines. A Fintech for Health strategy that optimizes the health-care market opportunity requires knowledge of pharmaceutical companies, diagnostics, public and private insurance, and most importantly, the patient journey.

Conversely, digital health companies can support increasingly comprehensive products and services by integrating digital payment options and partnering with financial services companies to offer innovative financing models, including savings, lending, and insurance. Patients want to choose not only the care they receive but also how they pay for it. Relatedly, digital health companies must be expansive in how they approach and map potential partnerships to include banks, fintech companies, information portals, and digital marketplaces.

3. Focus on the mutual achievement of financial inclusion and universal health coverage.

Innovators are well-placed to meet the complementary development goals of financial inclusion and universal health coverage. By focusing on gaps in policy implementation for financial inclusion and UHC, fintech and digital health companies can position themselves as partners to governments in meeting population-level economic and health needs, particularly in responding to and expanding after COVID-19.

Multinational Development Banks and Foundations

Multinational development banks and foundations, along with other donors, fund national-level projects and programs that strategically prioritize resources while seeding innovation. Knowledge sharing for the emerging area of Fintech for Health is a good starting point. For example, publications on eHealth and digital health strategies are available to support a comprehensive understanding of relevant tools, technologies, and frameworks among

policyholders and implementers.¹³⁰ Working across financial services, health care, and insurance, along with ICT infrastructure and digital connectivity, the development community is uniquely placed to lead a cross-sector agenda.

Commit long-term funding to a Fintech for Health agenda.

Multinational development banks and foundations can commit long-term funding to a Fintech for Health agenda that includes the following:

- (i) Priority funds that strengthen the regulatory environment and digital maturity of developing countries.
- (ii) A framework and toolkit to guide countries to prioritize and adopt Fintech for Health to strengthen UHC.
- (iii) Impact metrics for financial inclusion, health systems, and health outcomes that can gauge progress overall and for specific health areas and underserved populations.
- (iv) Catalytic financing for Fintech for Health pilot projects that support developing countries' national insurance programs and overall universal health coverage goals.
- (v) Technical assistance to help governments articulate Fintech for Health strategies.

¹³⁰ World Health Organization and ITU. 2012. *National eHealth Strategy Toolkit*. Geneva; and T. Jones et al. 2018. *Digital Health Impact Framework User Manual*. ADB Sustainable Development Working Paper Series. No. 57. Manila: Asian Development Bank.

Conclusion

Together, governments, fintech companies, digital health start-ups, telecommunications and financing institutions, investors, and development partners can create an enabling environment for a Fintech for Health ecosystem that places patient needs at the center of innovation. A Fintech for Health ecosystem approach supports providers and payers in the provision, administration, and management of health care, including national insurance programs.

COVID-19 has demanded that countries invest smartly in comprehensive digital solutions so that patients can access and pay for the health care they need, when they need it, in the communities in which they live and work. Digital finance, e-commerce, and telehealth policies in Southeast Asia quickly adapted to the “new normal,” a phase that feels new and anything but normal. Governments are required to maintain a balancing act of reactionary financing and strategic investment that supports population health needs both in the immediate future and for decades to come.

A Fintech for Health approach balances enterprise and development goals to attain universal health coverage for all people.

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Leveraging Fintech to Expand Digital Health in Indonesia, the Philippines, and Singapore

Lessons for Asia and the Pacific

This report highlights how financial technology or fintech can be leveraged to improve health systems and outcomes. A “Fintech for Health” approach integrates digital financial services with health innovations to help solve health-care affordability, quality, and access challenges. It can be powerful in enabling people to gain access to health care and in preventing health-related bankruptcy. The report draws on examples of this approach from Indonesia, the Philippines, and Singapore. It considers the enabling environment, challenges, future opportunities, and how Fintech for Health can be adapted to diverse contexts to help promote universal health coverage.

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