

Advancing Digital Financial Inclusion in ASEAN

Policy and Regulatory Enablers



The Advancing Digital Financial Inclusion in ASEAN report was written on the initiative of the ASEAN Working Committee on Financial Inclusion (WC-FINC) in collaboration with the World Bank Group.

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Acknowledgments

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Abbreviations

ACH	Automated clearing house
AFI	Alliance for Financial Inclusion
AFIN	ASEAN Financial Innovation Network
AMBD	Autoriti Monetari Brunei Darussalam
AML	anti-money laundering
AMLO	Anti-Money Laundering Office (Thailand)
AMLIO	Anti-Money Laundering Intelligence Office (Lao PDR)
API	application programming interface
ASEAN	Association of Southeast Asian Nations
ATM	automated teller machine
B2B	business-to-business
B2G	business-to-government
BI	Bank Indonesia
BNM	Bank Negara Malaysia
BOT	Bank of Thailand
BSA	Banking Supervisory Agency of Vietnam
BSP	Bangko Sentral ng Philipinas
CDD	customer due diligence
CFT	combating the financing of terrorism
CGAP	Consultative Group to Assist the Poor
CICO	cash in, cash out
CP	consumer protection
DFI	development finance institution
DFS	digital financial services
DLT	distributed ledger technology
EFT	electronic funds transfer
ETC	Electronic Transactions Commission (Thailand)
FATF	Financial Action Task Force
FI	financial institution
FinTech	financial technology
FSB	Financial Stability Board
G20	Group of 20
G2G	government-to-government
G2P	government-to-person
GPFI	Global Partnership for Financial Inclusion
ICT	information and communications technology
IT	information technology
KYC	know your customer
M&E	monitoring and evaluation
MAS	Monetary Authority of Singapore
MCM	Ministry of Communications and Multimedia (Malaysia)
MDEC	Malaysia Digital Economy Corporation

MDES	Ministry of Digital Economy and Society (Thailand)
ML/FT	money laundering/financing of terrorism
MFI	microfinance institution
MFI-ND	microfinance institution (non-deposit-taking)
ML	money laundering
MNO	mobile network operator
MoC	Ministry of Communication and Informatics (Indonesia)
MoCS	Ministry of Cooperatives and SMEs (Indonesia)
MOC	Ministry of Commerce (Thailand)
MOF	Ministry of Finance (Thailand)
MTO	money transfer operator
MyCC	Malaysia Competition Commission
NFIS	national financial inclusion strategies
NGO	nongovernmental organization
NPC	National Privacy Commission (Philippines)
OJK	Financial Services Authority of Indonesia
ODTI	other deposit-taking (licensed) institutions
ONDTI	other non-deposit-taking (licensed) institutions
P2G	person-to-government
P2B	person-to-business
P2P	person-to-person
PAFI	Payment Aspects of Financial Inclusion (report)
PCC	Philippines Competition Commission
POS	point of sale
PSP	payment service provider
SBV	State Bank of Vietnam
SDD	simplified due diligence
SEC	securities and exchange commission
SMEs	small and medium enterprises
WC-FINC	Working Committee on Financial Inclusion

Executive Summary

This report provides a cross-country overview of the policy and regulatory framework for digital financial services (DFS) in the Association of Southeast Asian Nations (ASEAN) from a financial inclusion perspective. The analysis is based on a regulatory survey, supplementary interviews with relevant regulatory authorities, and a literature review.

Overall, the countries in ASEAN show different levels of progress in their DFS policy and regulations, often associated to their different levels of financial system development. Many ASEAN countries have adopted policies and regulations to engage with their private financial sectors; bolster their retail payment infrastructures; expand their ID systems (to facilitate customer identification by the financial sector); and set

up regulatory frameworks for services such as e-money, crowdfunding, or online lending. Other countries, however, have taken less organized approaches to regulating DFS, and in some of those countries traditional financial system regulation or infrastructure (such as in the case of microfinance sector regulation, credit bureau penetration, or gross and retail payment system infrastructure) could be strengthened to further support financial inclusion.

Throughout ASEAN, several factors have aided the development of DFS, including (a) enabling frameworks for the provision of payments, (b) widespread use of e-money, and (c) regulations allowing the use of agents by both banks and nonbank entities. However, the region also faces several challenges in creating an enabling



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environment for DFS expansion, and further improvements should be encouraged in various areas such as the following:

- Better articulation of national strategies with the goal to increase financial inclusion and digitization of the economy
- Stronger regulatory capacity to comprehend the evolution of financial services and handle the additional risks brought by innovations and new business models
- Improvements in basic infrastructure, such as efficient and accessible retail payment systems, and in the digitization of large-volume recurrent payment streams
- Progress in financial and technological literacy, which would enhance trust in DFS
- The collection and use of reliable data on traditional and emerging financial technologies for policy-making purposes

Given the ongoing regional process of financial integration in ASEAN and based on the agreed framework by ASEAN member states, concerted actions among member countries to promote an enabling regulatory framework and to enforce governmental actions when needed could support the sound expansion of DFS at the country and regional levels. As there are many additional opportunities emerging for this very active region to develop its digital financial services, intraregional knowledge exchanges, facilitation of cross-border payment systems based on country readiness, and partnerships between the private and public sectors to support innovation could greatly enhance the development and use of DFS. In particular, the countries in the region with more advanced DFS systems could continue their regional and bilateral initiatives to share their experience and expertise with their less developed neighbors.

Authorities in most advanced DFS environments are encouraged to strengthen the development of both the traditional and the disruptive data infrastructure to support innovation on data gathering, storage, and management. New technologies and business models, such as cloud computing, distributed ledger technology, or e-commerce, have the potential to support DFS expansion. Authorities should consider analyzing these topics from a financial inclusion angle (identifying risks and opportunities) to leverage these innovations for DFS expansion.

The expansion of DFS in ASEAN will benefit financial inclusion; however, this expansion will require support from authorities to approach the needs and goals of DFS in a comprehensive and coordinated manner. Regulatory arbitrage, regulatory uncertainty, incomplete schemes for the protection of customers, or deficiencies in financial and technological literacy can hinder DFS expansion. Countries need to evaluate how current DFS regulations could promote competition and facilitate investment while adequately assessing its risks and fulfilling digital and financial consumer protection goals.



Introduction

Digital financial services (DFS) have the potential to overcome barriers to full financial inclusion (GPFI 2016; GPFI and G20 2017).¹ A high percentage of the population in Association of Southeast Asian Nations (ASEAN) countries lacks access to basic financial services. In most ASEAN countries, less than 50 percent of the population owns an account at a formal financial institution (see table C.2 in appendix C). Digital payment penetration in most ASEAN countries is under 40 percent, and gaps in DFS adoption are higher when considering specific indicators, such as the proportion of adults who use a mobile phone to pay utility bills or to access a bank account.²

The digitization of government payments (inflows and outflows) is in progress but is still in its early stages.

The Working Committee on Financial Inclusion (WC-FINC) requested World Bank support to perform a stock-taking assessment of the status of digital financial regulatory frameworks in ASEAN countries, focusing on the regulations enacted by central banks or other main financial authorities. A regulatory survey was performed to capture the status of the ASEAN countries in the digitization of financial services from a financial inclusion perspective. The G20 (Group of 20) High-Level Principles for Digital Financial Inclusion was also used as reference.

This report focuses on the policy and regulatory aspects of DFS in ASEAN countries and will serve as a background for the work of the WC-FINC. Chapter 1 presents the methodology and scope of this report, and chapter 2 describes some features of the region's DFS market context. Chapters 3 and 4 analyze ASEAN policies and regulations for DFS, and chapter 5 highlights some regulatory issues regarding emerging topics important to DFS expansion. Chapter 6 finishes the report by summarizing the main findings, challenges, and opportunities that the region faces going forward.

1 Digital financial inclusion is defined by GPFI (2016) as digital innovations in the delivery of financial services designed to reach the financially excluded and underserved. Full digital financial inclusion would mean, therefore, effective access to and use of a broad range of financial services accessed through digital means. For access to be effective, financial products must be responsive to the needs of those who are financially excluded or underserved and should be provided at a cost affordable to such customers.

2 Data are for 2014 and from the World Bank's Global Findex database.



CHAPTER 1

Scope and Methodology of the Report

This report is a stock-taking exercise that provides a cross-country overview of the policy and regulatory framework for digital financial services (DFS) among Association of Southeast Asian Nations (ASEAN) members from a financial inclusion perspective.

It looks at the main features, developments, and trends within the policy and regulatory environment that help or hinder DFS market development in each country.

This exercise claims neither to thoroughly assess the quality of DFS regulation nor to provide specific policy recommendations for a particular context or country.

Taking stock of the regulatory frameworks for DFS is a complex task because of the wide range of providers (regulated and nonregulated institutions) and topics covered, including payments; savings; credit and insurance products; measures related to the ecosystem, such as government policies or infrastructure; and nontraditional topics, such as data protection and cybersecurity.

The main sources of information used in carrying out this exercise include (a) a regulatory survey conducted by the ASEAN Working Committee on Financial Inclusion (WC-FINC) between June and November 2017; (b) additional interviews with some regulatory authorities during the ASEAN WC-FINC meeting in Brunei Darussalam (August 2017); and (c) a literature review of DFS markets, policies, and regulatory studies of ASEAN countries.

Financial inclusion is addressed throughout the report, which focuses on measures to increase access, use, and quality of provision of a variety of financial services.

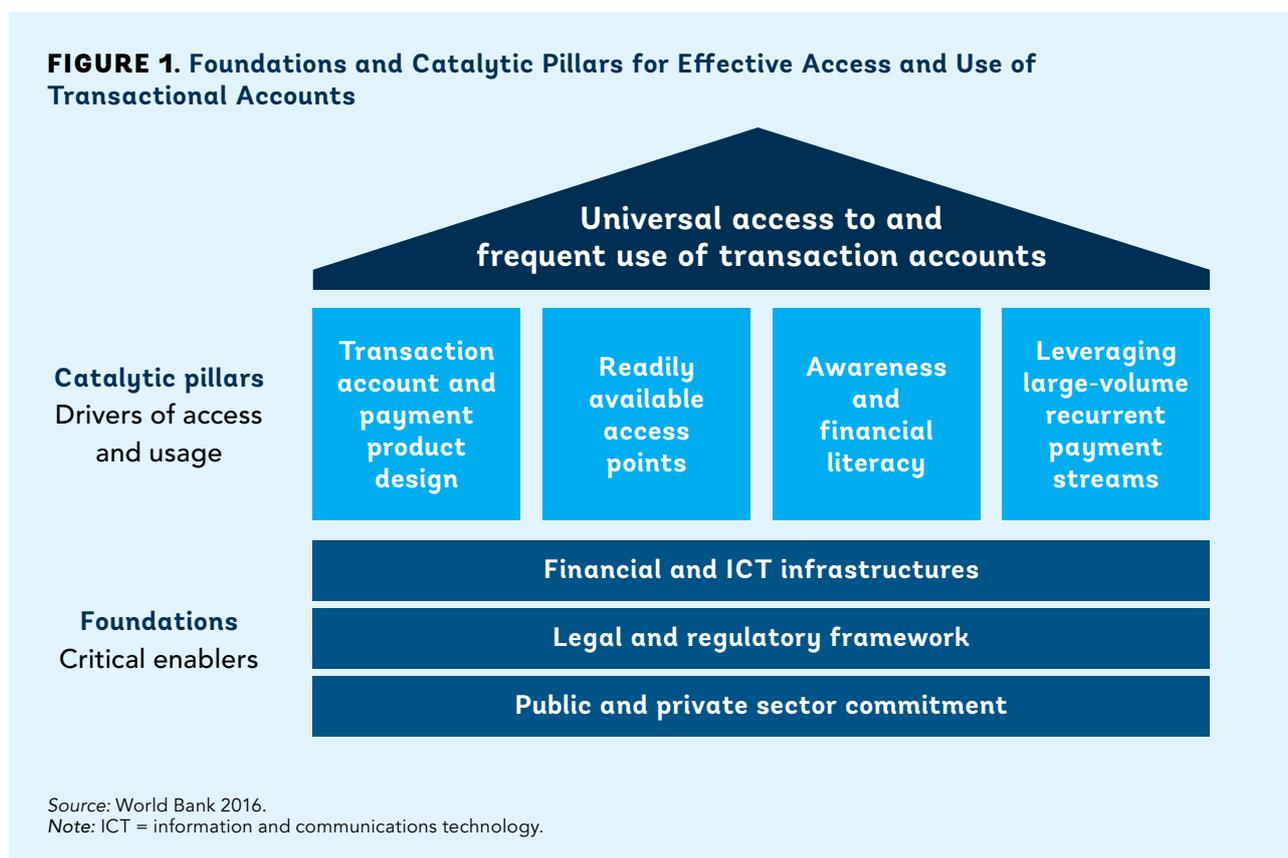
This exercise uses the Alliance for Financial Inclusion (AFI) definition of DFS to set the scope of the activities and providers included, as follows:

DFS is the range of financial services accessed and delivered through digital channels. Digital channels include the Internet, mobile phones (both smartphones and digital feature phones), automated teller machines, point-of-sale terminals, and near field communication-enabled devices, chips, and any other digital system (AFI 2016).

The analytical framework for this stock-taking exercise relies primarily on the “Payment Aspects of Financial Inclusion” (PAFI) report (World Bank 2016), the G20 (Group of 20) High-Level Principles for Digital Financial Inclusion (GPMI and G20 2016), and the Consultative Group to Assist the Poor (CGAP) framework for expanding branchless banking (see appendix B for more details on these publications; see also CGAP 2010).³

³ There are other initiatives that define the main elements of the DFS regulatory framework or cover specific types of products and services, such as the University of New South Wales DFS regulatory framework toolkit (Malady and others 2017); the International Telecommunication Union publication on DFS regulation (ITU-T Focus Group on Digital Financial Services 2016a), which includes many of the elements mentioned by CGAP (2010); and the Better Than Cash Alliance 2016 report (Janis and Shah 2016), which focuses on accelerating the digital payment ecosystem.

This report uses the foundations and catalytic pillars of the PAFI report as a reference framework for its analysis (see figure 1). This framework is used with a DFS lens, so that the relevant goal (the top triangle of figure 1) is to achieve universal access and frequent use of DFS. The foundations, as critical enablers, and the catalytic pillars, as drivers of access and use, will be reviewed in the report only from a policy and regulatory perspective.



To provide content to each of these foundations and catalytic pillars, the analysis considered both the G20 High-Level Principles for Digital Financial Inclusion and the topics covered by the CGAP Branchless Banking Template. See appendix B for more information on the GPFI and G20 (2017) and CGAP (2010) publications.





CHAPTER 2

DFS Market Context

This chapter will highlight commonalities and differences among financial systems across the Association of Southeast Asian Nations (ASEAN) region that have not been specifically addressed through the regulatory survey and that directly or indirectly influence public and private sector actions related to digital financial services (DFS).

The diverse level of development among ASEAN countries' financial systems seems to play a role in DFS adoption. More developed countries present innovative policy measures and frameworks to support DFS development and manage its risks, whereas less developed economies have shallower markets or little information available on their market development. Most DFS developments and product regulations have been set up in countries with more advanced financial systems (see box 1). Countries with less advanced financial systems need to strengthen their basic infrastructure, better identify risks, and prepare their regulatory bodies for upcoming innovations.

BOX 1

Level of Financial System Development and DFS Relationships

The credit-to-gross-domestic-product ratio is often used as a proxy for the level of development of a financial system. (See table C.1 in appendix C.) Among the Association of Southeast Asian Nations (ASEAN) countries, the highest such ratios belong to Malaysia, Singapore, Thailand, and Vietnam. Most of these countries have relatively advanced policy and regulatory ecosystems for digital financial services (DFS) (see chapters 3 and 4 of this report). Indonesia and the Philippines also have high levels of policy and regulatory development compared with other ASEAN members, despite their low levels of financial development.

These dissimilar levels of development also bring about opportunities and challenges for the expansion of DFS in the region. Knowledge exchanges are encouraged as an opportunity for the least developed countries to leap ahead with the help of the more advanced countries in the region. There are many opportunities for cross-border investments, given the specialization of financial technology (FinTech) companies in more advanced countries. Moving toward standardization or alignment of DFS regulations is important, because some regulatory frameworks have yet to be defined, and standardization or alignment would facilitate cross-border investments and payments. Furthermore, many DFS business models are characterized by economies of scope and scale,⁴ which adds to the argument for leveraging existing developments across the region.

Commonalities in financial system features across the region could also play a role in shaping public and private actions. ASEAN policy makers have identified several common challenges to financial system development: similar unattended segments of the population,⁵ sustainability problems within microfinance institutions (MFIs),⁶ informality,⁷ and infrastructure issues. Other shared market features are the limited uptake of DFS even in more developed countries⁸ and the public sector's strong role in financial markets (ADB 2017; Fujimoto and Rillo 2014; CGAP 2017; Lewis and Lewis 2017; CARD MRI and UNCDF 2015). All these shared characteristics should lead the public and private sectors to target unattended segments with DFS, collaborate with publicly owned financial institutions to pilot innovations,⁹ improve Internet and telecommunication infrastructure, and ensure a level playing field between publicly owned and privately owned DFS providers.

- 4 For example, providers of payment services and digitized credit (as described by Hwang and Tellez 2016) find financial success through economies of scale.
- 5 The similar segments of unattended customers are micro-, small-, and medium-sized enterprises and rural or agricultural regions. Subsistent problems exist related to the coverage and quality of Internet and telecommunication networks, the strong presence of publicly owned financial institutions, and the still-limited uptake of DFS (even in more developed countries).
- 6 Sustainability problems within microfinance institutions (MFIs) have been identified mainly in Cambodia, Myanmar, the Philippines, and Thailand. Sources report the use of a simplistic credit risk assessment for microloans in Cambodia, regulatory barriers such as interest rate caps, caps on loan size, and restrictions on credit allocation portfolios in Myanmar, a lack of an effective credit assessment methods for microloans in the Philippines, and issues with microfinance regulations and a high level of overindebtedness among borrowers at MFIs in Thailand. All of these factors can affect the financial sustainability of MFIs.
- 7 Informality refers to the large number of small and informal institutions in these countries. Such institutions include rotating savings and credit associations in Cambodia, the Philippines, and Thailand; unregulated MFIs and other informal lenders in Indonesia, Myanmar, the Philippines, and Thailand; informal leasing providers; village funds in the Lao People's Democratic Republic and Thailand; and cooperatives in Indonesia and Thailand.
- 8 See, for example, the data on the penetration of e-money (number of accounts/total adults) in table A.9.
- 9 See the example of the Bank Mandiri incubator in chapter 3.



CHAPTER 3

Foundations as Critical Enablers: Policy, Legal, and Regulatory Frameworks Supporting DFS Development

Supporting policy, legal, and regulatory frameworks already in place in the Association of Southeast Asian Nations (ASEAN) countries will help promote digital financial services (DFS) in financial inclusion contexts. The three key foundations to push forward DFS for financial inclusion include (a) public and private sector commitments on digital financial inclusion, (b) legal and regulatory frameworks for DFS, and (c) financial and information and communications technology (ICT) infrastructures of relevance to digital financial inclusion.

There is no standard definition throughout the ASEAN region of what should be considered DFS. Thailand defines the term as “the provision of electronic banking services via the Internet... whereby customers can perform transactions by themselves,”¹⁰ whereas Indonesia defines it as payment or financial services “conducted in cooperation with third parties and using tools and devices that are based on mobile technology or web-based [technology] in the framework of financial inclusion.”¹¹ Both of these definitions diverge to some extent from existing DFS definitions drafted in international forums such as the Alliance for Financial Inclusion (AFI) (see chapter 1) and the Global Partnership for Financial Inclusion (GPII) (whose definition refers to a range of formal financial services deployed through digital means).

These divergences from internationally agreed definitions can impede attempts to collect data on market developments and to standardize regulations and requirements for the free flow of services in the region, among other things. They also demonstrate a much narrower understanding of DFS, in some cases, than that of international standards. Since the DFS industry is developing rapidly, there is a risk that many products, business models, and technologies will evolve and will not be captured within these narrower frameworks.

In order to understand the status of ASEAN countries regarding the three foundations of DFS development, this chapter will examine public and private sector commitment, regulatory and supervisory frameworks, and financial and ICT infrastructure across the region.

¹⁰ Thailand regulatory survey, quoting Notification of the Bank of Thailand (BOT) Sor. Nor. Sor. 26/2008.

¹¹ Indonesia regulatory survey, quoting Regulation No. 16/8/PBI/2014 and BI Circular Letter No. 18/22/DKSP on Digital Financial Services.

Foundation 1: Public and Private Sector Commitment in ASEAN Countries

Strong commitment from both the public and the private sector is key to support and accelerate the development of DFS in ASEAN countries. The G20 (Group of 20) High-Level Principles for Digital Financial Inclusion has identified several ways for the public and private sectors to affirm their commitment to supporting digital financial inclusion. These ways include (a) ensuring that relevant national strategies reflect digital financial inclusion goals, (b) ensuring effective coordination among policy makers and authorities involved in DFS provision, (c) maintaining an active dialogue and coordination between public and private sector stakeholders as well as the civil society, and (d) implementing programs to digitize large-volume, recurrent payment streams.

Specific measures related to national policies, coordination mechanisms between the public and private sectors, and private sector initiatives supporting the development of the DFS ecosystems in ASEAN are analyzed below.

Relevant Government Strategies and Implementation and Coordination Mechanisms

The development of DFS can be greatly accelerated by effective and continuous political commitment to its support and by comprehensive strategies from public authorities to move toward financial inclusion, such as national financial inclusion strategies (NFIS) (GPFI and G20 2016, 7–8). In contrast, isolated policies and initiatives to favor specific products or sectors usually fail to achieve sustainable and efficient results (World Bank 2016, 22). In the context of DFS, it is important to understand the extent to which NFIS directly support digital-related activities and the extent to which other types of national or targeted policies also play a role in DFS development.

Several countries in ASEAN, such as Indonesia, Malaysia, Myanmar, the Philippines, and Thailand, have implemented NFIS with DFS objectives, data-gathering mandates, and, in some cases, monitoring and evaluation (M&E) mechanisms¹² (see table C.4 in appendix C). The remaining ASEAN countries either are in the process of designing an NFIS or have implemented other initiatives to promote financial inclusion. For example, Vietnam is working with the World Bank Group to design an NFIS, and Singapore has set up agencies to facilitate exchanges between the private and public sectors in financial technology (FinTech) topics, including DFS.

Aside from NFIS, other important high-level public sector policies include existing or upcoming financial system development strategies and broad strategies related to digitization. In Malaysia, for example, the Malaysia Digital Economy Corporation (MDEC) aims to drive the country's digital economy by creating awareness of it, fostering talent to enter the field, and encouraging the adoption of digital technologies.¹³

¹² Information regarding the existence of an NFIS and its coordination and M&E mechanisms was provided by the Thai regulatory authorities during a personal interview in Brunei Darussalam, August 2017.

¹³ For more information, see the MDEC corporate profile at <https://www.mdec.my/about-mdec/corporate-profile>.

This scenario, in which multiple actors at the domestic and regional levels are working directly or indirectly to expand DFS, brings both opportunities and challenges. On one hand, countries can leverage ongoing initiatives at the bilateral or regional level to support their national DFS strategies. On the other, the more entities that are involved in DFS expansion, the greater the risk that their efforts will interfere with each other's. ASEAN regulators should therefore pay attention to (a) reinforcing the relationship between NFIS and broader digitization and financial development strategies and (b) ensuring that the goals and actions of the various implementing bodies are coordinated. Authorities must also work to ensure nonduplication and collaboration between national or regional structures when planning any new initiative.

Public and Private Sector Coordination Initiatives

Public and private sector coordination is another key factor in DFS development in ASEAN. Public-private initiatives in the region include knowledge exchanges between private and public actors (such as regulators, banks, and FinTech providers) and the definition of standards for alternative data-gathering activities and credit-scoring algorithms. Several such initiatives are highlighted here:

ASEAN Bankers Association: This group, made up of major banking associations from all 10 ASEAN member countries, aims to strengthen the voice of ASEAN in global and regional policy advocacy efforts, share banking know-how, and promote active collaboration between ASEAN banking institutions. It is currently exploring and setting up events related to new technologies and FinTech innovations.¹⁴

ASEAN Financial Innovation Network: The Monetary Authority of Singapore (MAS) and the International Finance Corporation signed a memorandum of cooperation in May 2017 to establish the ASEAN Financial Innovation Network (AFIN). This network, governed by the ASEAN Bankers Association, aims to facilitate broader adoption of FinTech innovation and development as well as enhance economic integration in the region (Lee 2017). Its projects include creating a collaborative network of banks, FinTech developers, and nonbanks and maintaining an industry sandbox in which participants can integrate and test applications with each other (Mortimer-Schutts 2017).¹⁵

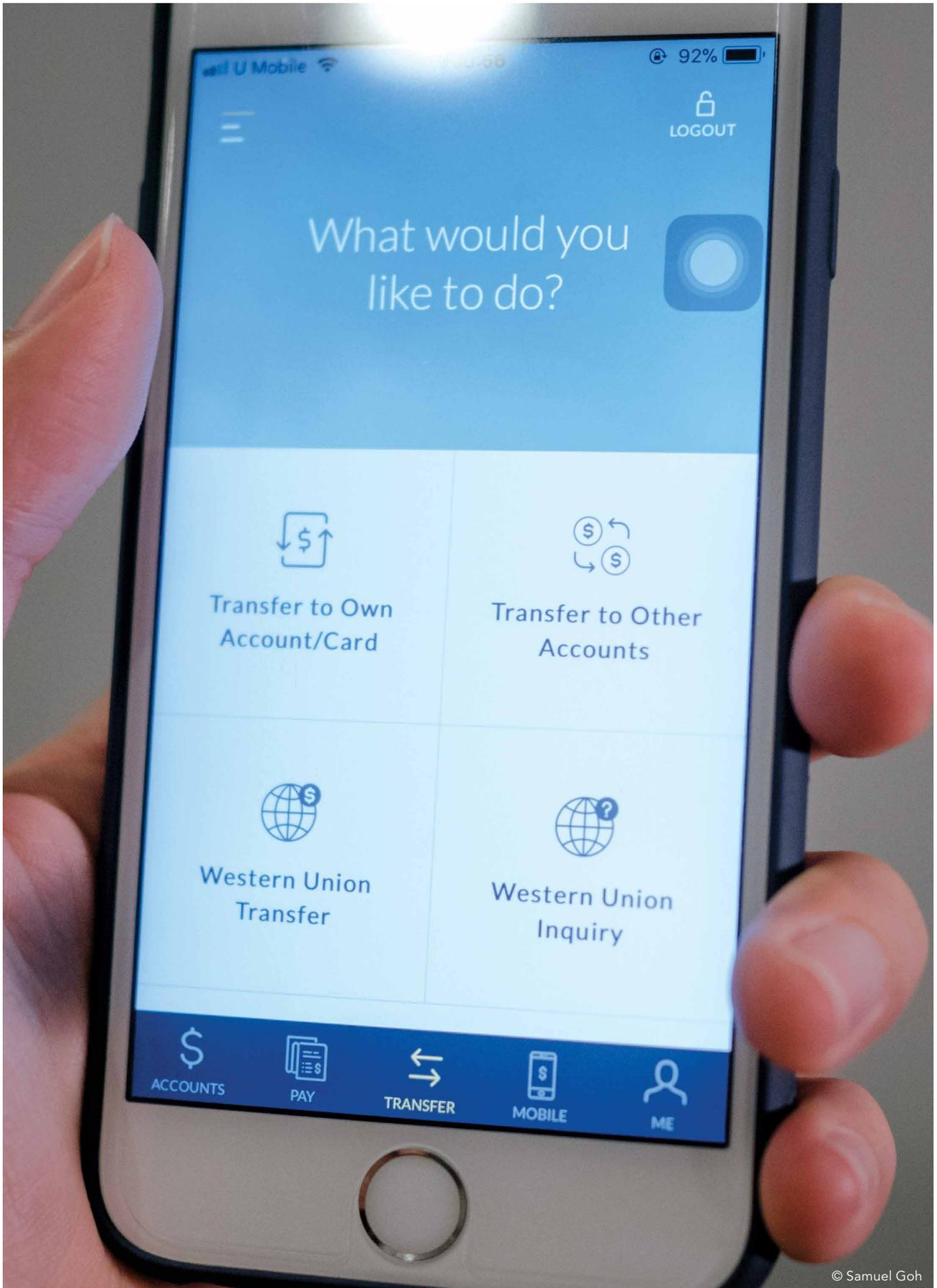
ASEAN UP: This digital platform provides resources, information, and services to empower businesses and professionals (including those involved in FinTech) in ASEAN countries. For example, it contains information on the number and types of FinTech companies in each of several ASEAN countries.¹⁶

Both national strategies and public-private initiatives on DFS build a supporting environment that policy makers should consider when designing policies and regulations that are favorable to DFS expansion.

14 Information about the ASEAN Bankers Association is available on the organization's website at <http://www.aseanbankers.org/ABAWeb/index.php/about-aba>

15 See also the website of the ASEAN Financial Innovation Network at <http://afin.tech/>.

16 See the ASEAN UP website at <https://aseanup.com/southeast-asia-digital-social-mobile/> for more information about the platform.



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Foundation 2: Cross-Cutting Topics within the Regulatory and Supervisory Frameworks for DFS

From a financial inclusion perspective, the regulatory and supervisory frameworks of financial systems must identify, assess, balance, and optimize the links between inclusion, stability, integrity, and consumer protection (Cull, Demirgüç-Kunt, and Lyman 2012: GPFI and G20 2016; CGAP 2017).

As such, this section assesses general frameworks applicable to DFS providers and the ways in which ASEAN countries are adapting these frameworks. Relevant topics include (a) the adoption of risk-based approaches to the regulation and supervision of DFS, (b) the coordination of DFS regulators and supervisors, (c) the ways in which regulators engage with the DFS industry and its consumers, (d) the activities permitted through digital channels, (e) the modification of anti-money laundering (AML) regulations and regulations combating the financing of terrorism (CFT) to increase financial inclusion, and (f) the regulation of consumer protection from a DFS perspective.¹⁷

Risk-Based Approaches to Regulation and Supervision

Although the G20 recognizes that innovation in financial services is essential to expanding financial inclusion, it also acknowledges that innovation introduces new risks—individual and systemic—that need to be addressed and mitigated (GPFI and G20 2017, 11; FSB 2017, 4). It has identified new or shifting risks concerning settlement, liquidity, operations, credit, consumer protection, and money laundering and the financing of terrorism (ML/FT) that derive from innovations in digital financial services. These risks must be considered when developing a regulatory framework for DFS, and the most effective way to do so is to adopt a risk-based approach to regulation.

A risk-based approach requires countries to identify, assess, and understand the risks to which financial institutions are exposed and to take appropriate measures to mitigate those risks. Risks should be identified for the specific institution or service under regulation (FATF 2014, 6; EBA 2016, 8). The Financial Stability Board (FSB) provides details on the types of microfinancial risks that should be considered (from a financial stability perspective)¹⁸ when setting FinTech¹⁹ regulations, such as maturity risks, liquidity risks, governance risks, cyber risks, and so on (FSB 2017). Table 1 presents an assessment of the relevance of these risks in the context of the most common DFS products. All of these risks should be identified and assessed by financial authorities when analyzing DFS developments and designing new regulatory frameworks. Many recent regulatory developments have taken a functional approach, focusing on the services in question, as opposed to an institutional approach, which would focus on the type of entity providing the service.²⁰

17 This content was selected following the examples proposed in principle 3 of the G20 High-Level Principles for Digital Financial Inclusion.

18 The FSB (2017) also describes important systemic macrofinancial risks related to financial institutions toward which more intense supervisory oversight, higher loss absorbency, and recovery and resolution plans should be considered.

19 The FSB describes FinTech as technology-enabled innovation in financial services. The FSB's definition covers a broader scope of innovations relevant to the financial system than does AFI's definition, which refers only to the innovations that enable access to financial services through digital mechanisms (FSB 2017, 1).

20 The IMF (2017, 15) highlighted the same distinction when analyzing FinTech developments and regulations. They state that "as market structures change, regulation needs to complement its focus on entities with increasing attention to activities."

TABLE 1. Microfinancial Risks of FinTech and Its Relationship with Existing Products

Microrisks (financial and operational)	E-money	Alternative lending	Crowdfunding
Maturity mismatch		X	X
Liquidity mismatch	X	X	X
Leverage	X	X	X
Governance	X	X	X
Cyber risks	X	X	X
Third-party reliance	X	X	X
Legal and regulatory risks	X	X	X

Source: FSB 2017.

Note: The relationship between risks and products was identified by the authors. According to Financial Stability Board (FSB) analysis, financial technologies showing relatively high activity or growing quickly include retail payments and financial technology (FinTech) credit.

The existence of a risk-based approach for one DFS product, however, does not guarantee that a similar approach is applied to other products. Thus, regulators should be mindful of all of the criteria in table 1 when designing new frameworks for DFS products or improving existing frameworks.

Regulatory and supervisory capacity to deal with DFS risks

The ability to implement a risk-based approach to regulation and supervision of DFS providers is tied to the capacity to fully understand and thwart risks inherent to DFS. The rise of digital financial services, including Internet banking, nonbank electronic services (such as e-money), and mobile banking, requires regulators to strengthen their institutional structures and supervisory capacities with new tools and technologies.

ASEAN countries recognize the need to strengthen their regulatory capacity with regard to DFS. Some countries, such as Malaysia, the Philippines (see box 2), and Thailand, have set up specialized units to deal with the risks associated with digital finance technologies. In addition, Brunei Darussalam did report having a team with the technical knowledge to supervise financial services through the Internet or other electronic means, and Lao People's Democratic Republic did report having technical capacity for data collection and analysis of prudentially regulated institutions and banks that provide mobile banking.

Most of the new initiatives taken by ASEAN countries to address DFS risks are related to data collection and analysis. These initiatives are expected to improve supervision by supplying regulators with the latest data on digital financial activities. Nevertheless, ASEAN countries should also begin to incorporate new tools and technologies to strengthen their supervisory capacities.

BOX 2

The Philippines RegTech Initiative

The Bangko Sentral ng Pilipinas (BSP) is running a RegTech pilot program to test an application programming interface (API) for its reporting process and the potential use of chatbots to handle consumer complaints (Agcaoli 2017). A chatbot is a computer program designed to simulate conversation with human users, especially over digital channels such as the Internet and SMS (short message service). The application programming interface (API) would connect financial service providers to the central bank and push their data to an information warehouse hosted by BSP. BSP staff would analyze the data and would be able to customize reports as input to supervision and policy-making processes. The use of a chatbot would allow customers to submit complaints electronically, thereby freeing staff time for more analytical tasks that can aid the consumer protection policy-making process.

Note: For more information about these BSP initiatives, see the R2A website at <https://www.r2accelerator.org/bsp/> and Schlicht (2016).

Coordination of Regulators and Supervisors

Effective coordination between regulators and supervisors is an essential part of an enabling regulatory framework for DFS.²¹ Successful supervision of the traditional financial system has required regular communication and sound coordination among supervisors; adding DFS to the picture only increases this need. Innovations in DFS products and the new business models adopted by their providers have forced local financial authorities to coordinate with a broader range of stakeholders than ever before on issues such as competition, cross-border activities, telecommunication services, data storage and privacy, and cybersecurity.

In particular, the new risks brought by DFS' intensive use of technology have increased the need for coordination among regulators and supervisors. DFS bears a higher risk of fraud than nondigital financial services; it thus requires more intense coordination with consumer protection and financial crime authorities. The economies of scale and scope needed for the success and financial viability of some new DFS business models (such as those of e-money and money transfer companies) also call for greater coordination with competition authorities.

Most ASEAN countries rely on at least three different authorities to regulate DFS providers, with several supervisors often joining to regulate a single type of provider or product (see table A.1. and A.2). These supervisors can include the financial authority, the competition authority, the telecommunication authority, the AML/CFT authority, or others. A need for coordination among these supervisors is evident, and the lack of such coordination was acknowledged as a major challenge to DFS facilitation.

²¹ See principle 3 of the G20's High-Level Principles for Digital Financial Inclusion (GPFII and G20 2016).

Engagement of Regulators with the Industry and Consumers

Policy makers around the world are dealing with DFS customers and providers through various innovative actions, such as hosting orientation and information-sharing events for DFS providers; developing supervisory tools, such as behavioral research methods, to gather consumer insights regarding DFS use; engaging with private sector innovators through innovation hubs, labs, and other innovator facilitators; and finding new modes of engagement with the industry and consumers (Jenik and Lauer 2017; FSB 2017). In many ASEAN countries, regulators and supervisors are actively reaching out to industry participants and consumers to better understand DFS developments so as to strengthen their oversight. These different approaches can be categorized as (a) orientation activities for DFS providers, (b) DFS promotion activities, and (c) piloting and testing DFS-related products or activities.

Orientation activities for DFS providers

Orientation activities include any institution or program created to facilitate the flow of information to DFS providers. In most countries, such initiatives have manifested as the creation of a specialized department within the financial authority. For example, the Autoriti Monetari Brunei Darussalam (AMBD) established a FinTech unit in 2016 that is responsible for regulatory and development strategies on technology. In Indonesia, OJK (a banking authority) and BI (the central bank) have created the Digital Finance Innovation and Microfinance Development Group and a FinTech office, respectively. Bank Negara Malaysia (BNM) established the Financial Technology Enabler Group in 2016 to promote the adoption of innovations in financial services by formulating and enhancing regulatory policies in support of them. In the Philippines, the central bank (BSP) established a FinTech subsector, a unit under the Financial Supervision Sector, tasked with exercising supervisory oversight over FinTech developments in the market. Singapore's Monetary Authority of Singapore (MAS) is leading the International Technology Advisory Panel to facilitate exchange with the private sector. And in Thailand, the Bank of Thailand (BOT) recently established a financial technology department to oversee developmental and supervisory issues regarding FinTech.

Promotion activities for DFS providers

The public sector can lead promotional activities, such as fairs or institutional structures, to support public and private sector coordination. Public-private partnerships can also set up incubators and innovation labs to promote DFS development. For example, Indonesian state-owned Bank Mandiri launched an incubator for FinTech start-ups in mid-2016 together with state telecommunications giant Telkom, while MAS and the National Research Foundation (part of the office of the prime minister of Singapore) set up a FinTech office in 2016 as a one-stop virtual entity to promote Singapore as a FinTech hub.

Piloting and testing activities for DFS providers

Many ASEAN countries have developed piloting or testing initiatives to allow innovation to happen under controlled environments, such as within regulatory sandboxes and industry sandboxes (see box 3 for an explanation of these terms). Regulators can use the controlled environments of sandboxes to test, without compromising consumer protection and financial stability, whether firms can

effectively operate. Other mechanisms to manage DFS innovations include building knowledge among supervisory authorities and technologically improving authorities' traditional methodologies and tools.²²

The main piloting and testing measures in use in ASEAN countries, and some other developments regarding the use of technology to improve supervisory tools, include the following:

- **Brunei Darussalam Regulatory Sandbox:** AMBD issued guidelines for a FinTech regulatory sandbox allowing qualified companies to operate and offer their financial products within parameters agreed to by the companies and AMBD. However, no company has yet been approved.²³
- **Indonesia:** The Financial Services Authority (OJK) and the BI are each providing mechanisms to test and pilot FinTech initiatives in an effort to facilitate innovation. OJK has designed a procedure to allow FinTech companies to deploy operations for a year after registration. During this time, OJK may conduct continuous evaluation of their performance. Within one year of registration, at most, FinTech companies must apply for a license (OJK 2017). BI has enacted rules (as of December 2017) for the creation of a regulatory sandbox designed to support innovation while preserving customer protection and stability. Providers under this scheme would be able to start commercial operations within a defined period (Rajah & Tann Asia 2018; personal communications with BI, May 2018).
- **Malaysia Regulatory Sandbox:** In October 2016, BNM launched the Financial Technology Regulatory Sandbox Framework to provide an environment conducive to the deployment of FinTech solutions, including by reviewing and establishing appropriate regulatory requirements and procedures to facilitate innovation. Under this framework, FinTech companies looking to carry out business regulated by BNM may be granted certain regulatory flexibility to experiment while keeping to appropriate safeguards. By the end of 2017, six firms, in the areas of advisory services, insurance aggregation, remittances, and foreign exchange services, had commenced live testing of their services.²⁴
- **Philippines:** BSP has an open-door policy with FinTech companies and encourages them to approach the regulator to discuss new products and services. This test-and-learn approach was adopted by the Philippines in 2004 to allow BSP to observe actual operations of new DFS providers, evaluate risk, and craft appropriate regulatory responses (Tariela 2017). New players must adhere to principles such as risk management for information technology (IT) (ADB 2016, 46–47).
- **Singapore Regulatory Sandbox:** The Singapore Regulatory Sandbox, created in late 2016, allows FinTech start-ups and large companies to experiment with financial technology solutions. Its goal is to provide appropriate safeguards to contain markets' or customers' costs of failure rather than to prevent failure. On a case-by-case basis, MAS relaxes specific regulatory requirements, such as credit rating, financial soundness, management expertise, track record, technology risk management, and outsourcing guidelines. Areas not subject to relaxation include confidentiality of customer information, staff honesty and integrity requirements, handling of customer money and assets by third parties, and AML/CFT requirements.²⁵

22 Building knowledge about FinTech and DFS is essential to effective supervision. A fast-moving marketplace requires quicker and more dynamic learning opportunities. Peer learning, specialized DFS training courses, and technical assistance are some ways to achieve this goal (Michaels and Homer 2017, 343).

23 Information provided by the regulator, January 2018

24 Information provided by BNM, April 2018.

25 There are exhaustive criteria to qualify as a participant in the regulatory sandbox, and there is a procedure to exit the market or to continue the development of the product in the case of a successful trial. See Pei (2017, 354–55).

- **AFIN Industry Sandbox:** One of the goals of AFIN is to develop an industry sandbox that provides a service platform architecture and contributes to the harmonization of application programming interface (API) standards at the country and regional level. To achieve this, AFIN plans to develop and operate a scalable and interoperable API and middleware infrastructure that will enable banks, nonbanks, and FinTech providers to connect and test applications (Mortimer-Schutts 2017, 6–9).
- **Thailand Regulatory Sandbox:** Established in late 2016 by the BOT, this sandbox enables FinTech companies to test the market before publicly launching their products. The experimental period is roughly 6 to 12 months, and participation allows new technologies to be approved faster for introduction to the market. Additionally, the regulatory sandbox facilitates information sharing between the central bank, other banks, and other FinTech operators while ensuring regulatory compliance.²⁶

BOX 3

Definitions of Regulatory and Industry Sandboxes

Regulatory Sandboxes

Regulatory sandboxes are set up by financial regulators to allow small-scale live testing of innovative products in a controlled environment under the regulator’s supervision. They enable regulators to potentially revise and shape the regulatory and supervisory framework with agility. Regulators establish sandboxes mainly to promote competition and efficiency in financial service markets through innovation.

Industry Sandboxes

Industry sandboxes are interoperable industry utilities where companies can contribute to and access data, systems, operational tests, feedback, and other tools to test their ideas. These sandboxes intend to replicate the minimal functionality needed to accurately test, pilot, and simulate software in development apart from its production environment, thus protecting real systems, data, and consumers. Regulators here act as observers, allowing them to understand and learn from experiments run in controlled environments.

Sources: Jenik and Lauer 2017, 1; Industry Sandbox Consultation 2017; and Industry Sandbox Consultation’s website at <http://industrysandbox.org/about/>.

²⁶ This information was provided by Thai authorities as a part of the report’s review process.

Activities Permitted Through Digital Channels

Some ASEAN countries allow financial services to take place through electronic devices, although many impose limits as to which services may be offered in this context. Allowed transactions include opening an account with a provider, signing a contract, paying a loan, and transferring money; these transactions can involve mobile phones, automated teller machines (ATMs), point-of-sale (POS) terminals, chips, biometric devices, or other devices. In Brunei Darussalam, Indonesia, Malaysia, Philippines and Thailand, many different transactions can be performed through online banking (over the Internet, using a device such as a mobile phone, personal computer, or laptop). On the other hand, Lao PDR allows money transfer activities over the Internet, and Vietnam allows e-money cash-in/cash-out and online banking (for more specific information, see table A.3 in appendix A).

Internet is the most common digital channel among ASEAN countries. As such, most ASEAN countries do not allow services to be provided through other electronic means, or, if they do (as in the Philippines, and Thailand), they allow only banking institutions to provide them. This attitude creates an uneven playing field that does little to help spread DFS to underserved customers. Policy makers may have to adjust their regulatory frameworks to accommodate alternate digital channels if they want to expand access to digital financial services.

Anti-Money Laundering Regulations and Regulations Combating the Financing of Terrorism

Since 2012, the Financial Action Task Force recommendations have required providers of financial services to combat the laundering of proceeds of crime and terrorism by applying risk-based AML/CFT measures. Such measures, when applied on a risk-sensitive basis, are intended to effectively prevent ML/FT and address the risks and vulnerabilities specific to a particular jurisdiction, but not to pose a barrier to financial inclusion. Consequently, to the extent that certain products, services, or sectors are less vulnerable to abuse by criminals, simplified AML/CFT measures should be applied to increase their accessibility.

Therefore, in regions where ML/FT risks have been assessed as low, financial institutions should be allowed to conduct simplified due diligence (SDD) measures, according to the Financial Action Task Force's (FATF's) risk-based approach to AML/CFT (see box 4). Authorities may also assess lower ML/FT risks relating to certain types of customers or to particular products, services, transactions, or delivery channels. As such, SDD measures usually result in a tiered customer due diligence (CDD) approach that applies different restrictions to accounts depending on these factors. These restrictions can limit an account's geographic scope of transactions, maximum value per transaction, total monthly value of transactions, and more (FATF 2017, 7–9).

Measures to simplify customer due diligence can also include simplifying ID verification by accepting alternative documents; relying on certain assumptions regarding the use of basic products; and not requiring customers to provide a physical address,²⁷ the given names of their parents, or an income stub when opening an account. To compensate for this relaxed due diligence check, regulators can increase the monitoring of transaction patterns or be on higher alert for suspicious transactions (FATF 2017, 18–21).

²⁷ This information is not required under international standards; however, most countries require customers to supply this information in order to open e-money accounts, basic accounts, or both (see table A.4, appendix A).

BOX 4

Customer Due Diligence

Customer due diligence (CDD) procedures are part of the assessment required by financial institutions to prevent money laundering and financing of terrorism (ML/FT). Institutions are prohibited from keeping anonymous accounts or accounts held under false names. CDD measures are applied at the moment of establishing business relations, when carrying out transactions above USD/EUR 15000, or when ML/FT is suspected. Standard CDD measures include verifying the customer's identity, identifying the owner of each account, understanding the customers' business relationships, and conducting ongoing scrutiny of these relationships and the transactions undertaken.

Sources: FATF 2012, 14; FATF 2017, 4.

Overall, there are multiple approaches among ASEAN countries to the exercise of AML/CFT regulation and supervision (see table A.4). In some countries, the financial authority is separate from the AML/CFT authority; in others, two or more different institutions have regulatory oversight of AML/CFT efforts (see table A.4 in appendix A). ASEAN countries also apply different approaches to account opening requirements, varying in how they address factors such as the customer's nationality or legal status, requirements for proof of employment and income, and the types of identification documents they accept.

However, ASEAN countries generally approach AML/CFT with a certain degree of flexibility in order to ease the provision of e-money and basic accounts (see box 5 for more information on the approaches taken by Indonesia and the Philippines). When opening accounts (specifically e-money and basic accounts), a majority of countries surveyed request the customer's address and nationality or legal status. Some countries require proof of employment and income, others require proof of nationality and address information. Also, the SDD approach of monitoring transactions once the customer has been identified has been adopted in various countries (see table A.4 in appendix A).

In many countries, the lack of a unified ID system has led to the use of adequate alternative documents. Brunei Darussalam, Indonesia, Lao PDR, Malaysia,²⁸ the Philippines, and Singapore, for example, allow the use of alternate ID documents issued by the government in place of the national ID card for both e-money and basic accounts. Indonesia, Singapore, Thailand, and Vietnam reported that financial institutions can access the national ID system electronically, which greatly facilitates customer ID verification procedures. Moving forward, one strategy to increase access to DFS could be to simplify account-opening requirements even further, because requiring proof of employment or income might not be necessary for certain products or users. It would be encouraged, however, that countries depend on a deeper and contextualized analysis of how AML/CFT rules are truly encouraging or preventing access to DFS in each country.

²⁸ Malaysia, remarkably, allows the use of a foreign ID to send remittances, which greatly supports financial inclusion efforts. See BNM (n.d.).

BOX 5

Indonesia's and the Philippines' AML/CFT Approaches Favor Digital Financial Inclusion

Indonesia and the Philippines showcase two different ways to implement flexible approaches to compliance with anti-money laundering rules and rules combating the financing of terrorism (AML/CFT rules). The Philippines' Circular 950 (2017) provides that customers profiled as low risk may present any document or information, reduced in writing, which the financial institution deems sufficient to establish the client's identity. This provision was made in view of the lack of a national ID system, which hindered low-income people in opening accounts. When dealing with low-risk consumers, e-money issuers complying with identification procedures must collect account information within a 90-day time frame, which facilitates remote account opening and reduces costs to e-money issuers. The Philippines also set a threshold for suspicious transactions to be considered under AML/CFT rules. Microfinance transactions fall mostly below that threshold. Therefore, nongovernmental organizations, microfinance institutions (MFIs), and MFI cooperatives, whose clients generally transact in low amounts, do not have to report to the financial intelligence unit (Anti-Money Laundering Council). Despite this favorable framework, the absence of a national ID system remains a huge obstacle to easier customer due diligence (CDD) compliance in this country.

In Indonesia, simplified account ID requirements allow individuals to open basic accounts (*laku pandai*) by presenting, among other documents, a letter from the local village officer. Agents can capture customers' documents digitally through mobile devices (such as smartphones and tablets), and the documents can be uploaded directly to bank servers. E-money accounts can be opened with as many as 20 different types of paper-based IDs. Another element contributing to Indonesia's advances in digital financial services is the implementation of the link between the e-KTP (electronic identity card) program and financial institutions' systems.

Sources: CGAP 2017, 23 and 31; ADB 2017, 23.

Note: The government of the Philippines, as of August 2018, has passed a law to create a national ID system. See <http://psa.gov.ph/content/philippine-identification-system-act-and-its-implementation>.

Consumer Protection Regulation and Supervision

Consumer protection (CP) regulatory and supervisory frameworks are critical to the expansion of DFS. Using electronic devices to access financial services increases customers' exposure to various risks, such as fraud, operational failure, and human errors caused by a lack of technological or financial literacy. Data show that the most frequent complaints of breaches to consumer rights in several ASEAN countries concern ATM transactions, mistaken or unauthorized transaction fees, and debit and credit card issues. To increase DFS uptake, customers need to clearly understand the way DFS products work and to be confident that any problem will be resolved in a fair and simple way.

In many ASEAN countries, including Indonesia, Malaysia, the Philippines, Singapore, and Thailand, consumer protection (CP) supervisory responsibilities fall under multiple agencies, including the general CP agency, the financial authority, and the cooperatives authority. This model could result in regulatory and supervisory overlap in the absence of mechanisms for effective coordination. Additionally, the way regulations are currently designed (for example, by building up specific frameworks for e-money issuers rather than aligning e-money regulations with frameworks already in place for banks, or by leaving digital credit providers outside the competence of CP authorities) risks regulatory arbitrage.

There are comprehensive enforcement mechanisms for CP in place in most ASEAN countries, with penalties ranging from warnings to the revoking of operating licenses. However, the fact that not all financial providers are subject to CP rules and the differing levels of enforcement that apply from one provider to another threaten the effectiveness of several countries' otherwise well-designed CP frameworks.

Disclosure requirements and complaint handling mechanisms, for example, vary across DFS providers. Among ASEAN countries, disclosure requirements cover most stages of the acquisition process of DFS products, but these requirements tend not to apply to payment or e-money providers, only to banks, rural banks, and development finance institutions (DFIs). Mechanisms for complaint handling are also generally not available to all financial providers, except in Malaysia, Brunei Darussalam, and the Philippines. Malaysia and Thailand exclude cooperatives from these mechanisms, and Indonesia excludes MFIs as well.

ASEAN regulators are trying to raise the standard of consumer protection. Countries such as Malaysia, the Philippines, and Singapore have implemented provisions focusing on various aspects of fair treatment, including rules and requirements to (a) provide consumers with products suitable to their needs, (b) prevent overindebtedness and mandate minimum standards for debt-collection practices, (c) forbid any distortion in customer choice on the basis of unfair or abusive practices, (d) enhance transparency over fees and charges, (e) ensure a minimum level of professionalism on the part of personnel dealing with customers, and (f) subject agents to CP requirements. Supervisors are also trying new tools to enhance CP supervision, such as mystery shopping schemes, which allow supervisors to gather information on customer experience by posing as clients of financial institutions without the knowledge of the financial officers. Nevertheless, further work is needed to strengthen and simplify the CP frameworks of most ASEAN countries so that CP can be effectively enforced over a level playing field.

The review of the cross-cutting topics within the regulatory and supervisory framework for DFS (Foundation 2) shows that ASEAN countries have made great progress toward developing an enabling regulatory and supervisory framework for DFS. Several countries have established general, risk-based rules applicable to DFS providers regarding the financial authority's interaction with the industry, the activities allowed to take place through digital channels as financial institutions move toward digitization, consumer protection, and AML/CFT practices favorable to financial inclusion. However, more indepth analysis is needed to eliminate the risks of regulatory arbitrage or incomplete consumer protection schemes.

Foundation 3: Regulation of Infrastructure Relevant to DFS Development

From a financial inclusion perspective, seven key infrastructure components are necessary for DFS development: (a) data-sharing platforms, (b) identification infrastructure, (c) automated clearing houses, (d) interbank payment-card processing platforms, (e) large-value interbank gross settlement systems, (f) ICT infrastructure, and (g) a reliable electrical grid. The following subsections will focus on important policy and regulatory measures regarding three topics, (a) retail payment systems, (b) identification infrastructure, and (c) credit information systems (as an existing infrastructure for data sharing), because of their particular relevance to DFS expansion in the context of financial inclusion.

Retail Payment System Features

Sound and efficient retail payment systems support financial inclusion by serving as the underlying infrastructure for DFS expansion (see box 6). Moreover, increasing financial inclusion can augment the efficiency of the whole payment system, including retail transactions, by incorporating more participants into a market system characterized by economies of scope and scale. DFS, regarding payments, refers to the transition of retail payments from traditional cash-based transactions to digitized transactions using the various electronic payment instruments available, including interbank systems such as ACHs (automated clearing houses) and interbank payment card networks.²⁹ Such systems are vital to financial inclusion because of their intrinsic goal: the daily processing of low-value payments in the interbank payment network.



²⁹ Electronic payment instruments are issued by payment service providers (PSPs) (see chapter 4) and can be classified into three categories: electronic funds transfers (EFTs), which consist of direct credit and debit transfers; payment-card-based instruments, which include credit card payments, charge card payments, and debit card payments; and e-money-based instruments, in which the payer maintains a prefunded transaction account with a PSP (often a nonbank) (World Bank 2016, 13).

BOX 6

Payment System Infrastructure and Retail Payment Features

The payment infrastructure needed to support financial inclusion includes (a) an interbank system for retail electronic fund transfers, such as an automated clearing house (ACH); (b) a platform to process payment cards; (c) a large-value interbank settlement system (such as a real-time gross settlement system); (d) an efficient communications infrastructure; and (e) an adequate identification infrastructure (discussed later in this chapter). Some of these components (a and b) are directly related to the provision of services for retail (small) transactions and were therefore examined through the regulatory survey of ASEAN countries.

Retail payments refer to transactions in which at least one party is not a financial institution; that party can be a consumer, a business, or a government agency. Depending on the payer-payee combination, the retail payment can be classified as P2P (person to person), B2B (business to business), G2G (government institution to government institution), or as between a mixed combination of persons, businesses, or government institutions (P2B, B2G, G2P, and so on).

Source: World Bank 2016, 16–19.

ACH access

Automated clearing houses (ACHs) provide the infrastructure for retail payments products (especially direct credit and direct debit transfers) and increase the number of access points available to customers, since any branch or outlet of an ACH member can be used to transfer funds to a customer of any other ACH member. Traditionally, the only ACH members with direct access to these clearing houses are banks. Nonbanks, such as money transfer operators (MTOs), cooperatives, and MFIs, among others, rarely have direct access, although they are sometimes granted indirect access through partnerships with entities that do. (World Bank 2016, 31–32). The financial and technical costs of establishing and maintaining direct access to an ACH are high: within the reach of medium or large PSPs, but outside that of smaller PSPs. As such, a smaller PSP seeking access to an ACH may have no choice but to partner with a larger institution that has direct access, relying on the larger institution to provide it with access on fair terms (which the larger institution might not do, if it comes to see the smaller PSP as a competitor).

Many ASEAN countries have at least one ACH in place and allow banks direct access to it. (see table A.5) However, most countries, including Malaysia, the Philippines, and Thailand, limit or do not allow direct access to most nonbank financial institutions, potentially influencing competition, access, and reliability of those institutions. Indirect access to the ACH is available in (a) Cambodia; (b) Indonesia to regulated nonbanks (except for non-deposit-taking MFIs); (c) Lao PDR to local MTOs, other deposit-taking institutions (ODTIs), and MFIs; and (d) the Philippines to subsidiaries of mobile network operators (MNOs) and to MTOs, exchange bureaus, and the postal networks through partnerships with sponsor banks (which are subject to membership fees).

Efforts are being made to improve the accessibility to and efficiency of retail payments. For example, some countries are developing alternative real-time or faster-payment schemes, including Singapore and Thailand. Malaysia has adopted the ISO20022 standard and a real-time retail payments platform to support instant fund transfers using proxies such as mobile phone numbers, identity card numbers, and business registration numbers. Indonesia launched the National Payment Gateway policy initiative to establish a secure, interconnected, and interoperable payment infrastructure that facilitates retail payments linked to government programs. And the Philippines introduced the National Retail Payment System policy framework, which provides standards and governance principles pertaining to the retail payments market and promotes interoperability among service providers. Two ACHs, PesoNet (a batched electronic fund transfer mechanism) and InstaPay (a real-time, low-value fund transfer service), have been established under this framework.

Many of the current initiatives to improve ACH access are led by private sector players. The role of the regulator in such initiatives is to oversee aspects such as transaction security, transparency, fair competition (allowing nonbanks to compete), and fair merchant practices. In addition, some countries (including Indonesia, Malaysia, Singapore, and Thailand) are trying to facilitate coordination between private and public stakeholders and promote large-scale use cases. As the development of ACH systems progresses, it will be beneficial for the ASEAN countries to define standards to facilitate interoperability of ACH systems across the region.

ATM and POS networks

ATM and POS networks are card-processing payment systems belonging to a financial provider that connect various payment card issuers and allow the exchange of payment card transactions. They play a key role in increasing the number of access points available to clients. However, their effect on financial inclusion is limited unless they are connected to similar networks, and certain pricing and access policies applied to these networks can negatively affect interoperability (World Bank 2016, 32–34).

The interoperability of ATM and POS networks varies among ASEAN countries. Indonesia, Malaysia, the Philippines, Thailand, and Vietnam reported full interoperability of their domestic ATM networks (see table A.6), and full interoperability of POS networks was reported by Malaysia, the Philippines, Singapore, and Vietnam (see table A.7). Regarding the clearance and settlement process of ATM and POS networks, most countries state that all of their ATM and POS networks are interconnected.

To expand the reach of DFS, countries would benefit from assessing the existing infrastructure of their retail payment systems and the efficiency and accessibility of such systems. Overall, very different levels of development of ACH and card payment networks exist across the ASEAN region. The high level of interoperability and interconnectivity among ATMs and POS networks plays, or stands to play, a large role in an efficient retail payment ecosystem. And finally, the question of whether the current scheme of ACH access rules is fair and sufficient to support a level playing field deserves further consideration.

Identification Infrastructures³⁰

Access to formal financial services requires the verification of customer identity. The lack of reliable identity documentation and data verification for potential customers is one of the main challenges to financial integrity in ASEAN; as such, the development of digital identity systems is called for. The key principles behind a digital ID system, as endorsed by several international organizations and stakeholders, include (a) universal coverage, (b) minimal barriers to access and use, (c) a robust system, (d) platform interoperability, and (e) data privacy.³¹

National identification infrastructures in ASEAN

Brunei Darussalam, Indonesia, Malaysia, Lao PDR, Singapore, and Thailand have compulsory national ID programs in place. For example, Indonesia's e-KTP program covers 86 percent of the population and contains the owner's unique ID number, encrypted fingerprint and photo, and demographic data. Malaysia has MyKad, a multipurpose smartcard containing key information on individuals, including their biometric identity (in the form of a fingerprint), their unique 12-digit identity number, their driver's license, their passport, and their basic medical records, with the ability to serve as an e-wallet if activated.

Some countries in the region are transitioning toward digital identity systems, with various degrees of progress. The Philippines recently passed a law establishing a foundational identification system, PhilSys, with biometric information, to provide proof of identity for all citizens and resident aliens. Meanwhile, Singapore is building a national digital identity platform, which is expected to be fully operational by 2020. Thailand plans to set up a national single identity platform by 2018, and Cambodia is planning an integrated population identity system.

ID connections with DFS customers

Connecting ID systems with financial infrastructure encourages DFS uptake by facilitating know-your-customer (KYC) procedures and ID-based accounts for digital banking, mobile money, and transfers from government assistance programs (ITU-T Focus Group on Digital Financial Services 2016b, 42). A few examples of such connections were reported, for example, in Malaysia, MyKad readers and POS terminals allow financial institutions to directly verify customers' identities via an online, real-time system.³² Singapore is building an e-KYC platform for financial institutions using the national identity system.³³

In summary, national ID systems in ASEAN are, in general, highly developed. However, some challenges remain in the digitization of ID infrastructure and in its integration with other data initiatives. Few ID systems are currently connected with financial systems; thus, further work is needed to enhance their use in supporting DFS expansion.

30 The survey did not request information about national ID systems; therefore, this analysis is based on publicly available information.

31 For more detailed information, see World Bank and Center for Global Development (2017).

32 Information provided by BNM, April 2018.

33 The program will allow Singaporeans to open bank accounts using information drawn from MyInfo, a government system through which citizens can store their personal information in a central online depository for use across public sector organizations. See Lowmaster (2017).

Credit Bureaus and Credit Information Services

Credit information services support financial inclusion and DFS expansion by being a critical source of information for financial service providers. With the help of credit scores, financial service providers can manage the risk of channeling funds to their customers. The development of credit information services varies widely across the ASEAN region (see table C.5 in appendix C). Malaysia and Singapore have the widest coverage (76.4 percent and 65.7 percent of adults, respectively), but in most ASEAN countries, coverage ratios of both credit bureaus and credit information registries remain below 65 percent of adults (World Bank 2017a, 130ff).

With regard to financial inclusion, Indonesia and the Philippines are showcasing efforts to improve data collection from specific underserved segments, such as microenterprises and small and medium enterprises (SMEs). Indonesia has a diverse institutional infrastructure for data sharing focused on the SME segment, including a credit bureau, a rating agency for SMEs, and credit guarantee and reguarantee companies for SMEs. In the Philippines, nongovernment MFIs have created their own credit bureau system, MiDAS, which is optimized to serve these small institutions.

Despite these advances in credit information systems, there is still room for improvement. The coverage and completeness of credit bureaus' information are still underdeveloped in ASEAN. Authorities should prioritize building traditional credit infrastructure and supporting innovation in data gathering, storage, and management. Credit information system regulations should consider new credit providers and should include data from new DFS providers.

In conclusion, ASEAN countries have made some progress in the development of the basic infrastructure necessary to support DFS, although mostly without a link to financial system development. Most efforts in this regard are recent initiatives, such as connecting ID systems to financial institutions. Policy makers should focus their efforts on improving ID and payment system infrastructure as a gateway for access to financial services and on integrating new data into credit information systems in order to facilitate customers' transactions.





CHAPTER 4

Catalytic Pillars for DFS Access and Use: Policies and Regulatory Considerations

Atop the foundations for digital financial services (DFS) development are four catalytic pillars needed to achieve effective access to and use of DFS (see figure 1): (a) well-designed DFS products and services, (b) readily available access points, (c) awareness and financial literacy, and (d) the leveraging of large-volume, recurrent payment streams. Each of these components, discussed in this chapter, should be included in any country's strategy to increase access to and use of DFS.

Catalytic Pillar 1: Regulatory Frameworks for Specific DFS

DFS regulatory development varies widely across Association of Southeast Asian Nations (ASEAN) countries according to their levels of financial system development (see table C.3 in appendix C). Products available in their markets include digital payments, crowdfunding, online lending, and digital investment products, although uptake of most of these products is limited.³⁴ The presence of DFS in a country's market does not necessarily mean that a regulatory framework exists around them, considering that many DFS products are fairly new. Thus, this section assesses regulations on payment services, e-money, and other financial products with digital features to understand whether a DFS approach to regulation exists, who its main actors are, and how selected risk-based features play into it.

Payment Services and Providers

Around the world, regulators have increasingly modified the regulatory frameworks for payment service providers (PSPs) to incorporate technological innovations and new products, such as stored value cards issued by nonbanks. In the eight ASEAN countries that reported having regulatory frameworks for PSPs, these frameworks cover institutions such as remittance service providers, money transfer operators (MTOs), fund transfer companies, and designated payment instrument issuers. There are a significant number of these institutions (400 in Malaysia alone and another 100 in Indonesia), but financial data on them were not reported.



³⁴ See data on the penetration of e-money in table A.16 of appendix A.

BOX 7

Interoperability among PSPs

Interoperability among payment service providers (PSPs) can happen at the level of payment system infrastructure (see the discussion of foundation 3 in chapter 3), of PSPs themselves, or even of outlets. Improving interoperability among PSPs (cross-system interoperability) facilitates customer access to financial services and increases competition among providers. However, requiring interoperability of PSPs could become too onerous of a burden in the case of new products, because new providers who have made significant investments in developing new products may want to protect their businesses by locking merchants into exclusive agreements for a period of time. Financial authorities may opt to take proportionate regulatory approaches to promote interoperability of PSPs.

In ASEAN, both banks and nonbanks can become PSPs under various authorization or licensing processes.³⁵ Nonbank PSPs (such as open-loop prepaid card systems and e-money issuers in Indonesia, Malaysia, the Philippines, and Thailand) generally have lighter requirements in terms of capital and risk management procedures than other financial institutions; however, they must still report information to the financial authority and provide complaint-resolution mechanisms for customers. In five countries PSPs can hire agents, and in four countries they can act as agents.

One major aspect of PSP operations is the issuing of payment cards. In most ASEAN countries, payment cards are used as payment instruments (not only for cash-in, cash-out [CICO] transactions) and are explicitly regulated. Indonesia, Malaysia, and Singapore reported extensive use of payment cards as payment instruments, and the Philippines and Thailand reported less-extensive use.

PSPs in ASEAN issue several different types of payment cards; as such, many ASEAN countries have differing regulations for various types of cards. For example, open-loop prepaid cards are identical to e-money (except that the latter can be accessed from an electronic device such as a mobile phone, whereas the former requires a physical card). Regulations in Indonesia, Malaysia, the Philippines, and Singapore acknowledge this similarity. Thailand, however, differentiates between the instruments by allowing e-money users but not users of open-loop prepaid cards to make person-to-person (P2P) transfers. Closed-loop and semiclosed loop prepaid cards can be used only for low-value transactions within a network (such as transport and toll payments) and are thus subject to laxer ID requirements than open-loop cards. Furthermore, closed-loop and semiclosed loop cards do not necessarily identify the customer, another factor differentiating them from e-money.

The most important way PSPs can support DFS expansion is by increasing inter-PSP interoperability (see box 7). The lack of interoperability among payment systems is one of the main barriers to DFS expansion. In 2013, Indonesia's private sector initiated the world's first interoperability agreement between three main operators; similar efforts should be encouraged (Phan 2016).

35 Question 2.1. of the regulatory survey assessed prudential regulations for various financial service providers.

Many ASEAN countries already have in place enabling frameworks that allow PSPs to grow, such as ad-hoc capital and risk-management requirements and the possibility of hiring or becoming agents.

To ensure that PSPs are able to support their countries' financial inclusion goals, ASEAN regulators need to maintain these enabling frameworks. They should also consider leveraging their PSP infrastructure for the expansion of DFS as CICO outlets.

E-Money Regulation

E-money, electronically stored monetary value that can be used in payment transactions, is a pioneering DFS technology and has the potential to increase financial inclusion. There are e-money issuers in all ASEAN countries (see table A.9),³⁶ of which nine countries have regulatory frameworks for e-money where both banks and nonbanks can become issuers depending on regulatory requirements. For example, Indonesia, Malaysia, the Philippines, Singapore, and Thailand allow commercial banks to become e-money issuers and have created a specific institutional type for nonbank e-money issuers. Most countries require nonbanks (nonfinancial institutions) to request a license to become e-money providers.

E-money markets in ASEAN tend to be dominated by banks, with physical cards as the most common transaction interface. For example, in Indonesia and Cambodia, banks hold a larger market share than nonbanks in terms of volume of e-money transactions, and the Philippines report a larger market share for banks in terms of number of accounts. This differs from other regions, where e-money often takes the form of mobile interfaces developed by nonbank entities such as telecom companies.

ASEAN countries vary in terms of the activities they allow within e-money systems, and in some cases their restrictions conflict with financial inclusion goals. Although most countries allow CICO transactions, payments, and transfers, some do not allow government payments through e-money. Also, most countries do not require interoperability for e-money providers, an important feature to support market development.

Some ASEAN regulators, including those in Indonesia, Malaysia, and Thailand, require e-money issuers to submit regular reports and audited financial statements so that regulators can understand their operations and customer bases. Typical requirements include the number of users and transactions, the service's float volume, and the service's value of use.

The protection of customer funds is handled differently among countries and between bank and nonbank e-money issuers. These differences could affect market competition and cross-border investments. For example, Indonesia and Myanmar require the full value of e-money accounts be placed in escrow at banks, whereas Cambodia and Malaysia, depending on the size of the nonbank issuer, require funds to go to a trust account or a separate deposit account at a licensed institution.

In short, e-money regulatory frameworks in ASEAN countries seem to have all the elements needed to allow market growth, prevent risks, and protect customers. However, there is still room to improve these frameworks, such as by expanding reporting requirements and data collection on e-money providers, allowing a wide enough range of activities (in particular, government transfers) to pass through e-money channels to facilitate financial inclusion, and ensuring that regulatory distinctions between banks and nonbanks favor competition.

³⁶ For all countries except Myanmar and Singapore, this information came from survey replies; information on those two countries came from their current regulations, which were accessed through their financial authorities' websites.

Other DFS Products

In addition to e-money and digital payment products, there are other digital financial services that support financial inclusion. Traditional financial products, such as credit, savings accounts, and insurance, are becoming increasingly available through digital channels; new products, such as crowdfunding and online advisory services, allow previously unserved customers access to financial services on an unprecedented scale.

Savings

There are various definitions among ASEAN countries of digital savings or similar products (see table A.10). In ASEAN, digital resources are used mainly to provide existing accounts through electronic channels. Mobile bank accounts are typically checking or savings accounts accessed through a mobile phone. Brunei Darussalam, Indonesia, Lao PDR, Malaysia, the Philippines, and Thailand have rules for this type of account. Brunei Darussalam and Lao PDR allow only banks to provide mobile channels for access to accounts; in the other three countries, nonbanks are also permitted to do so. Basic accounts are regulated in most of these countries. However, there are few rules regarding the provision of basic accounts through electronic means, and regulations on mobile bank accounts specifically were not identified. In regard to fund-safeguarding mechanisms, existing mechanisms in most countries fail to cover all deposit-taking institutions, therefore leaving some customers unprotected and affecting fair competition conditions.

From a financial inclusion perspective, digitizing basic bank accounts would make them more accessible.³⁷ Indonesia and Malaysia have introduced measures to do so. In Indonesia, several basic savings accounts³⁸ are linked with electronic money and mobile devices (Responsible Finance Forum 2016, 13). In Malaysia, the Guidelines on Basic Banking Accounts, allows the use of basic bank accounts through the Internet or mobile phones, permits the opening of basic accounts via agents, and requires banks to be able to validate customer information in real time.

All in all, ASEAN countries have made few innovations in digitizing traditional savings accounts. But by improving fund protections and spurring digitization, ASEAN countries can move forward in this area to promote financial inclusion.

Online lending

Technology is bringing new, cost-effective ways to lend money and facilitate financial inclusion. Online lending can be done in different ways, either by using digital channels to deliver credit or by incorporating technology into the product design itself.³⁹ Regulations on some form of digital lending providers are in place in Indonesia, Malaysia, and Singapore, among other countries, although their definitions of digital lending vary. Indonesia considers online lending as “money borrowing services based in IT [information technology] services,” Malaysia defines it as “P2P platforms,” and Singapore categorizes it as “lending-based crowdfunding” (see box 8).

37 The digitization of basic accounts has already happened in some countries, including Mexico and Colombia. Financial technology (FinTech) companies are working to digitize informal saving mechanisms such as traditional saving circles (AhorroLibre and Tutanda in Mexico, E-savings Club in Uganda, Osusu Mobile in Nigeria, and others). For more information on this topic, see EIU (2016) and Patel, Plaisted, and Widjaja (2016)

38 A basic savings account has certain characteristics such as no deposit limitation, no minimum account balance, maximum limitation on withdrawal, and maximum fund on the account.

39 Digitized credit, defined by Chen and Mazer (2016) as an instant, automated, and remote credit service, has not been regulated in any ASEAN country.

BOX 8

Online Lending Platforms and Potential Risks

Online lending platforms, a new type of credit provider, use innovative business models to borrow and lend money, often without the involvement of a traditional financial institution. Technology and big (alternative) data allow these electronic platforms to connect borrowers and investors faster and more cheaply than a bank. However, these same features, their massive potential reach, and the complexity of the business model behind them justify increasing regulatory oversight even though credit-only activities are not usually regulated. Potential risks to be avoided include massive losses, reputational risk, and overindebtedness. The evolution of online lending platforms should be monitored by financial authorities, and rules on data and consumer protection should be enforced.

Source: Cambridge Centre for Alternative Finance and Australian Centre for Financial Studies 2017; <https://www.fundingcircle.com/uk/businesses/peer-to-peer-vs-crowdfunding/>.

Because of the different approaches taken by ASEAN countries toward online lending, regulatory frameworks in this area fall under different authorities. In most cases, such as in Singapore and Malaysia, business models for online lending include a crowdfunding feature and investors as participants, and therefore the regulatory power resides in securities and exchange commission (SEC) authorities. Indonesia, however, categorizes P2P lending institutions as nonbank financial institutions, regulates them under the financial system authority, and allows them a wider variety of business models, such as invoice lending or point-of-sale (POS) e-commerce financing. The Philippines and Thailand also reported advances in P2P lending.

All in all, some ASEAN countries have made advances in regulating online lending through digital platforms, with different approaches. However, more attention should be paid to the responsibilities and risks on the debtors (individuals or small or medium enterprises [SMEs]) participating in these schemes. Because these business models are so new, developments in this area must also identify potential gaps in regulations and consumer protection needs.

Equity crowdfunding

Equity-based crowdfunding describes the use of small amounts of money gathered from investors to purchase equity shares in a company through a digital marketplace. Like online lending platforms, crowdfunding is a recent development. With regard to financial inclusion, this service could become an effective funding mechanism for start-ups and small companies in emerging markets (Mas and Shulte 2017, 110).

A few ASEAN countries have moved forward in regulating equity crowdfunding. Malaysia, Singapore, and Thailand regulate equity crowdfunding under their securities commissions. Malaysia treats equity crowdfunding as a form of fundraising that allows a start-up or other small enterprise to obtain capital

through small equity investments from a relatively large number of investors (Securities Commission Malaysia 2016). Singapore allows individuals to invest in a company and receive a share of its profits in the form of a dividend or distribution (see the Singapore government's MoneySense website). Thailand defines a crowdfunding portal as the provider of an electronic system or network on which to offer and sell securities. In the Philippines, SEC is also working to regulate the many crowdfunding platforms in the country. Meanwhile, Brunei Darussalam assigns its monetary authority to regulate crowdfunding, and founders of equity-based crowdfunding platforms must apply for a capital market service license. To this date, no platforms have yet been licensed.

In sum, several ASEAN countries have enacted regulation to address the development of crowdfunding. Rules on crowdfunding providers cover topics such as licensing procedures, investor protection, disclosure requirements, and integrity. From a financial inclusion angle, authorities could consider how to integrate crowdfunding activities into the bigger financial ecosystem (for example, by facilitating data sharing between traditional financial providers and these companies or by integrating crowdfunded borrowers' data into credit information systems).

Technology and insurance

The use of technology to solve problems faced by the insurance industry is called InsurTech.⁴⁰ Although some ASEAN countries, including Malaysia and Thailand, have begun to provide insurance through digital channels, there are still no frameworks for purely digital insurance products in the region (including regulations for purely digital delivery of micro-insurance or other types of insurance targeting underserved segments).

There are three main regulatory challenges to the provision of insurance online: (a) the risk of regulatory arbitrage, because mobile insurance often engages more than one regulator, which can lead to conflicts over payments, consumer protection principles, infrastructure, agents, and processes; (b) the entrance of new players and partnership models in the value chain; and (c) enhanced consumer protection risks related to technology.

Malaysia and Thailand, two countries showing progress in regulating the sales of insurance products via electronic channels, both define online insurance as the use of the Internet as a channel to sell insurance. In these countries, many financial institutions facilitate insurance sales in partnership with an insurance company (also known as bancassurance), acting as third-party providers. The liability for most related activities corresponds to the insurance companies. In Thailand, insurance firms can also receive claims and make claim payments via digital channels. E-policy regulations require institutions to register with the Office of the Insurance Commission if they want to provide services through digital channels and to follow regulations addressing consumer protection and risks related to outsourcing.

To develop online insurance, ASEAN countries need to ensure that authorities can address issues involving the regulation of partnerships, the responsibilities of stakeholders in the process, and the protection of consumers.

⁴⁰ Technology has been used to improve customer relationship management, aggregate prices, set up digital claim processes, and improve risk management via the Internet of Things. See Tan, Schulte, and Lee (2017, 250–51).



Catalytic Pillar 2: Readily Available Access Points

Access Points Relevant to DFS

Good and reliable access points are crucial to determining the success of retail payment services and to the provision of financial services outside of traditional bank branches. In ASEAN countries, available electronic access channels or outlets include mobile phones, Internet banking, automated teller machines (ATMs), and POS terminals, as well as other types of kiosks or agents (see table A.11 in appendix A for information on which channels are present in which countries).

There are different levels of access point development throughout the ASEAN region (See table A.12 in appendix A). The countries surveyed vary widely in their number of ATMs per 100,000 adults: from fewer than 100 in Lao PDR and Thailand to more than 400 in Indonesia and Vietnam. Although the number of electronic outlets (which include ATMs, POS terminals, merchants, and agents) has increased significantly, by 20 to 30 percent, between 2014 and 2016 in many ASEAN countries, the region's average prevalence of ATMs, at 52 per 100,000 adults, is still well below that of developed regions such as the European Union (70 ATMs per 100,000 adults).⁴¹

ATMs in many ASEAN countries provide a wide variety of services beyond CICO transactions (see table A.13 in appendix A), such as bill payments, cash deposits, purchases, and credit or money transfers. Furthermore, full ATM interoperability has been adopted in all ASEAN countries (in contrast to POS interoperability, which varies from full in most countries to low or nonexistent in few countries).

To favor the expansion of DFS, ASEAN countries may need to increase the number of outlets, interoperability, and variety of services that can be accessed through ATMs. Innovations by some countries in the type of outlets available and in smaller and more flexible types of bank branches may also support digital finance inclusion. Malaysia, for example, is currently developing geospatial analytics, in collaboration with Remote Sensing Agency Malaysia, to enhance the monitoring and analysis of financial access points through geospatial technology and satellite imaging (BNM 2017). And in the Philippines, other banking offices provide non-transactional banking related services, such as marketing products, accepting loan applications, creating documents for account opening, and providing customer care services. Overall, the significant increase over the past few years in the number of outlets available in ASEAN countries, the interoperability in place, and the variety of services that can be accessed through ATMs favors the expansion of DFS, even if the prevalence of access points in that region is still lower than that of others and more data could be collected on access-point transactions.

Agent Regulations

Agents play a big role in increasing digital financial inclusion. They are the main, and sometimes the only, interface between clients and providers (such as mobile money providers and digital banks), especially in areas untapped by more conservative financial institutions. Most ASEAN countries allow agents to an extent that favors DFS expansion. Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, and Thailand permit various entities to become agents (subject to risk-based requirements), including financial providers

41 Information is for 2017 and is from the World Bank's World Development Indicators database.

such as PSPs, MTOs, nonregulated microfinance institutions (MFIs), and any entity with a business license. Most regulated institutions are allowed to hire agents, except for finance companies and PSPs.

The activities allowed to agents vary depending on the status of the principal (the financial institution hiring the agent). In general, agents of banks and other deposit-taking financial institutions can conduct a wider range of activities; agents of PSPs or nonbank e-money issuers are allowed a narrower range. Key to expanding DFS uptake are agents' abilities to identify customers and open accounts. Agents of banks and rural banks can open bank accounts in Indonesia, Malaysia, and Thailand. Indonesia also allows saving and loan cooperatives' agents to open bank accounts; Malaysia allows the same of specialized deposit-taking institutions' agents; and Thailand allows it to agents of specialized deposit-taking institutions, finance companies, and credit fonciers. However, neither Indonesia nor Malaysia allow agents of nonbank e-money issuers to open accounts (for security reasons), which can be a constraint on e-money expansion.

Several ASEAN countries, including Indonesia, Malaysia, the Philippines, and Thailand, require financial institutions to be responsible for their agents' actions.⁴² Other rules regarding how to manage agents' responsibilities are set up through agent network manager frameworks, which allow the outsourcing of agents' handling and oversight. Many countries worldwide have already implemented rules in this area (EIU 2016). Clarifying the frameworks for hiring agents or outsourcing duties in ASEAN countries may be beneficial, as such frameworks reduce risks and protect consumers. Although exclusivity arrangements are still allowed in certain countries in ASEAN, with time it is encouraged to evolve towards nonexclusive arrangements, which also allow interoperability. Most ASEAN countries also apply rules regarding agents' reporting requirements, consumer protection, and AML/CFT (anti-money laundering/combating the financing of terrorism) responsibilities.

In sum, regulations on agents are in place in most ASEAN countries, with significant differences in who can have agents, who can be an agent, who supervises risk management issues, and what data must be reported to the financial authority, among other features. Policy makers should monitor these differences, lest they lead to regulatory arbitrage and confused or unprotected consumers. However, the wide range of providers allowed to have agents and the ability of agents to open accounts both favor DFS expansion.

Overall, the features analyzed under the second catalytic pillar, on readily available access points, present both favorable developments and challenges to the expansion of DFS. The recent increase of electronic outlets and rules in place to allow their use by financial institutions will likely help DFS uptake. Important challenges include the different regulatory frameworks applied to various types of institutions, the lack of data by which to assess the performance of DFS providers, and existing gaps in providers' functionality and availability.

42 An agent (or correspondent) is a third party providing services to a financial institution's customers on behalf of the institution.

Catalytic Pillar 3: Awareness and Financial Literacy

Awareness and financial literacy are crucial to the development of DFS, especially in regard to financial inclusion of unserved segments. Lack of knowledge of financial services, coupled with a lack of experience with electronic devices, the Internet, and mobile phones, hinders access to financial services. Lack of technological literacy and confidence, in particular, appears to be the fifth-most-important barrier to access to financial services for both women and men (GSMA 2015, 54). An additional problem is that most technology developers build their apps and customer interfaces around the English language. Low-income populations, particularly women from developing countries, are unlikely to understand a foreign language.

Most ASEAN countries have a range of financial literacy strategies and programs in place, with different government bodies in charge of specific tasks and sufficient staff assigned to the topic (see table A.14 in appendix A for country specific information on financial literacy strategy and features). Initiatives include long-term training, such as incorporating financial literacy into school curricula, and partnering with the private sector, such as Indonesia's Non-Cash National Movement and Thailand's National E-Payment Master Plan. The Philippines works through advisory campaigns to prevent scams in e-channels and DFS, and Bank Negara Malaysia provides financial education through social media, mobile applications, and outreach programs such as road shows, financial carnivals, MobileLINK (mobile customer service coaches), and face-to-face engagement with consumers. Policies and actions by both the public and the private sectors are expected to help address the issues of lack of awareness and deficient financial literacy.

Catalytic Pillar 4: Leveraging Large-Volume, Recurrent Payment Streams

Leveraging (by digitizing) large-volume, recurrent payment streams to generate habits of DFS use in unserved or underserved customers supports DFS expansion. (See box 9.) Government payment programs are the payment stream most relevant to this goal. However, utility payments, public transit payment programs, and employer payroll programs are also increasingly relevant. Remittances, both cross-border and domestic, are another large-volume payment stream that can be leveraged to advance financial inclusion (World Bank 2016, 46).

DFS providers in ASEAN, both banks and nonbanks, can be greatly leveraged by both government and private sector players that are trying to digitize large-volume recurrent payment streams, given their proximity to clients and their low operational costs. This is already happening in some ASEAN countries through partnerships between DFS providers and public-sector authorities; among all payment types, government-to-person (G2P) payments have the highest level of digitization in the region. In Brunei Darussalam and Indonesia, over 90 percent of public sector salary transfers are digitized, as are 100 percent of pension payments and 50 percent of cash transfers in the Philippines.

However, across ASEAN, there seems to be a need to enhance regular data collection of recurrent payment streams to be used for policy considerations. In this context, countries are encouraged to (a) implement strategies to digitize government payment flows, (b) develop monitoring and evaluation

mechanisms for such programs, and (c) enhance efforts to better coordinate institutional structures in order to support DFS expansion. Countries that already have strategies in place to digitize large-volume payment streams must make sure their strategies are clearly defined and enforced.

Overall, ASEAN countries are approaching the foundations and pillars of DFS development in varied ways. Some countries have implemented pioneering strategies to support innovation and DFS expansion, some regulations are in place to allow market growth, and some infrastructure is being strengthened. However, many gaps and potential risks have been identified within current policies and regulatory frameworks. There is a clear call to action to ensure a level playing field, the availability of more data, and coordination between government and private actors to facilitate knowledge exchange, standard creation, and better understanding and uptake of DFS.

BOX 9

Actions to Support End-to-End Digitization of Payments and Transfers

- Leveling the playing field by allowing nonbanks to participate in government-to-person (G2P) transfers
- Streamlining G2P program implementation across ministries
- Developing a cash strategy and working with providers to promote financial and digital literacy
- Initiating a single aggregator platform
- Investing in or developing an open application programming interface (API) platform connected to payment platforms
- Allowing providers to partner with agents and leverage informal agents
- Championing interoperability if necessary

Source: ADB 2017, 28.



CHAPTER 5

Regulations on Emerging Topics Relevant to DFS and Financial Inclusion

Aside from the foundations and catalytic pillars analyzed in chapters 3 and 4, some emerging technologies may be relevant to digital financial services (DFS) expansion because of their potential impact on DFS providers' activities. The Association of Southeast Asian Nations (ASEAN) countries have explored topics such as alternative data initiatives, data privacy, e-commerce, telecommunication network regulations, cloud computing, distributed ledger technologies, and cybersecurity, seeking ways to leverage these innovations for DFS expansion. These new technologies will likely bring both opportunities and challenges.

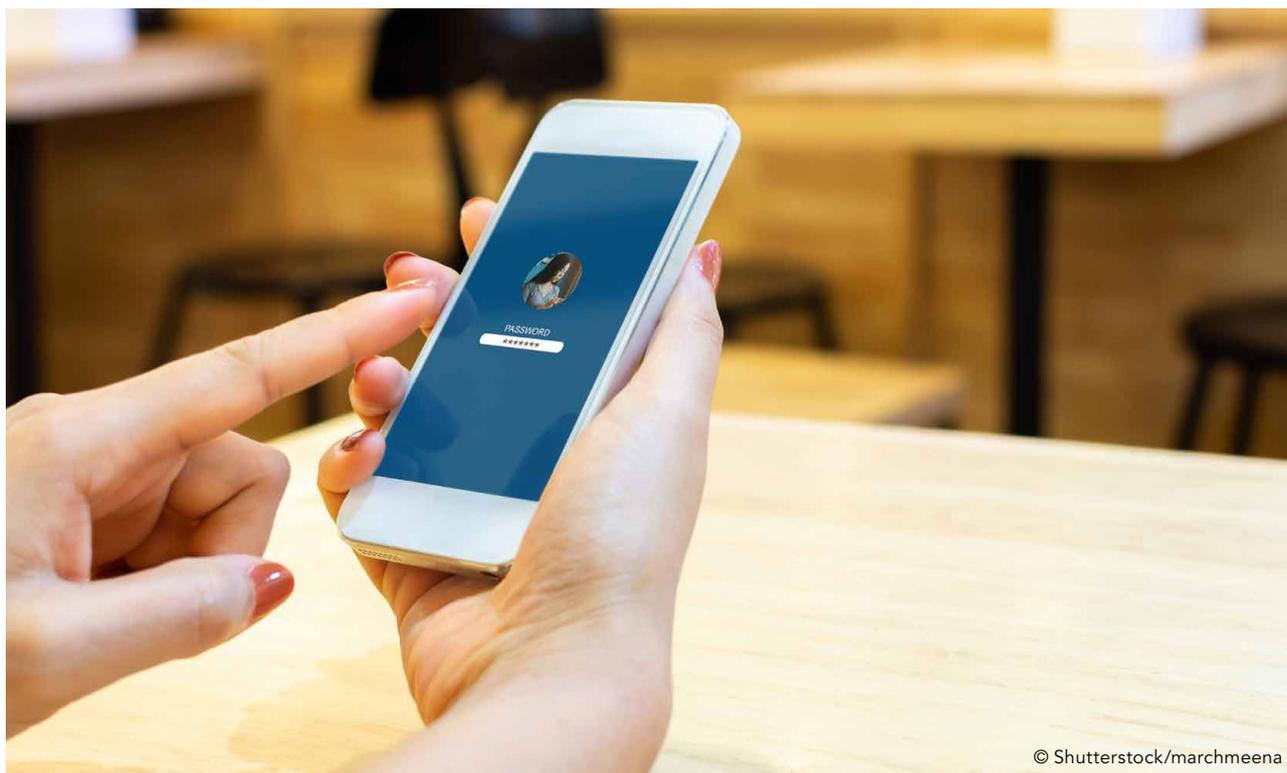
Data-Sharing Platforms and Alternative Data Initiatives

DFS providers and progress in financial inclusion could benefit from access to alternative data. Newly available sources of data include digitized transaction data and social media interactions; these data can be used to improve credit scoring of underserved or unserved customers and to support product customization, product cross-selling, and operational efficiency (such as by facilitating the analysis of sales performance) (Sengupta and Lam 2013, 60–68).

Some players in the financial system are already working with nontraditional data (including big data) from sources such as telephone companies, social media platforms, or handset devices. Some financial technology (FinTech) companies, for example, have partnered with telephone companies, banks, and other financial institutions to offer loans to microenterprises, small, and medium enterprises (SMEs), and consumer credit products using a lending scoring technology that is based on social media, e-mail, or mobile phone data. They can also use such data for identity verification purposes (Cash Credit 2017; Cabrera 2017).

DFS providers could also benefit from the use of open application programming interfaces (APIs). Data sharing through APIs enables specialized third parties to connect with large-scale platforms and financial providers, enabling customers to access services provided by these platforms and providers. This facilitates data gathering and analysis, a customer's risk assessment, and product design on the basis of customer preferences. However, APIs also introduce risks of cannibalization of revenues, reputational damage, fraud, and internal conflicts (Hanouch and Morawczynski 2016). Therefore, data protection, portability, and consent, as well as security standards regarding authentication, authorization, and encryption, must be considered when regulating and assessing API risks. It is also important to clearly define the responsibilities of each actor in the value chain of data transmission (ASEAN Bankers Association 2017b, 5)

Although many of these data sets and technologies are being developed by the private sector, countries in the ASEAN region must assess potential risks related to data security, data management, and data privacy to ensure prudential measures. Some countries have recently recognized Open API, which can be used to enhance customer experience and spearhead digital innovation in financial services. Bank Negara Malaysia has issued an Exposure Draft on Open API in September 2018, which sets out guidance on the development and publication of open APIs for open data by financial institutions. And the Monetary Authority of Singapore (MAS) has developed guidelines, in coordination with the Association of Banks in Singapore, to assess the potential risks of the use and expansion of APIs.



Data Privacy

Data privacy is a major issue for DFS, because many DFS providers collect detailed data on their customers. ASEAN countries fully realize the need for coordination and cooperation to ensure that their data protection measures are effective. However, regulators must tighten existing data protection rules, because in several ASEAN countries, the current rules around confidentiality and security of data are enforced unevenly across institutional types, with some types of institution exempt from them. In this regard, countries should follow the example of Malaysia and the Philippines, which apply such rules to all institutions.

ASEAN countries also differ in how they monitor data privacy. Indonesia, Malaysia, and Thailand have multiple public authorities regulating and overseeing data protection, whereas some other countries put a single authority in charge of this area. In regard to data sharing, most countries allow financial customers to stop financial institutions from sharing their information. However, they exempt from this duty some nonbank providers such as microfinance institutions (MFIs), payment service providers (PSPs), and financial cooperatives.

The growing number of e-commerce and telecommunication firms that collect customer data are also being monitored. The Philippines and Vietnam have authorities in charge of data protection in e-commerce, and Brunei Darussalam, Indonesia, and Malaysia assign their telecommunication or communication authorities to oversee privacy protections on customer transactions with telecom operators. It is important to establish oversight in this area, because data generated by both telecom networks and e-commerce firms are already being used by some financial institutions (for example, to fill gaps in information or to complete credit histories). Regulators should consider how they could use this data not only to preserve customers' rights but also to promote competition in their markets.

E-Commerce

E-commerce policies and regulations are considered potential enablers for the expansion of DFS, mainly because (a) e-commerce companies can subtly force customers to become familiar with a digital interface and to make payments through digital channels, (b) they are becoming financial service providers for the stakeholders along their value chain, and (c) they are an important source of alternative data on current or potential customers for financial institutions. The Chinese website Alibaba is a well-known example of how an e-commerce company can become a key player for financial inclusion and DFS development.

Currently, in most ASEAN countries, multiple authorities oversee e-commerce providers, which risks leaving customers unprotected. Brunei Darussalam, for example, regulates e-commerce under multiple government authorities. The country also promotes the development of legal and business infrastructure necessary to implement secure electronic commerce and minimize fraud. Indonesia regulates e-commerce under different frameworks; as such, there are different regulators in charge of different aspects of e-commerce. Malaysia set up a national e-commerce council, composed of various ministries and agencies, to coordinate e-commerce providers. This council is also tasked with driving the implementation of a national e-commerce road map that aims to double Malaysia's e-commerce growth rate by 2020. And although Singapore does not regulate e-commerce from a DFS perspective, e-commerce companies' activities in the provision of financial services are covered by specific regulation of those activities.

Since the e-commerce industry in many of the ASEAN countries is still at a low level of development, regulators are yet to use it as an active tool for financial inclusion. To further support e-commerce for financial inclusion, policy makers and regulators are encouraged to adequately coordinate the roles of various public sector institutions in e-commerce activities.

Telecommunication Network Rules

As the backbone of mobile technology, telecommunication networks play a crucial role in DFS expansion. Many FinTech firms rely on mobile technology to support their businesses, using mobile applications as their main platforms. However, there have been cases of discrimination by mobile network operators (MNOs) against DFS providers (in matters including pricing and terms of access), particularly in contexts where the two provide competing mobile money services. Such discrimination must be addressed by regulators so that it does not discourage competition.

To facilitate the provision of DFS, regulators should ensure that DFS providers have open access to networks, address consumer protection in this context, and provide dispute-resolution mechanisms. Setting up these frameworks requires coordination, well-defined regulatory competences (when dealing with MNOs providing DFS services), and support for the provision of DFS (Mauree 2016). Other important topics to regulate regarding MNOs' incursions into digital financial services include fair competition in the offering of DFS, the role of agents of MNOs, the transfer of airtime balances to e-money accounts, and number portability.

Countries such as Brunei Darussalam, Indonesia, Lao PDR, and Malaysia have enacted rules to support fair treatment and nondiscrimination and to regulate pricing mechanisms and the quality of telecom services, but only in regard to traditional MNO activities. Improvements linking DFS and mobile network operations should continue to support the achievement of financial inclusion goals.

Cloud Computing Initiatives

Cloud computing is defined as “a pay-per-use model enabling available, convenient, on-demand network access to a shared pool of configurable computing resources (such as network servers, storage, applications, and services).”⁴³ It is considered a public utility that can be used to pool computing resources and can be metered and billed for use. Many financial institutions have embraced this technology because it can reduce costs (particularly in regard to hardware maintenance), speed up operations, make them more flexible, increase their access to data, and aid in data management and disaster recovery.

In the ASEAN region, the Indonesian, Malaysian, and Singaporean markets have approached cloud computing via different strategies. Singaporean banks are adopting cloud services to improve agility and information technology (IT) responsiveness to internal business demands, while Malaysian and Indonesian firms are more conservative and are waiting for regulatory guidelines before adopting cloud technologies. The MAS has issued guidelines on the factors financial providers should consider when adopting cloud computing initiatives, an action that shows an openness to embrace this technology. Indonesian regulators, in contrast, have focused primarily on data residency and providing full audit capabilities.

Financial authorities need to increase their understanding of the main risks of cloud computing. Traditional financial sector players need regulatory certainty before they can deploy big changes in the way they operate and manage data, but new players (in many cases, nonregulated providers) can adopt new technologies without restriction or sanction. This can create an unlevel playing field in favor of the new players, and it can also expose those new players’ customers to unanticipated (and unregulated) risks.

Distributed Ledger Technologies

Another new development that can support digital financial inclusion is distributed ledger technologies (DLTs). DLTs are used in cryptocurrencies, cross-border payments, financial market infrastructure in the securities market, and collateral registries. Their advantages include decentralization, disintermediation, increased transparency, speed, efficiency, automation, and auditability (World Bank 2017b, ix). Compared with traditional, centralized cross-border transfer services, DLT-based services can speed up transactions, reduce the cost of compensation and settlement, and lower the risk of fraud and money laundering (ITU-T Focus Group on Digital Financial Services 2017, 28–29).

43 As defined by the US National Institute of Standards and Technology in Garg (2016, 4)

In ASEAN, various private sector players are already developing services or products using blockchain, a popular DLT. For example, Coins.ph provides Filipino users with a mobile, blockchain-based platform to send money affordably and conveniently. International banks such as OCBC, HSBC, and Mitsubishi UFJ Financial Group, together with Singapore’s Infocomm Media Development Authority, have completed a proof of concept for a know-your-customer (KYC) blockchain. And in Myanmar, Japanese companies Tech Bureau and Infotera Corporation are using a ledger as a new kind of credit reporting mechanism, allowing lenders access to borrowers’ data to determine loan terms and creditworthiness through microfinance activities.

In sum, DLTs are being used in ASEAN as the underlying infrastructure of existing and new financial products. However, the risks attached to the use of DLTs are being identified and managed through operational risk management rules and third-party rules, many of which were not created for this purpose. Financial authorities should therefore assess current and potential implications of DLT use and reexamine risk management rules and third-party relationships in light of them.

Cybersecurity

As financial services transition into a digitized and data-empowered industry, the focus on cybersecurity has increased. The increasing risk of attack, theft, and fraud from hackers is a threat to consumers. As such, regional and country efforts in ASEAN are addressing both the broad spectrum of cybersecurity issues and the subset of those issues directly related to financial services.⁴⁴ There is a need to examine the particular features of FinTech and DFS businesses that put them at risk of digital breaches. However, cybersecurity regulations should also be balanced and proportional, so as to avoid constraining DFS development (A. T. Kearney and Axiata 2015, 35).

In summary, several technological innovations have the potential to support DFS expansion, each with its own implications in the policy and regulatory arenas. Policy makers and regulators should seek a better understanding of these implications with respect to financial market development and risks. Some of these topics (such as cybersecurity) would even benefit from a coordinated regional approach.

ASEAN countries have shown some progress in the adoption of these technologies, but in most cases regulations are still pending. The needs for regulatory certainty, technologically neutral rules, and a level playing field underlie many of the observed challenges in ASEAN countries’ current regulatory frameworks. Examining these topics with an eye toward digital financial inclusion would help to leverage these innovations for DFS expansion.

⁴⁴ The ASEAN Bankers Association, in their November 2017 meeting, mentioned the need for quality insights and ideas to be generated and socialized to boost collective efforts to augment the posture of the ASEAN banking and financial sector. For more information, see ASEAN Bankers Association (2017a), which shows private sector efforts to address cybersecurity in finance. Also, from a government perspective, senior officials from ASEAN member states, at the Ministerial Conference on Cybersecurity (September 2017), agreed on the importance of closer coordination of regional efforts to develop basic voluntary norms to guide responsible use of information technology. This platform brings together ministers of cybersecurity, telecommunication, and other relevant sectors from across the region.



CHAPTER 6

Findings and Recommendations

Policies and regulations on digital financial services (DFS) cover a variety of topics: policies, infrastructure, and cross-cutting regulatory enablers, as well as specific regulations on diverse financial products, access points, financial literacy, and mechanisms to increase uptake.

Overall, a robust policy and regulatory framework to support DFS has the following key goals: to preserve the stability, integrity, and competition of the financial sector and to protect the rights of financial consumers. DFS also offer great opportunities to enhance financial inclusion, and authorities are increasingly adopting DFS-related measures to improve access to financial services. A summary of the general findings, gaps, and recommendations regarding the policy and regulatory environment for DFS in Association of Southeast Asian Nations (ASEAN) countries and this environment's impact on access to financial services is presented here.

Main Findings

- **Relevant strategies for DFS expansion go beyond countries' national financial inclusion strategies (NFIS) and should be coordinated with broader digitization strategies,** because these strategies can target similar goals, such as developing the national ID system and improving the quality and coverage of Internet and telecommunication networks. Additionally, the ASEAN region's broad digitization strategies and cooperation agreements should complement and be coordinated with NFIS and other strategies specific to the financial sector.
- **Many ASEAN countries seem to be in the process of implementing an enabling regulatory and supervisory framework for DFS, but these countries' needs and levels of progress vary widely.** This report identified many opportunities and challenges in all areas: policies, infrastructure, and specific regulatory frameworks.
- **A risk-based approach, as well as the effectiveness of the regulatory and supervisory framework, requires financial authorities to be able to handle DFS-related innovations.** ASEAN countries have acknowledged a gap between (a) their current institutional structures and human resources and (b) their capacity for enforcement.
- **Various supervisors in addition to the financial authority often come together to regulate a single DFS provider or product.** Coordination mechanisms are therefore needed among these supervisors.
- **Regulators and supervisors in ASEAN countries are actively reaching out to industry participants and consumers in an effort to better understand developments in DFS and to strengthen their oversight.** These approaches could be categorized as (a) orientation activities for DFS providers, (b) DFS promotion activities, and (c) activities related to piloting and testing DFS innovations.
- **Many ASEAN countries increase the flexibility of their anti-money laundering regulation and regulation to counter the financing of terrorism (AML/CFT) by applying simplified due diligence (SDD) rules to e-money and basic accounts.** Remote account opening is allowed, together with ID verification; such accounts are subject to ongoing monitoring procedures that can be adjusted to the specific risks of both products.
- **The uneven application of fair treatment rules and complaint-resolution-mechanism requirements among DFS providers and products needs to be assessed to ensure that this unevenness does not result in regulatory arbitrage or unprotected customers.** Additionally, ASEAN countries should enhance effective coordination of consumer protection (CP) among the multiple agencies in charge of this topic.
- **Payment system infrastructures in ASEAN countries show diverse levels of development.** Many countries reported limited access by nonbanks to automated clearing house (ACH) systems. Automated

teller machines (ATMs) and point-of-sale (POS) networks are interoperable and interconnected at a good level in most countries.

- **Many ASEAN countries have national digital ID systems with electronic ID cards, while others are still exploring the implementation of digital ID programs.** In addition, some countries are making progress toward connecting their national ID systems to financial uses such as know your customer (KYC).
- **There have been steps toward improving credit information systems in ASEAN countries, but more could be done to improve coverage and completeness of information.**
- **Many DFS products are already available in ASEAN countries, although with limited uptake.** Most countries have regulatory frameworks for payment service providers (PSPs) and e-money that allow banks and nonbanks to provide these services. Other products, such as person to person (P2P) lending, equity crowdfunding, digital insurance, and advisory services, are starting to appear in ASEAN countries.
- **Digital outlets such as ATMs and POS terminals are key to the provision of DFS.** Their prevalence in ASEAN countries is below the average of more developed regions, but their numbers have increased significantly in the past few years. ATMs provide a wide variety of services (beyond just cash-in, cash-out [CICO] transactions) in many countries, and interoperability at the point of sale is available in most countries.
- **Agents' regulations are in place in ASEAN countries,** with significant differences among countries as to which institutions can have agents, which can be agents, who supervises risk management issues, and what data the financial authority requires on agents' activities.
- **There are important technological innovations and related developments that have the potential to support DFS expansion in ASEAN countries.** Many of these have implications in the policy and regulatory arena related to alternative data initiatives, data privacy, e-commerce, telecommunication network regulations, cloud computing, distributed ledger technologies (DLTs), and cybersecurity. Most of these issues are not yet being addressed from the perspective of DFS expansion.

Main Recommendations

- **DFS could greatly increase financial inclusion in ASEAN countries if the countries clearly identified goals and targets to pursue, with regular processes in place to monitor and evaluate their progress.** These goals should be complemented by a robust coordination mechanism to ensure that plans to digitize the economy are aligned with objectives related to the efficiency and soundness of the provision of financial services.
- **The broad spectrum of DFS development calls for greater intraregional knowledge exchange and cross-border investment.** Aligning or standardizing regulatory frameworks throughout the ASEAN region, or at least among the largest economies in the region with similar levels of financial development, would facilitate such exchanges.
- **More data are needed to appropriately assess the strengths and weaknesses of DFS at the country and regional levels.** ASEAN countries should invest in the design and implementation of a

strong, formal collection scheme for data on infrastructure and its use, the operations and outreach of outlets, high-volume payment streams, and the effectiveness of financial literacy programs.

- **Simplified customer due diligence measures should be applied on the basis of risk assessment results**, identifying clearly why low-amount transactions or services are or are not exempted from a full due diligence process regarding AML/CFT rules.
- **Progress toward the development of efficient, accessible, and reliable retail payment systems in ASEAN countries is essential.** Nonbanks should be enabled to access this infrastructure on fair and responsible terms.
- **Authorities in ASEAN countries should prioritize the development of both traditional and new forms of data infrastructure to support innovation in data gathering, storage, and management.** Regulations on credit information systems and alternative or complementary data management mechanisms should consider new players in the credit market and include new sources of data from new providers.
- **Current regulatory frameworks for DFS in ASEAN countries carry potential risks of regulatory arbitrage, regulatory uncertainty, and incomplete consumer protection schemes.** PSP regulation, reporting requirements, and consumer protection (CP) mechanisms should be strengthened.
- **The large number of PSPs in ASEAN countries opens possibilities for partnering with other financial services providers** (through acting as agents of each other or of third parties) to enable wider access to financial services.
- **E-money services are comprehensively regulated in ASEAN; however, their penetration seems relatively low in many markets.** Countries should seek to understand the reasons behind this low penetration so that they can better address this issue.
- **ASEAN countries should strengthen their customers' fund-protection regulations**, especially for cooperatives and other nonbanks (in light of their large numbers).
- **New technologies and business models, such as cloud computing, DLTs, and e-commerce, have the potential to support DFS expansion.** Authorities in ASEAN countries should analyze these topics from a financial inclusion angle, identifying risks and opportunities, in order to leverage them for this purpose.
- **Authorities in ASEAN countries should further assess the role of e-commerce in the provision of financial services in order to better leverage its expansion to increase uptake of digital payment systems.** They should also monitor developments in this area, paying attention to potential financial or reputational risks.
- **Authorities should also reassess the implications of DLT applications**, particularly regarding regulations for operational risk management and third-party rules.
- **Effective cybersecurity strategies are essential to the long-term sustainability and uptake of DFS, but ASEAN countries have not necessarily addressed cybersecurity topics from a financial inclusion perspective.** When drafting national or sector plans, authorities should consider the risks associated with DFS and the advantages and drawbacks of incorporating these services into a regional strategy. Authorities should incorporate risk-based approaches that do not deter innovation.



Appendixes

APPENDIX A

Digital Financial Services (DFS) Products and Regulatory Frameworks in Association of Southeast Asian Nations (ASEAN)

TABLE A.1 Licensing Authorities and Procedures

	Money transfer operators	Mobile network operators	ODTI, ONDTI, MFI	MFI-ND, NEID, PSP	Others
Brunei Darussalam	L, R; CB	N	—	L, R; CB	—
Indonesia	L; CB	L; CB	L; CB, Ministry of Communication and Informatics, OJK	L; CB	L; CB, Cooperative (Ministry of Cooperative and SMEs)
Lao PDR	—	R; CB, MI	—	—	—
Malaysia	L; CB	L; CB	ODTI*	PSP; L; CB/MFI-ND: N**	—
Philippines	L; CB	R; CB	L,R; CB/SE	R; CB	—
Singapore	L; CB	—	—	N (PSP and NEID); CB	—
Thailand	L; CB, MOF	L; CB, MOF	L, R; CB, MOF	L, R; MOF, Ministry of Digital Economy	—

Source: Regulatory Survey of ASEAN countries.

Note: For each type of institution, cells contain first the type of licensing procedure it follows and then who manages it. ATA = anti-trust authority, CB = central bank, FA = financial authority, L = license, SE = securities regulator, MFI = microfinance institution, MFI-ND = microfinance institution (non-deposit-taking), MI = Ministry of Industry (or similar), MOF = Ministry of Finance, R = registration or authorization, N = no license or registration, NEID = nonbank e-money issuers, ODTI = other deposit-taking (licensed) institutions, ONDTI = other non-deposit-taking (licensed) institutions, PSP = payment service provider; — = not available.

*Pilgrims Fund Board and National Higher Education Fund are statutory bodies, whereby those entities are under the purview of the relevant ministries and their establishment and operations are governed by their own specific laws.

**Amanah Ikhtiar Malaysia is a private trust body registered under the Deed of Trust (Incorporation) Act 1952 (amended 1981) (Act 258). TEKUN Nasional, previously known as TEKUN Nasional Foundation, is an agency established under the Ministry of Entrepreneur Development.

TABLE A.2 Authorities in Charge of Overseeing DFS Providers

Countries	PSP	Nonbank e-money issuers	Online lending providers	Equity crowdfunding providers
Indonesia	BI, Com, MoC	BI, MoC, Com	OJK, MoCS, MoC	OJK
Malaysia	BNM, MyCC, MCM	BNM, MyCC, MCM	SEC	SEC
Philippines	BSP	BSP	—	—
Thailand	BOT, ETC, AMLO, MOC, MDES	BOT, MOF, ETC, AMLO, MDES	—	SEC, AMLO, MOC, MDES

Source: Survey on the Regulatory Frameworks for DFS.

Note: Banking institutions (or regulated nonbanks) require only an authorization to become payment service providers or e-money issuers, and they sometimes answer to different regulatory or supervisory authorities than other such providers. In Indonesia, for example, the authorities in charge of competition issues for banks (including those that operate as e-money issuers) are BI and OJK, whereas the Com supervises such issues for nonbank e-money issuers. A license is required to become a person-to-person lending institution, and BI is the regulator. In Malaysia and Singapore, becoming an online lending provider or equity crowdfunding company requires an additional license from the SEC. The survey did not ask whether or how regulated financial services providers could become person-to-person lenders. AMLO = Anti-Money Laundering Office, BI = Bank Indonesia, BNM = Bank Negara Malaysia, BOT = Bank of Thailand, BSP = Bangko Sentral ng Philipinas, Com = Commission for the Support of Business Cooperation, ETC = Electronic Transactions Commission, MCM = Ministry of Communications and Multimedia, MDES = Ministry of Digital Economy and Society, MoC = Ministry of Communication and Informatics, MOC = Ministry of Commerce, MoCS = Ministry of Cooperatives and SMEs, MyCC = Malaysia Competition Commission, NPC = National Privacy Commission, OJK = Financial Services Authority of Indonesia, P2P = person-to-person, PCC = Philippines Competition Commission, PSP = payment service provider, SEC = Securities and Exchange Commission; — = not available.

TABLE A.3 Activities Allowed through Electronic Devices

Online Activities Allowed	Brunei Darussalam	Indonesia	Lao PDR	Malaysia	Philippines	Thailand	Vietnam
Apply for a loan	No	Banks and ODTIs	No	Yes (imSME)	Yes, Banks, ONDTI	Banks and ODTIs	No
Sign a loan contract	No	No	No	—	No, signing is onsite	Banks and ODTIs	No
Make a loan payment	Only Banks and finance companies	Yes	No	Only banks	Yes	Banks, ODTIs, and ONDTIs	No
Open an account	Only existing clients, only banks	Yes	No	Only banks	Yes, subject to eKYC	Banks and ODTIs	Yes
Deposit or withdraw funds from an e-money account	—	Yes	No	Banks and non-banks e-money issuers	Yes, subject to KYC	Banks and nonbank e-money issuers	Yes
Pay an insurance premium	Yes, only banks	Yes, only banks	No	Agrobank, via mobile banking vehicle	Yes	Banks and PSPs	—
Online banking	Yes	Yes	Only money transfers	Transfers, payments, account balances, deposits for banks, and cooperatives	Yes, Banks	Banks and ODTIs	Yes

Source: Regulatory surveys of ASEAN countries.

Note: The question in the survey asked countries to indicate which of the activities could be initiated and transmitted by electronic devices. See appendix C, section III.A. Some inconsistencies were found in the countries' replies. eKYC = electronic know your customer, KYC = know your customer, ODTI = other deposit-taking (licensed) institutions, ONDTI = other non-deposit-taking (licensed) institutions, PSP = payment service provider; — = not available.

TABLE A.4 Anti-Money Laundering and Combating the Financing of Terrorism Rules for E-Money and Basic Accounts

Countries	Type of store-value account ^a	National government ID (A) or any official ID (B)	Proof of nationality or legal status	Proof of address	Proof of income	Proof of employment	Simplified CDD	Main regulator	National ID system connected to FIs for account opening	Agents can open accounts and conduct KYC
Brunei Darussalam	Basic accounts	B	Yes	Yes	Yes	Yes	No	AMBD	—	—
Indonesia	E-money	B	Yes	Yes	No	No	Yes	BI	Yes	Yes
	Basic accounts	B	Yes	Yes	No	Yes	Yes	OJK	Yes	Yes
Lao PDR	Basic accounts	B	Yes	Yes	Yes	Yes	—	AMLIO	—	Yes
Malaysia	E-money	B	Yes	Yes	No	No	Yes	BNM	No	— (No agent)
	Basic accounts	B	Yes	Yes	No	Yes	Yes	BNM	No	Yes
Thailand	E-money	A	Yes	Yes	No	No	No	AMLO/ BOT	Yes	Banks: No, Nonbanks: Yes
Philippines	E-money	B	—	—	—	—	Yes	BSP	No	Yes
	Basic accounts	B	Yes, if non-Filipino	Yes, but collection deferred for a year	No	No	Yes	BSP	No yet	Yes
Singapore^b	E-money	B	Yes	Yes	No	No	No	MAS	Yes	Yes
	Basic accounts	B	Yes	Yes	No	No	No	MAS	Yes	Yes
Vietnam	E-money	A	Yes	Yes	No	No	No	SBV	No	No
	Basic accounts	A	—	—	—	—	—	SBV	Yes	—

Source: Regulatory surveys of ASEAN countries.

Note: AMBD = Autoriti Monetari Brunei Darussalam Darussalam, AMLIO = Anti-Money Laundering Intelligence Office, AMLO = Anti-Money Laundering Office, BI = Bank Indonesia, BNM = Bank Negara Malaysia, BOT = Bank of Thailand, BSA = Banking Supervisory Agency of Vietnam, BSP = Bangko Sentral ng Philipinas, CDD = customer due diligence, FI = financial institution, KYC = know your customer, MAS = Monetary Authority of Singapore, OJK = Financial Services Authority of Indonesia, SBV = State Bank of Vietnam; — = not available.

a. Brunei Darussalam and Lao PDR do not regulate e-money, and Thailand does not regulate basic accounts.

b. Singapore only requires proof of income and employment from potential loan and credit card customers if the customer has been classified as high risk, which is a classification that includes politically exposed persons. Despite these requirements, Singapore does not have a simplified CDD approach.

TABLE A.5 Automated Clearing House Access Features

Countries	Direct access	Indirect access	Not allowed or not applicable
Brunei Darussalam	Banks	—	All remaining institutions
Indonesia	Banks	All others	MFI-ND
Lao PDR	Banks	Exchange bureaus, local MTOs, ODTI, and MFIs	Not applicable to international MTOs, MFI-ND, MNOs
Malaysia	Banks and development financial institutions	—	All remaining institutions
Philippines (Bancnet and PCHC)	Banks, rural banks, and the national treasury (PCHC)	MNOs through Bancnet. paying membership fees. International MTOs, local MTOs, exchange bureaus, MNOs, postal network through partners banks	
Singapore	Banks	—	All remaining institutions
Thailand	Banks and deposit taking financial institutions	—	All remaining institutions

Source: Regulatory surveys of ASEAN countries.

Note: MFI = microfinance institution, MFI-ND = microfinance institution (non-deposit-taking), MNO = mobile network operator, MTO = money transfer operator, ODTI = other deposit-taking (licensed) institution, PCHC = Philippines Clearing House Corporation; — = not available.

TABLE A.6 How Are Domestic ATM Transactions Processed in the Country?

	Brunei Darussalam	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand	Vietnam
Most ATM networks interconnected	√					√		
All ATM networks interconnected		√	√	√	√		√	√
ATM transactions cleared and settled in international networks	√	√	√					
ATM transactions cleared through international networks but settled in local currency at local banks								

Source: Regulatory surveys of ASEAN countries.

Note: ATM = automated teller machine.

TABLE A.7 How Are Domestic Point of Sale (POS) Transactions Processed in the Country?

	Brunei Darussalam	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand	Vietnam	Cambodia
Most POS networks interconnected		√					√		
All POS networks interconnected		√	√	√	√	√		√	√*
POS transactions cleared and settled in international networks	√		√						√
POS transactions cleared through international networks but settled in local currency at local settlement banks				√	√	√			

Source: Regulatory surveys of ASEAN countries.

* For Cambodia case: the system for launching the network is expected to go live in 2019.

TABLE A.8 Electronic-Based Retail Payment Products

	Brunei Darussalam	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand	Vietnam
Card based ^a	2	1, 2	X	1,2	1**	1,2	1,2	1
Computer and software based ^b	X	√	X	√	√	√	√	√
An Internet service used to access an innovative product ^c	√	√	X	√	√	√	√	√
Mobile phone based ^d	2,4	1,2,4	3	1,2,3,4	1	1,2,3	1,2,3,4	1,2,3,4
Others	X	FinTech payment developments	X	X	—	—	—	—

Source: Regulatory surveys of ASEAN countries.

Note: — = not available.

a. "Card based" can refer to (a) chip cards with an electronic purse or (b) magnetic stripe cards or chip cards used to access an innovative product maintained at a central infrastructure or payment processor.

b. "Computer and software based" refers to e-purse, prefunded network accounts.

c. "Internet service access to a product" refers to an account maintained in a central infrastructure or payment processor.

d. "Mobile phone based" does not include the purchasing of airtime or other telecommunications-related products. It refers to (a) an e-wallet; (b) access to an account maintained at central infrastructure (information is not recorded in the phone); (c) mobile operators offering pot-paid payments; and (d) all account information that is available on mobile (through chip, SIM card, or a similar mechanism) and used to initiate transactions.

** Bangko Sentral ng Philipinas required all cards to be EMV (Europay, Mastercard, and Visa)-equipped by June 30, 2018.

TABLE A.9 E-Money Market Features

Country ^a	Type of FI	Number of e-money issuers	Market share, volume (%)	Growth (2014–2016) (%)	Number of accounts / total adults (%)	Market share (customers, %)	Mobile based (market share volume)	Card based (market share volume)	Mobile based (market share customers, %)	Card based (market share customers, %)
Cambodia	Other banks	1	68	—	2	69	30	70	—	—
	PSP	5	32	—	1	31	—	—	—	—
Indonesia	Banks	11	80	86	8	63	—	—	1	84
	Nonbank e-money issuers	20	20	176	5	37	—	—	99	16
Malaysia	Banks	5	0.8 ^b	10 ^c	0.4	0.03	—	—	—	—
	Nonbanks	26	99.2	54 ^d	^e	99.9	1	99	23	77
Philippines	Banks	28	50% as end of 2017	—	23	70	—	—	30	70
	Nonbanks	7		—	10	30	—	—	—	—
Thailand	Banks	—	—	—	—	—	—	—	—	—
	Nonbanks	22	—	59	—	—	—	—	—	—

Source: Regulatory surveys of ASEAN countries.

Note: The mobile-based and card-based columns only report the total, not the number per type of institution.

— = not available.

a. Indonesia's and the Philippines' banks predominantly offer a card-based e-money model. They have the largest share of the market. Malaysia is also predominantly card-based in terms of customers. However, in terms of volume, all e-money types (online, card, and mobile) have a similar share of the market, with the online modality leading the market share at 40 percent. Malaysia doesn't segregate e-money data for banks and nonbanks because the e-money market is mostly dominated by nonbanks.

b. Market share is based on transaction value at the end of 2017.

c. Growth of 10% refers to transaction value and 16% refers to that based on transaction volume.

d. Growth of 54% refers to transaction value and 16% refers to that based on transaction volume.

e. The number of accounts per adult is 1.9. The percentage of accounts over total adults is not available.

TABLE A.10 Savings-Related Products and Deposit Insurance

Countries	Digital savings	Mobile bank account	Basic account	Deposit insurance
Brunei Darussalam	Yes	Banks	Banks and nonbanks; salary assigned	For banks and financial companies
Indonesia	No	Banks and cooperatives (using third-party application)	Simplified KYC, banks, rural banks and MFIs	No for cooperatives and the postal office
Lao PDR	No	Banks	Banks	Only for banks
Malaysia	No	All financial institutions offering e-banking services	Banks, development financial institutions, and cooperatives—no service fee, 16 free monthly transactions.	Covers banks
Philippines	No	Banks, rural banks	Simplified KYC required, minimum opening amount, no service fee, and no dormancy charges Banks, rural banks, financial cooperatives, and MFIs—no ID required, maximum opening amount, no service fee, and no dormancy charges.	Covers all deposit accounts in banks
Thailand	No	Banks, finance companies, credit foncier, NIEDs, PSPs	No, in process of drafting framework	Only for banks and finance companies and credit foncier companies

Source: Regulatory surveys of ASEAN countries.

Note: KYC = know your customer, MFI = microfinance institution, NEID = nonbank e-money issuers, PSP = payment service provider.

TABLE A.11 Digital or Electronic Access Channels in Addition to Credit and Debit Cards

Digital or electronic access channels	Brunei Darussalam	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand	Vietnam
Mobile banking (mobile phone use to access bank accounts)	√	√	√	√	√	√	√	√
Internet banking (websites used to access bank accounts)	√	√	√	√	√	√	√	√
ATMs for remote access to operate accounts (in addition to CICO)	√	√	√	√	√	√	√	√
POS terminals that are magnetic stripe, biometric, and chip enabled	√	√	√	√	√	√	√ (not biometric)	√
Others	X	Kiosks	X	Agent banks, virtual teller machines	Kiosks in cash agents banks; Virtual Currency Exchanges	Telephone	Kiosks, telephone	X

Source: Regulatory surveys of ASEAN countries.

Note: ATM = automated teller machine, CICO = cash in, cash out, POS = point of sale; — = not available.

TABLE A.12 Outlets Available per Country

Countries	ATMs per 100,000 adults	POS terminals per 100,000 adults	Merchants per 100,000 adults	Agents per 100,000 adults
Brunei Darussalam	65	—	—	—
Cambodia	15	135	—	180
Indonesia	58	599	344	847
Lao PDR	26	72	—	—
Malaysia	46	1,671*	—	29.6**
Myanmar	2	—	—	—
Philippines	29	278	—	32
Singapore	60	—	—	—
Thailand	97	719	60	—
Vietnam	27	406	—	—

Sources: Regulatory surveys of ASEAN countries and FAS (IMF) data from 2015 on ATMs for Myanmar and Singapore.

Note: FAS also reports the number of mobile banking agents, but because we use the data for total agents, that information has not been included. ATM = automated teller machine, POS = point of sale; — = not available.

* Data as at end-2017. Please note that Malaysia measures POS indicators by using “per 1,000 inhabitants.”

** Refers to bank agents.

TABLE A.13 Services Provided Through ATMs

	Bill payments	Cash deposits	Purchases	Credit transfers to accounts within the same bank	Credit transfers to accounts at any other bank	Others
Brunei Darussalam	√	√	x	√	x	x
Indonesia	√	√	√	√	√	e-money top-up
Lao PDR	√	√	x	x	x	x
Malaysia	√	√	√	√	√	Cash withdrawal, set and change withdrawal limit, balance inquiry, card and loan repayment, and reload of mobile prepaid applications
Philippines	√	√	√	√	√	x
Singapore	√	√	x	√	—	x
Thailand	√	√	√	√	√	Set transaction limit, donation, balance inquiry
Vietnam	—	√	—	√	—	—

Source: Regulatory surveys of ASEAN countries.

Note: ATM = automated teller machine; — = not available.

TABLE A.14 Financial Literacy Strategies and Features

Features	Indonesia	Thailand	Philippines	Malaysia	Brunei Darussalam
Authorities and department in charge	OJK: Department of Financial Literacy and Education BI: Department of Payment System Policy and Department of Electronification and National Payment Gateway	MOF, BOT, SEC (communication and investor education), Capital Market Education Division	Financial Consumer Protection Department	<ul style="list-style-type: none"> FEN, comprising public and private institutions with core mandate in financial education Consumer protection department, LINK, and BNM offices Financial Education Department (Credit Counseling and Debt Management Agency) 	<ul style="list-style-type: none"> Financial Consumer Issues Unit, AMBD National Financial Literacy Council (Prime Minister Office, Ministry of Finance and Economy, Education, Culture, Youth and Sports, among others)
Number of staff in total	19	68	<ul style="list-style-type: none"> Five organic warm bodies, with support from outsourced personnel, and other BSP units when necessary 	<ul style="list-style-type: none"> 7 in BNM (additional resources will be deployed for outreach programs) 8 in Credit Counseling Agency 	<ul style="list-style-type: none"> 3 officers in charge of Financial Literacy/Education under the Financial Consumer Issues Unit, AMBD
Roles	Developing materials, promotion, implementation, coordination, and oversight	Formulation and development of policies, promotion, coordination, and supervision	Content development; partnership/ stakeholder management; actual delivery of financial literacy sessions/ events	<ul style="list-style-type: none"> FEN: Coordinate and drive the 5-year National Strategy for Financial Literacy Consumer and Market Conduct Department, BNM (formulating policies, setting strategic direction, identifying target groups and priority areas) LINK and BNM offices (enhance awareness and understanding on financial matters), Credit counseling offices (conduct programs for adults and provide financial counseling and debt management programs) 	<ul style="list-style-type: none"> Promotion Coordination Implementation Oversight
Data collection? Broad or limited to set of institutions?	Yes, a limited set of providers	No data collection	Limited data collection on programs conducted; Financial literacy data leveraged on existing external surveys	Yes, from a limited set of providers of financial education	No
Requirement to FIs to provide financial education	Yes, a limited set of providers	No	Yes, under the BSP Financial Consumer Protection Framework	Yes, directed at a limited set of providers	No
In school curriculums?	Yes	Yes, as a distinct topic	Yes, ongoing integration	Yes, as a subtopic integrated into other topics or subjects	Yes, as a subtopic integrated into others
Education programs	National campaigns, radio, television, (announcements and programs), text messages and SMS reminders, games, or apps	All kind of educational programs, except text messages	National, regional financial education campaigns; Multi-sectoral partnerships	<ul style="list-style-type: none"> National financial education campaigns Public service announcements by radio or television Text messages, SMS reminder Games or apps 	National campaigns and public service announcements by radio or television.

TABLE A.14 Financial Literacy Strategies and Features (continued)

Features	Indonesia	Thailand	Philippines	Malaysia	Brunei Darussalam
DFS public—private initiatives	Noncash national movement 2014	Digital literacy efforts with the National E-Payment Master Plan that contains 4 pillars: 1. PromptPay (e-transfers between bank account users using IDs or mobile phone numbers) 2. Debit card use expansion 3. E-tax system 4. Social welfare and government e-payments	Advisories to avoid scams in e-channels and DFS part of the existing campaigns	1. Financial education through BNM's social media (Facebook, Twitter, and Instagram) 2. Financial education through BNM's mobile applications: a. MyLINK b. MyBNM c. MyTabung d. MyRinggit 3. Outreach programs through various channels, such as road shows, financial carnival, MobileLINK (mobile customer service coach), and face-to-face engagement with consumers	—

Source: Regulatory surveys of ASEAN countries.

Note: AMBD = Autoriti Monetari Brunei Darussalam, BI = Bank Indonesia, BNM = Bank Negara Malaysia, BOT = Bank of Thailand, DFS = digital financial services, FEN = Financial Education Network, FI = financial institution, LINK = Laman Informasi Nasihat dan Khidmat, MOF = Ministry of Finance, OJK = Financial Services Authority of Indonesia, SEC = securities and exchange commission, SMS = short message service, — = not available.

APPENDIX B

Basic Information on G20 High-Level Principles and CGAP Branchless Banking Template

The G20 Principles

These principles provide guidelines for the development of each of the Action Framework for Universal Financial Access building blocks. For example, in terms of political commitments, the Group of 20 (G20) principles encourage countries to promote a digital approach to financial inclusion (guideline 1). Regarding the regulatory environment, they highlight the need to design proportionate rules (guideline 2), balance innovation and risks (guideline 3), and so on. They stress the importance of financial literacy and tracking data (guidelines 6 and 8), which would support progress in the Achieving Scale and Political Commitment blocks, respectively.

Global Partnership for Financial Inclusion High-Level Principles for Digital Financial Inclusion

1. Promote a digital approach to financial inclusion.
2. Balance innovation and risk to achieve digital financial inclusion.
3. Provide an enabling and proportionate legal and regulatory framework.
4. Expand digital financial services infrastructure ecosystem.
5. Establish responsible digital financial practices to protect consumers.
6. Strengthen digital financial literacy and awareness.
7. Facilitate customer identification for digital financial services.
8. Track digital financial services progress.

Source: GPFI and G20 2016.

This stock-taking analysis will cover all building blocks in figure 1, together with examples on how Association of Southeast Asian Nations (ASEAN) countries are implementing the G20 principles for each of the building blocks, specifically addressing policies and regulations for digital financial services (DFS). We are not covering anything regarding information and communications technology (ICT) infrastructure, since that goes beyond this analysis.

CGAP Branchless Banking Diagnostic Template

The template provides insights into the elements of the regulatory framework that should be in place for the expansion of branchless banking.⁴⁵ These elements remain a good approach for DFS, providing us with an agenda to analyze current ASEAN members' progress.

Considering the evolution from branchless banking to DFS—and the wider scope of products and services available since 2010—we have followed a slightly different approach from the Consultative Group to Assist the Poor (CGAP) (2010).

Regulations in place for most of the CGAP branchless banking elements, under the structure given by the Universal Financial Access Framework and G20 principles, have been assessed. Not all topics included in the Branchless Banking Diagnostic template (e-security, telecommunications regulations, and taxation) have been covered, because of constraints on available information. Some other topics, mostly regarding regulation for new products (not well known back in 2010), have been included.

The topics covered by the CGAP Branchless Banking Diagnostic Template are organized in three large categories, as follows:

1. Preconditions: necessary topics but not sufficient

- Agent regulations: nonbanks being able to use them
- Anti-money laundering and combating the financing of terrorism: risk-based approach

2. Next-generation policy and regulatory topics: play a role in the success and sustainability of markets

- E-money framework
- Consumer protection: to address risks involved in electronic payments
- Payment systems: inclusive regulation and effective oversight
- Competition: balancing incentives for pioneers with reinforcing monopolies
- Interoperability

3. Ancillary topics: may affect the development of DFS or present obstacles to their development

- Prudential regulations: deposit and payments
- Data privacy
- Foreign exchange controls
- E-commerce and e-security
- Telecommunications regulation
- Taxation
- General banking and financial access

⁴⁵ See CGAP 2010. Branchless banking is defined as the delivery of financial services outside conventional bank branches, often using agents and relying on ICT to transmit data details.

APPENDIX C

Additional Tables Based on Literature Review and Complementary Information

TABLE C.1 Ratio to Assess the Level of Financial System Development

Credit to the private sector / GDP (%)			
Country	2014	2015	2016
Singapore	131	127	133
Malaysia	121	125	124
Vietnam	100	112	124
Thailand	115	116	115
Cambodia	54	63	69
Philippines	39	42	45
Brunei Darussalam	33	41	44
Indonesia	33	33	33
Myanmar	16	18	21
Lao PDR	—	—	—

Source: World Bank 2017c.

Note: — = not available.

TABLE C.2 Some Indicators on the Level of Financial Inclusion—Demand-Side Data

Country / indicator	Financial institution account (% age 15+)	Made or received digital payments in the past year (% age 15+)	Paid utility bills using a mobile phone (% age 15+)	Used a mobile phone or the Internet to access an account (% age 15+)
Cambodia	18	16	2	6
Indonesia	48	35	4	8
Lao PDR	29	13	1	2
Malaysia	85	70	22	33
Myanmar	26	8	0	1
Philippines	32	25	1	7
Singapore	98	90	15	49
Thailand	81	62	5	17
Vietnam	30	23	2	9
East Asia & Pacific	73	62	18	33

Source: World Bank 2017d.

TABLE C.3 Digital Financial Services Products by Country

Countries	Personal finance	Investment	Payments and mobile wallets	POS/banking infrastructure/ payment gateway	Lending	Accounting comparison business tools education	Crowd-funding	Crypto	InsurTech
Indonesia	1	2	15	5	6	12	4	2	—
Malaysia	—	1	4	19	6	—	7	—	—
Philippines	1	—	9	5	4	5	1	1	—
Singapore	10	13	20	14	9	14	—	—	—
Thailand	3	13	24	—	—	16	7	2	6
Vietnam	3	—	23	—	1	3	4	3	—

Source: ASEAN UP, <https://aseanup.com/>, September 2017.

Note: This list is not exhaustive, nor does it indicate the entire range of products available. It provides an overview of innovations already happening in these markets and where policy makers and regulators should focus their attention on the basis of available information on ASEAN UP. POS = point of sale; — = not available. Bank Negara Malaysia (BNM) data indicate the existence of more than 30 banks and 26 nonbanks as providers of payments and mobile wallets, as well as more than 407,000 electronic funds transfer at point of sale (EFTPOS) that accept international-brand payment cards or domestic-brand debit cards, and includes terminals acquired by nonbank acquirers. However, data provided by BNM aggregates credit card, debit card, and e-money as payments under the same category. Regarding InsurTech operators, BNM data indicates the existence of 18 providers, including 3 authorized under the regulatory sandbox scheme.

TABLE C.4 National Financial Inclusion Strategies and Related Policies

Country	NFIS with DFS targets	Data collection initiatives	Other policies
Brunei Darussalam^a	<ul style="list-style-type: none"> No 	—	<ul style="list-style-type: none"> FinTech unit created in October 2016, also in charge of cybersecurity
Cambodia^b	<ul style="list-style-type: none"> No NFIS, in development 	<ul style="list-style-type: none"> FinScope Consumer Survey in July 2016 	<ul style="list-style-type: none"> Microfinance sector development through MFIs Mobile payments developments
Indonesia^c	<ul style="list-style-type: none"> 2012/2016 Branchless banking National ID No-frills accounts Simplified KYC Interoperability of e-money Bulk registration E-commerce regulation 	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Strengthening of OJK as microfinance authority. Reform of MFI regulations effective by 2015. Unlevel playing field between MFIs and public microcredit programs. Barriers to foreign ownership. M&E framework developed with the World Bank, together with capacity building to support the Coordination Council and to analyze data.
Lao PDR	<ul style="list-style-type: none"> No NFIS, in development 	—	—
Malaysia	<ul style="list-style-type: none"> Financial inclusion strategy (framework under the Financial Sector Blueprint 2011–2020) SME financing ecosystem Agent banking Tech-based innovative channels Microfinancing, microsavings, and microinsurance DFI capabilities in financial inclusion 	<ul style="list-style-type: none"> Financial Inclusion Index Supply-side data— submission by financial institutions and payment service providers Financial inclusion demand-side survey 	<ul style="list-style-type: none"> Small debt resolution schemes for SMEs BNM Fund for SMEs
Myanmar	<ul style="list-style-type: none"> Financial Inclusion Roadmap 2014–2016 Priority segments: agriculture, fisheries, livestock, SMEs, and low income Strengthen traditional FIs: banks, MFIs, and cooperative Develop electronic payments and outlets 	<ul style="list-style-type: none"> Demand-side survey in project 	<ul style="list-style-type: none"> Strengthening financial sector Agricultural and fisheries development policies (Decree 717 and ss.) Review national payment system strategy and set up of the National Payments Systems Council.^d

TABLE C.4 National Financial Inclusion Strategies and Related Policies (continued)

Country	NFIS with DFS targets	Data collection initiatives	Other policies
Philippines	<ul style="list-style-type: none"> NFIS launched in 2015 Institutionalization of Financial Inclusion Steering Committee Strategy for a national retail payment: two priority payment schemes under ACH and G2P and P2G policies E-money Expansion of microbanking offices 	<ul style="list-style-type: none"> Reports on the state of financial inclusion every year, quarterly for the dashboard, and once every two years for the Financial Inclusion Survey Spatial mapping and data visualization exercises Demand-side survey 	<ul style="list-style-type: none"> M&E on NFIS (5th report on the state of financial inclusion) Regulatory council in place led by the SEC, and ongoing efforts to improve the frameworks for NGO MFIs.^{46e}
Singapore	<ul style="list-style-type: none"> Creation of the Bureau of Financial Inclusion and Policy Development (2011) within the Fiscal Policy Office 	—	<ul style="list-style-type: none"> Microfinance and microinsurance framework (2011) Creation of Agricultural Insurance Scheme (2011) Payment System Roadmap (2012–2016) finalized
Thailand^f	<ul style="list-style-type: none"> Literature review: lack of financial inclusion strategy but current programs to increase digitization of payments Interview with regulators: NFIS, but all information is in Thai 	—	<ul style="list-style-type: none"> Plans and concrete strategies for payments, community financial organization development, microfinance, and others
Vietnam^g	<ul style="list-style-type: none"> NFIS in development (2017–2019) with the World Bank Some areas to be covered: digitization of G2P, mobile payments regulation, financial education in school curriculum, and others 	—	<ul style="list-style-type: none"> Agricultural and low-income sector credit policies National Microfinance Strategy (2011–2015 and 2015–2020)

Sources: AFI Data Portal and national financial inclusion strategies available online.

Note: Goals related to financial education strategies are not included because they are analyzed in other sections. ACH = automated clearing house, AFI = Alliance for Financial Inclusion, BNM = Bank Negara Malaysia, DFI = development finance institution, DFS = digital financial services, FI = financial institution, G2P = government-to-person, KYC = know your customer, M&E = monitoring and evaluation, MFI = microfinance institution, NFIS = national financial inclusion strategies, NGO = nongovernmental organization, OJK = Financial Services Authority of Indonesia, P2G = person-to-government, SEC = securities and exchange commission, SME = small and medium enterprises; — = not available.

a. Conversation with the Regulatory Authority, August 2017.

b. ADB 2017, 17.

c. See the World Bank Group's National Financial Inclusion Strategies Brief at <http://pubdocs.worldbank.org/en/889991430496150181/National-Financial-Inclusion-Strategies-BRIEF-by-WBG.pdf>.

d. See Universal Financial Access (UFA) in World Bank 2016.

e. CGAP 2017, 29.

f. AFI 2015; Terada and Vandenberg 2014, 94.

g. Conversation with World Bank staff and Vietnam authorities in 2016.

TABLE C.5 Credit Bureau and Credit Information Services Coverage

Country	Credit bureau		Credit information services	
	Adults (%)	Individuals/firms	Adults (%)	Individuals/firms
Brunei Darussalam	0	0	61.8	Both
Cambodia	44.0	Individuals	0	0
Indonesia	0	0	51.8	Both
Lao PDR	0	0	10.9	Both
Malaysia	76.4	Both	62.4	Both
Myanmar	0	0	0	0
Philippines	10.2	Both	0	0
Singapore	65.7	Both	0	0
Thailand	53.0	Both	0	0
Vietnam	14.8	Both	41.8	Both

Source: World Bank 2017a.

46 <https://www.sec.gov.ph/microfinance-ngo-regulatory-council/mnrc-composition-and-mandate/>

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