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ALLIANCE FOR ETRADE DEVELOPMENT

INTEROPERABILITY OF DIGITAL PAYMENTS FOR INCLUSIVE TRADE IN SOUTHEAST ASIA

June 30, 2022

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INTEROPERABILITY OF DIGITAL PAYMENTS FOR INCLUSIVE TRADE IN SOUTHEAST ASIA

Agreement no.:
7200AA19CA00021

Submitted to:
USAID Center for Economics and Market Development

Prepared by:
Dr. Kati Suominen, Founder and CEO, Nextrade Group and Technical Director, eTrade Alliance,
Michael Poor, Manager and Financial Services Lead, Nextrade Group

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ACKNOWLEDGMENTS

This report was produced for the Alliance for eTrade Development, a Global Development Alliance supported by the US Agency for International Development. Dr. Suominen is the Alliance’s Technical Director. The authors would like to thank Erica Vambell for persistent research assistance.

I. INTRODUCTION

In the past few years, advanced, emerging, and most developing countries have promoted the use of digital payments to enable people and businesses, even ones without bank accounts, to transact with each other. Countries around the world have also ensured that the payment methods emerging in their economies interoperate with each other. However, such ubiquitous and interoperable payments systems are scarcer *among* countries. Gaps in cross-border payments interoperability in turn arrests the growth of cross-border trade and ecommerce – at a time when especially micro, small, and medium-sized enterprises (MSMEs) can use ecommerce expand their customer bases and sell across borders.

Cross-border payments interoperability is critical especially in regions such as Southeast Asia where ecommerce is booming and opening new opportunities for the region’s MSMEs to grow their sales; payments innovations are proliferating; and consumers and firms are rapidly adopting digital payments. Indeed, 2021 was the first year that digital payments use outpaced cash as a medium of exchange in transactions in Southeast Asia.

Yet even Southeast Asia still has considerable frictions to cross-border digital payments interoperability that curtail MSMEs’ cross-border ecommerce. In our surveys, a third of Southeast Asian online sellers report having lost an export sale due to inability to accept payments from foreign customers, and over a third state that the lack of interoperable regional payments is a “huge challenge” for them to export using ecommerce. Integrating Southeast Asia’s many digital payment systems to a point where anyone could receive an instant payment from anyone in the region would provide a major boost to cross-border ecommerce and MSMEs’ sales in the region. ¹

There is of course already extensive work in Southeast Asia to promote and pilot interoperable payments. Broadening these efforts can have significant payoffs. In the estimates in this report, if increasing just by 10 percent the export revenues of MSMEs that report having lost sales because inability to accept payments from a customer, payments interoperability would help generate \$30.6 billion in new MSME sales, growing regional MSMEs’ revenues by 2.4 percent and increasingly MSME employment by as many as 4.2 million. If however interoperability increased by 20 percent the exports of MSMEs that report having lost sales because of lack of interoperability, the region’s MSME sales would increase by \$61.2 billion per year or 4.7 percent in total, and the regional GDP would grow by 2.1 percent. The new sales could lead to as many as 8.3 million new jobs and enable as many as 10.6 million MSMEs to export for the first time.

Granted, payments interoperability would also promote regionalization of services MSMEs need for their ecommerce and trade, such as regional lending and insurance services, and also facilitate the use of other financial services such as digital remittances.²

The purpose of this report, prepared for the USAID-supported Alliance for eTrade Development II (“eTrade Alliance,” made up of Cargill, DHL, Element, Etsy, eCommerce Institute, Google, Mastercard, Mexican Association for Online Sales, PayPal, Ringier One Africa Media, UPS, and Visa), is to promote dialogue on ways to accelerate the interoperability of digital payments in Asia-Pacific, in order to support MSMEs’ ecommerce. In particular, this report will:

- Review digital payments innovations and the use of digital payments in Southeast Asia in the past few years;

- Review our survey data on how Southeast Asian MSMEs use ecommerce and explore their needs for regionally interoperable payment systems in order to accept payments from foreign customers;
- Pioneer in measuring the gains from payments interoperability for MSME trade and economic growth in Southeast Asia;
- Map out the region’s many cross-border payments interoperability pilots and assess their progress and potential for paving the way for region-wide interoperability;
- Assess potential opportunities for payments interoperability opened by central bank digital currencies (CBDC), a vibrant area of national as well as cross-border pilots;
- Discuss regional efforts to promote payments interoperability, for example among Association of Southeast Asian Nations (ASEAN) members; and
- Put forth ideas on policy and technology solutions for accelerating the payments interoperability in Southeast Asia and more broadly in Asia-Pacific, to enable MSMEs in ecommerce.

This report are relevant to many other regions in the world – and as such, are hoped to catalyze thinking on pathways to payments interoperability also outside Southeast Asia.

This report is organized as follows. The following section discusses the rise of digital payments innovations in Southeast Asia and their adoption in ecommerce transactions. Section three analyzes MSMEs’ use of digital payments and the challenges they face to receiving and making payments in cross-border transactions.

Section four calculates the potential gains from payments interoperability, and the various ongoing regional pilots and policy initiatives to promote interoperable cross-border payments. Section five puts forth policy and programmatic recommendations for accelerating Southeast Asian MSMEs’ use of ecommerce and the growth of their online sales.

II. GROWTH DIGITAL PAYMENTS IN SOUTHEAST ASIA'S ECOMMERCE AND ECONOMIES

A. PAYMENTS INNOVATION IN SOUTHEAST ASIA

Southeast Asia has had an explosive growth digital payment innovations and instruments in the past few years. In our estimate, there are in total some 359 payments-related businesses in the region, most of them digital wallets and PSPs (figure 1). There are also some pioneering digital currency companies that leverage blockchain and its underlying distributed ledger technology (DLT) to enable transactions in digital currencies, and well as diversified financial services providers, such as digital banks, that also provide payment services. In addition, there are numerous companies providing various payment platform solutions for corporations.

Singapore is a payments innovations hub. However, Indonesia, Malaysia, and Philippines and well Vietnam are all featuring more payments startups, especially from 2015 onward (figure 2.). Some of these have robust revenues above \$50 million (figure 3). Most deals have however been Seed to C rounds; a few such as Gojek, Nium, Sea, and Ayannah have raised past C Round (figure 4).

Figure 1: Digital payments companies in the ASEAN region, by estimated revenue and type

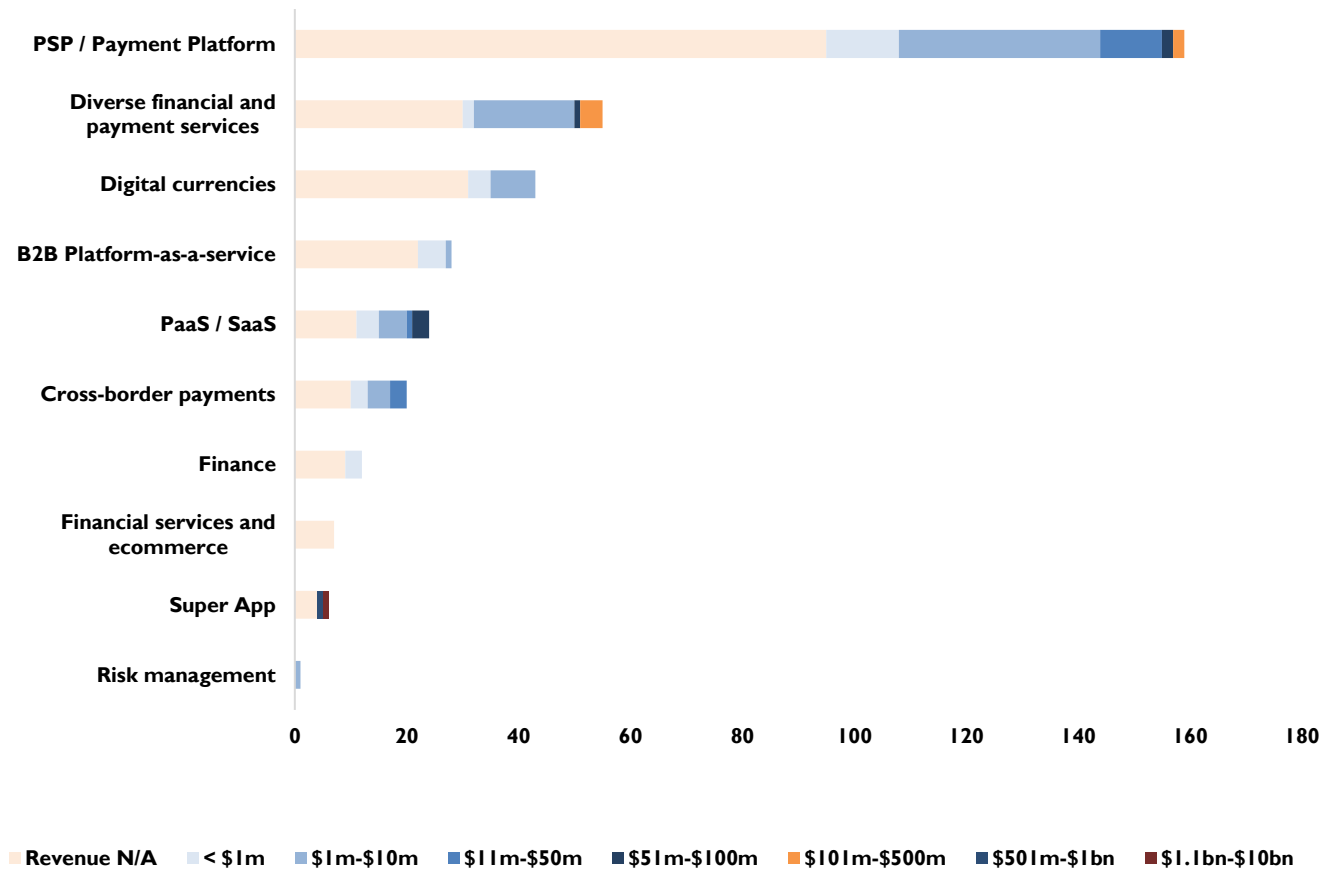
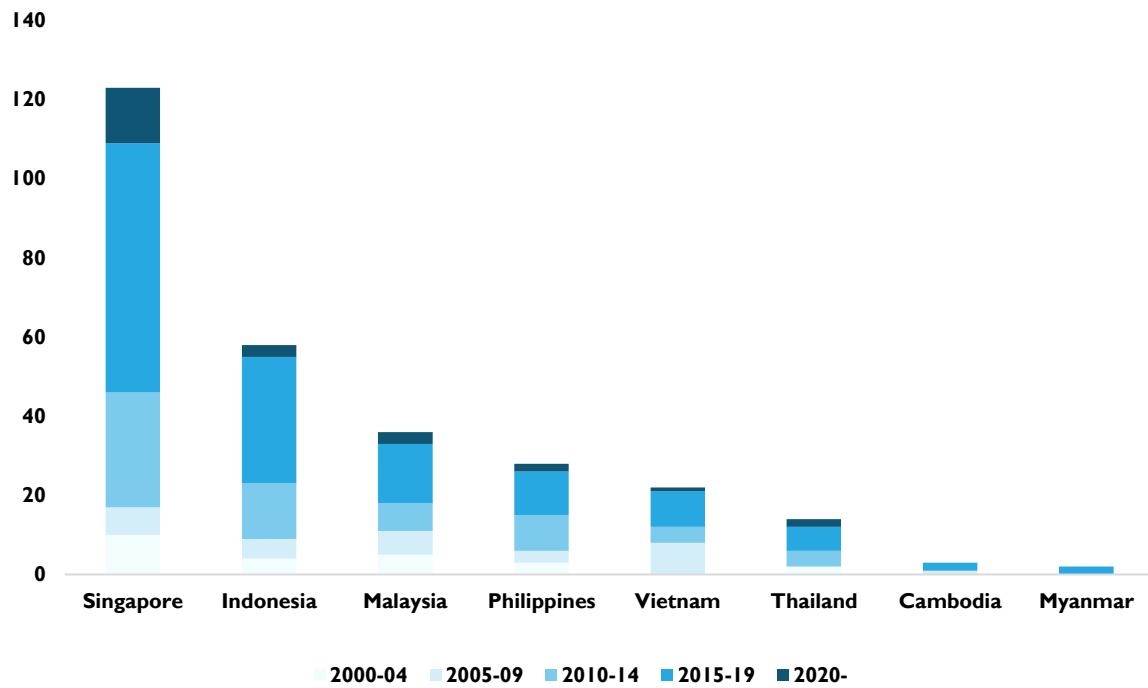
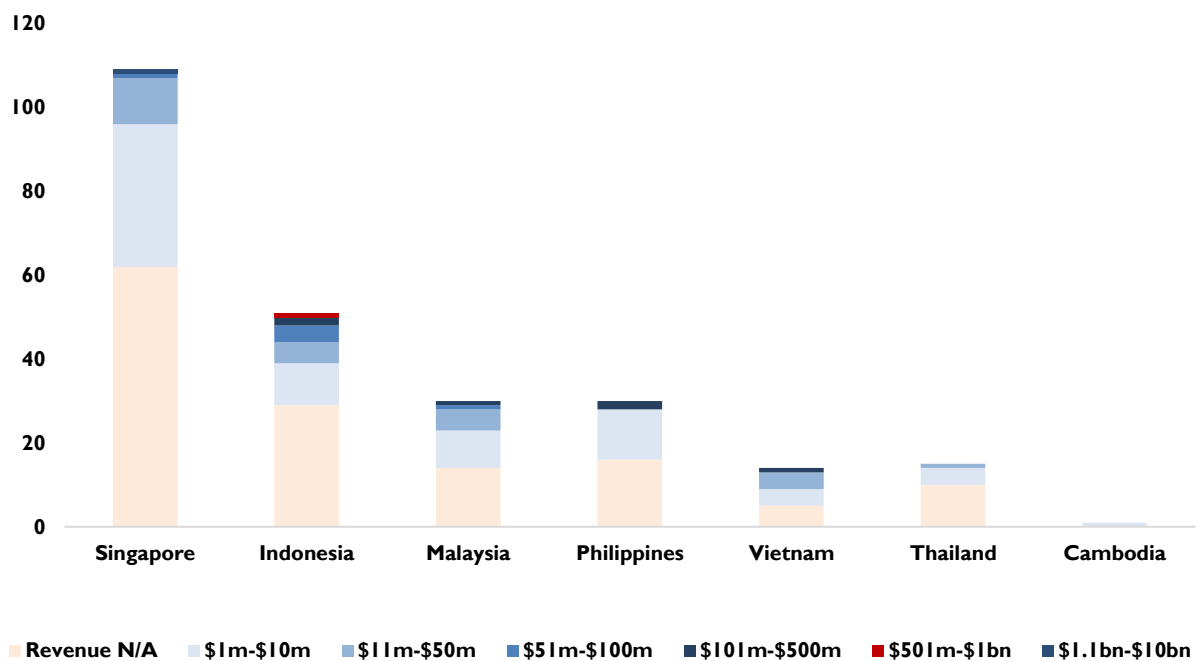


Figure 2: Digital payments companies in the ASEAN, by year founded and country



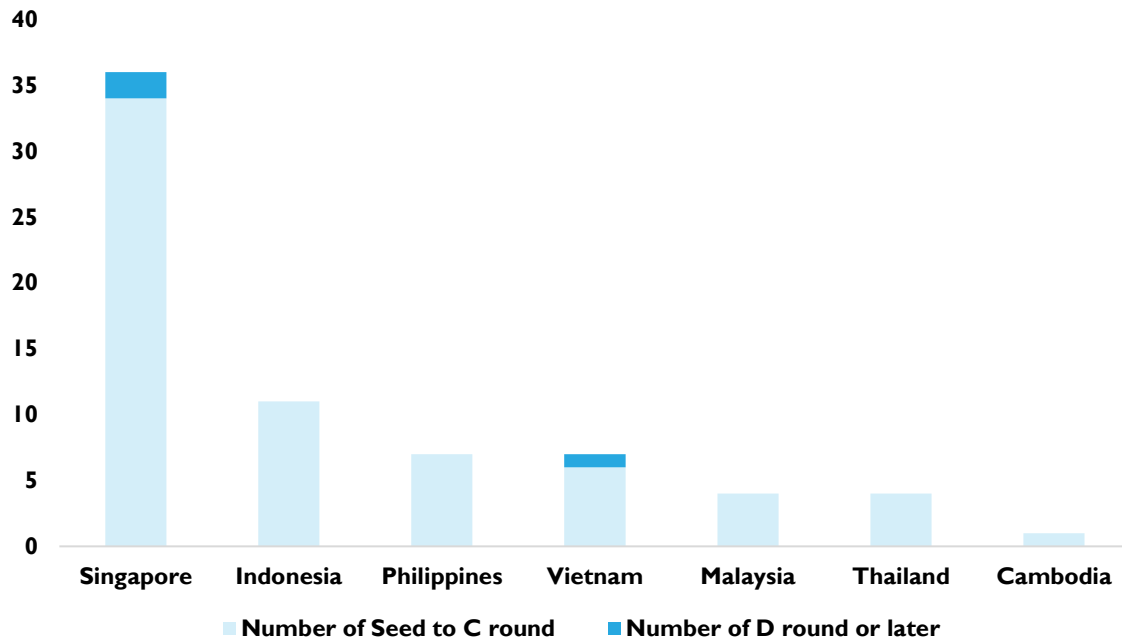
Source: Author on the basis of Crunchbase.

Figure 3: Digital payments companies in the ASEAN region, by revenue and country



Source: Author on the basis of Crunchbase.

Figure 4: Digital payments companies in the ASEAN region, by funding rounds and country



Source: Author on the basis of Crunchbase.

Let's assess the most prominent digital payment methods and instruments in turn.

E-wallets and digital payment service providers (PSPs). Asia-Pacific is the global leader in the adoption of digital wallets, which accounted for 69 percent of e-commerce transactions value in 2021, and are expected to grow to over 72 percent by 2025.³ Southeast Asia is the world's fastest growing region for digital wallets, with broad-based adoption: 77 percent of Malaysians, 70 percent of Indonesians, and 66 percent of Thai used a digital wallet over the course of a month in 2021.⁴ Major payment networks have in turned partnered with ay of these. Digital wallets are in the region offered by a wide range of providers, including (table 1):

- Traditional banks such as DBS Bank (PayLah), Bank of Central Asia in Indonesia (Sakuku), CIMB in Malaysia (CIMB Pay), and Philippines OCBC (Pay Anyone);
- Digital challenger banks (that have a banking license) and neobanks (that do not) such as Grab, Timo (Vietnam), Tonik (Phillippines), Aspire (Singapore), Singtel, Razer and Sheng Sion, among others;⁵
- Fintechs such as PayMaya in the Philippines, Touch'n Go in Malaysia, and Momo in Vietnam;
- "Techfins", or technology companies that offer digital payments, such as Samsung Pay, Google Pay, and Alipay;

- Superapps such as Gojek and Grab that enable digital payments for services such as transportation, food delivery, and logistics, and that also offer financing for their users.⁶

By 2025, some estimates suggest that as many as 440 million wallets are expected to be in use in Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam, representing nearly 100 percent penetration among people over 15 years of age.⁷ These are among the few examples of payments providers in the region.

Table 1 : Selected Digital Wallets in Southeast Asia

E-wallet	Ultimate parent	Parent's business	Market cap or amount raised as of Nov. 30, 2020 (\$B)	Southeast Asian countries
GrabPay	Grab Holdings Inc.	Ride-hailing	10	SG, MY, TH, ID, PH, VN
AirPay, Shopee Pay	Sea Ltd. (NYSE: SE)	Ecommerce, gaming	89	SG, MY, TH, ID, PH, VN
GoPay, Coins.ph	PT Go-Jek Indonesia	Ride-hailing	NA	TH, ID, PH
Alipay, Lazada Wallet	Ant Group Go. Ltd.	Fintech	22	SG, MY, TH, PH, VN, KH, LA
TrueMoney	Ascend Group Co. Ltd.	Ecommerce, fintech	NA	TH, ID, PH, VN, KH, MM
Line Pay	Line Corp. (TSE:3938)	Social media	13	TH, ID
Boost	Axiata Group Berhad (KLSE: AXIATA)	Telecom	8	MY, ID
Dash	Singtel (SGX:Z74)	Telecom	29	SG, TH
OVO	NA	NA	NA	ID
DANA	Emtek (IDX:EMTK)	Telecom, media	3	ID
LinkAja	State-owned enterprises	Telecom, bank	NA	ID
Touch'n Go eWallet	CIMB Group Holdings Bhd. (KLSE:CIMB)	Bank	9	MY
GCash	Investor group	Telecom, fintech	NA	PH
PayMaya	PLDT Inc. (PHPSE:TEL)	Telecom	6	PH

Source: Nariyanuri, S&P Global, 2021

Real-time Payments (RTP). RTP applications operate on high-speed payment networks, typically established by a consortium of large domestic commercial banks with the central bank. RTPs enable instant transfers of money between bank accounts – in contrast to digital wallets or many card-based payments that travel through a bank settlement process and take up to three days to settle.⁸ is among

exceptions that offers Real-time settlement offers several value propositions, such as instant cash flow for the seller in ecommerce transactions.⁹ In Asia-Pacific, 13 countries have adopted RTP networks; in Southeast Asia, the most prominent ones include Thailand’s PromptPay and Singapore’s PayNow (table 2).¹⁰ These also enable contactless QR code-initiated payments.¹¹ Digital wallets are also increasingly integrating RTPs. There are of course other private sector solutions, such as Visa Direct global real-time network for individuals between accounts domestically and globally.

Table 2: RTPs in Southeast Asia

Country	Name	Parties	Description
Philippines	InstaPay	Bangko Sentral ng Philipinas (BSP), BancNet	Interbank funds transfer service governed by the Philippine Payment Management Inc. and overseen by the central bank (BSP). Transfers of up to PHP 50,000 per day are available 24/7, and are settled in real-time.
Singapore	PayNow	DBS Bank, OCBC Bank, United Overseas Bank (UOB)	PayNow is an application on the Network for Electronic Transfers (NETS), which provides 24/7 real-time transfers between accounts of participating banks; PayNow is similar to FAST (both part of NETS), but requires only minimal identification information.
Malaysia	DuitNow	Bank Negara Malaysia (BNM)	DuitNow operates on PayNet's RPP, Malaysia's national retail payment network (overseen by BNM - Central Bank of Malaysia), and provides 24/7, 365 real-time payments
Thailand	PromptPay	Bank of Thailand (BoT), Thai Banker's Association (TBA), + 15 Commercial Banks and 4 National Fis	PromptPay is an RTP platform connecting Thai commercial banks, and enabling 24/7, 365 instant transfers. The platform was initiated by Thai government's efforts to digitize commerce and move off a reliance on cash.
Indonesia	BI-FAST	Bank Indonesia	National retail payments system that provides 24/7 real-time transaction settlement at the bank and customer levels (currently in pilot phase)
Vietnam	National Payment Corporation of Vietnam (NAPAS)	State Bank of Vietnam	NAPAS has been licensed by the State Bank to provide financial switching services and electronic clearing services in Vietnam; it operates a switching system among 18,600 ATMs, 261,000 POS machines and 300 electronic payment companies, and serving over 100 million cardholders. ¹²
Cambodia	Pilot	Retail + Wholesale	DLT-based RTP

Central Bank Digital Currencies (CBDCs). The rise of crypto currencies has propelled the wave of CBDC pilots, as governments seek to assert their monetary powers. Governments are also adopting CBDCs to respond to consumers’ interest in digital payments over cash; to enhance financial inclusion;

and to modernize payment and settlement systems for efficiency (speed and accuracy) and cost reduction. By now nearly every Asia-Pacific economy has begun to explore CBDCs, with some already being tested in live pilots – most notably, China’s e-CNY. In Southeast Asia, Cambodia, Malaysia, the Philippines, Singapore and Thailand have progressed to CBDC pilots (table 3).

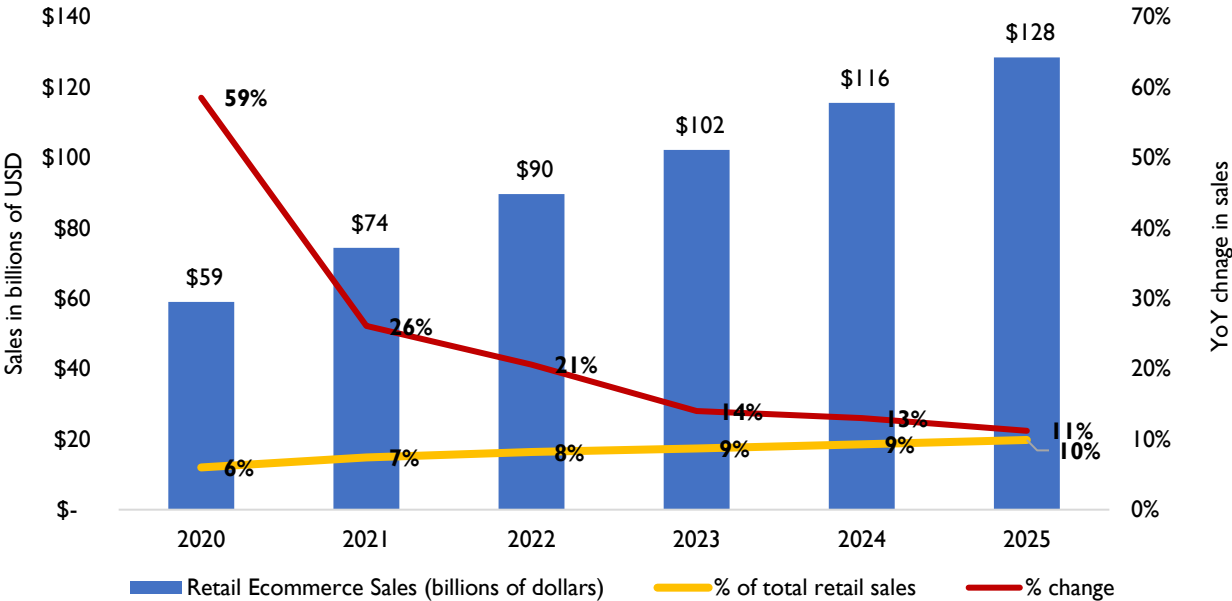
Table 3: CBDC Initiatives in the Asia-Pacific

Country	Status	Type	Infrastructure	Parties Involved
Indonesia	Research	Retail	Undecided	Bank of Indonesia
Laos	Research	Undecided	Undecided	Bank of Lao P.D.R., Soramitsu
Malaysia	Research / Pilot	Retail + Wholesale	Conventional + DLT	BNM
Philippines	Pilot	Retail + Wholesale	Undecided	BSP
Singapore	Research / Pilot	Retail + Wholesale	Undecided	MAS
Thailand	Pilot	Retail + Wholesale	Conventional + DLT	BoT, Giesecke + Devrient
Vietnam	Research	Undecided	DLT	State Bank of Vietnam

B. GROWING USE OF DIGITAL PAYMENTS IN SOUTHEAST ASIAN ECOMMERCE

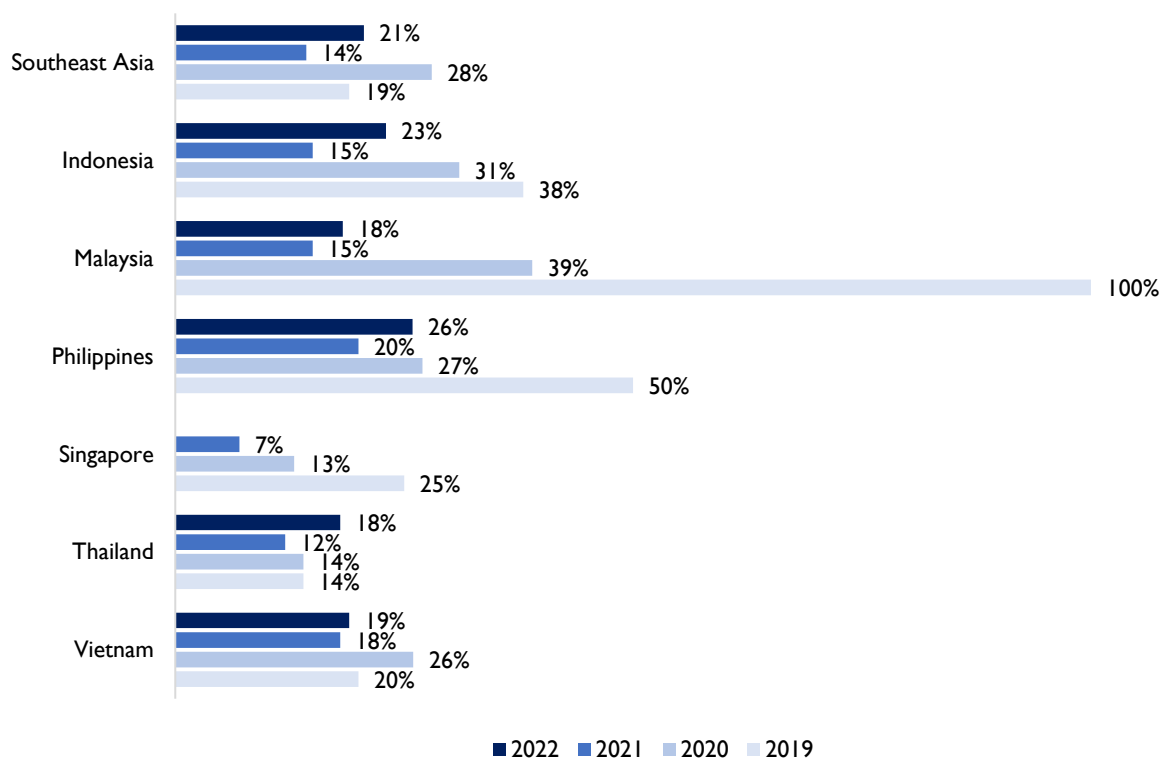
Digital payments innovation in Southeast Asia has enabled more fluid payments and ecommerce transactions – Southeast Asia has experienced explosive growth in ecommerce transactions in 2021, with retail ecommerce sales growing to over \$100 per capita in Thailand, over \$200 per capita in Malaysia and over \$600 per capital in Singapore in 2021 (figures 5-7). In 2022, Philippines, Indonesia, Vietnam, Malaysia, and Thailand alike will be among the top-10 fastest growing retail ecommerce markets in the world.

Figure 5: Retail Ecommerce Sales in Southeast Asia, 2020-2025



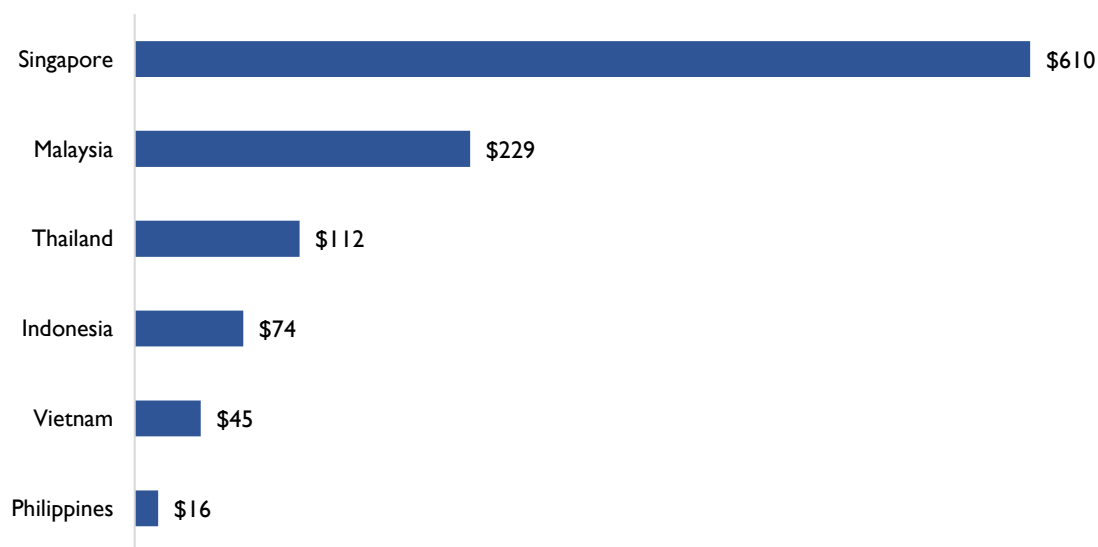
Source: eMarketer and PPRO Payments and E-Commerce Report.

Figure 6: Growth of ecommerce in selected Southeast Asian economies, 2019-21



Source: eMarketer and PPRO Payments and E-Commerce Report.

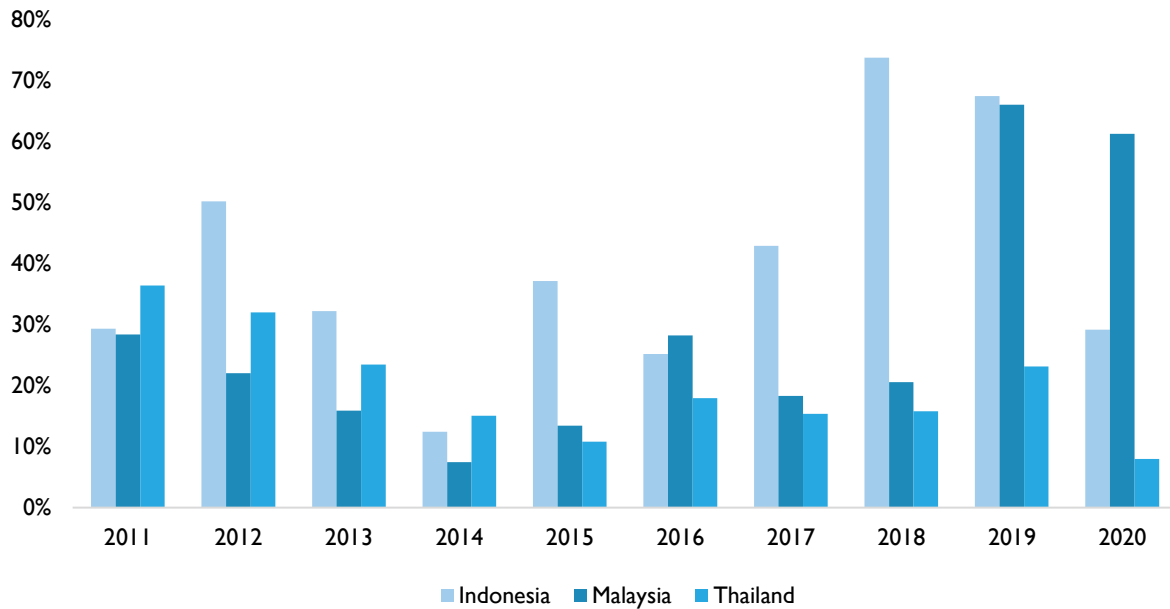
Figure 7: Retail Ecommerce Spending per Capita in Select Southeast Asian Countries, 2021



Source: eMarketer and World Bank.

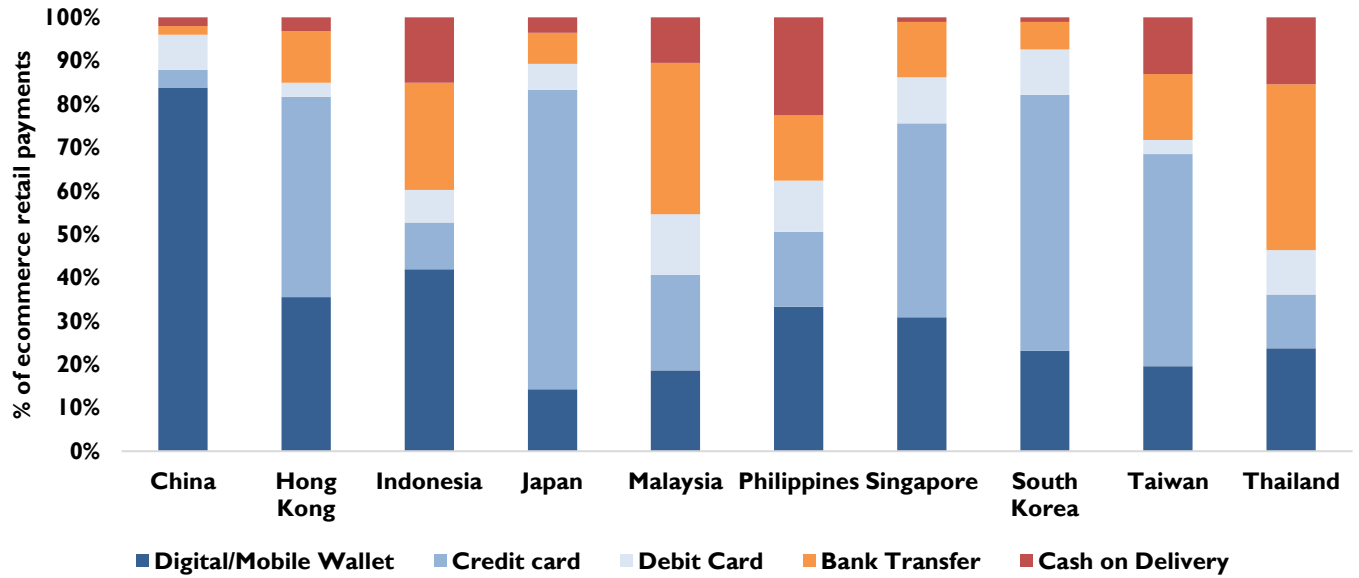
The growth of ecommerce has helped hasten the adoption of online payments among Southeast Asian shoppers. Per available Central Bank data, the use of digital payments has grown at robust 70–80 percent per year in Indonesia and Malaysia, and at double digits in Thailand (figure 8). By 2021, digital and card payments made up the majority of ecommerce transactions in the region (figure 8). Digital payments have also surged in popularity in in-person retail sales (figure 9).

Figure 8: Annual growth in e-money transactions in Indonesia, Thailand, and Malaysia in 2011–2020



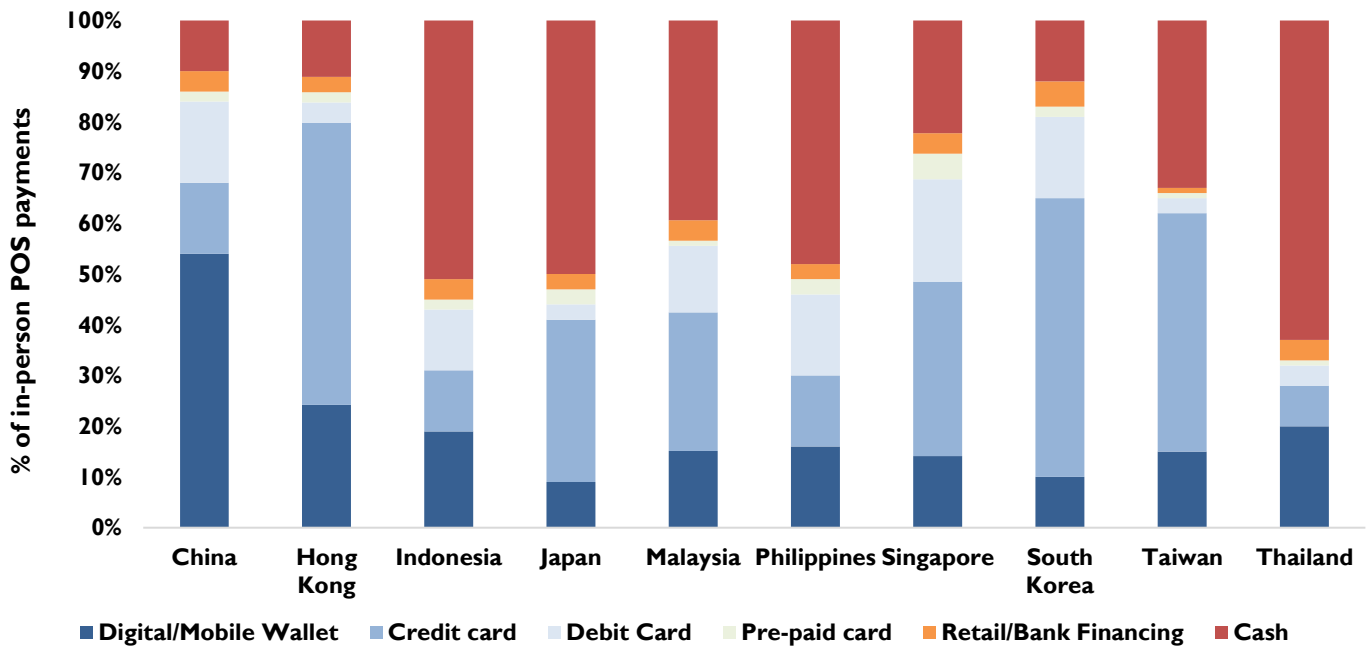
Source: Suominen (2021)..

Figure 9: Ecommerce retail payments by type and country, 2021



Source: FIS - The Global Payments Report. 2022.

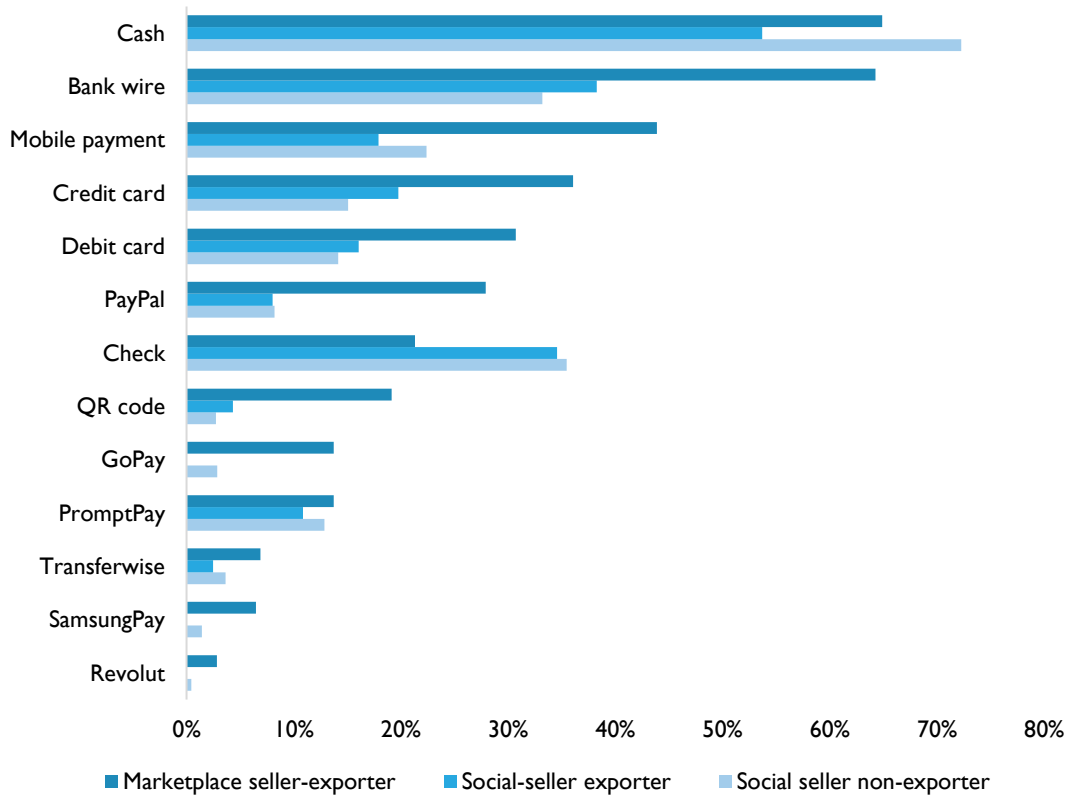
Figure 10: Retail (in person) point of sales (POS) payments by type and country, 2021



Source: FIS - The Global Payments Report. 2022.

These trends in part reflect the growth of digital payments acceptance by MSMEs. Indeed, Covid-19 accelerated MSMEs' acceptance of real-time and contactless payment methods, such as QR code-based payments, and products like Visa's Tap to Phone that enables sellers to use the smartphones they already own to accept payments at low cost and with little friction.¹³ Online seller MSMEs accept particular wide range of digital payments – such as wire payments, cards, PayPal, QR codes, and digital wallets (figure I I). Social sellers still primarily accept payment in cash and checks, and their use of QR codes and mobile payments is much more limited in domestic transactions.

Figure I I: Payment methods for accepting payments from domestic customers, by MSME seller type



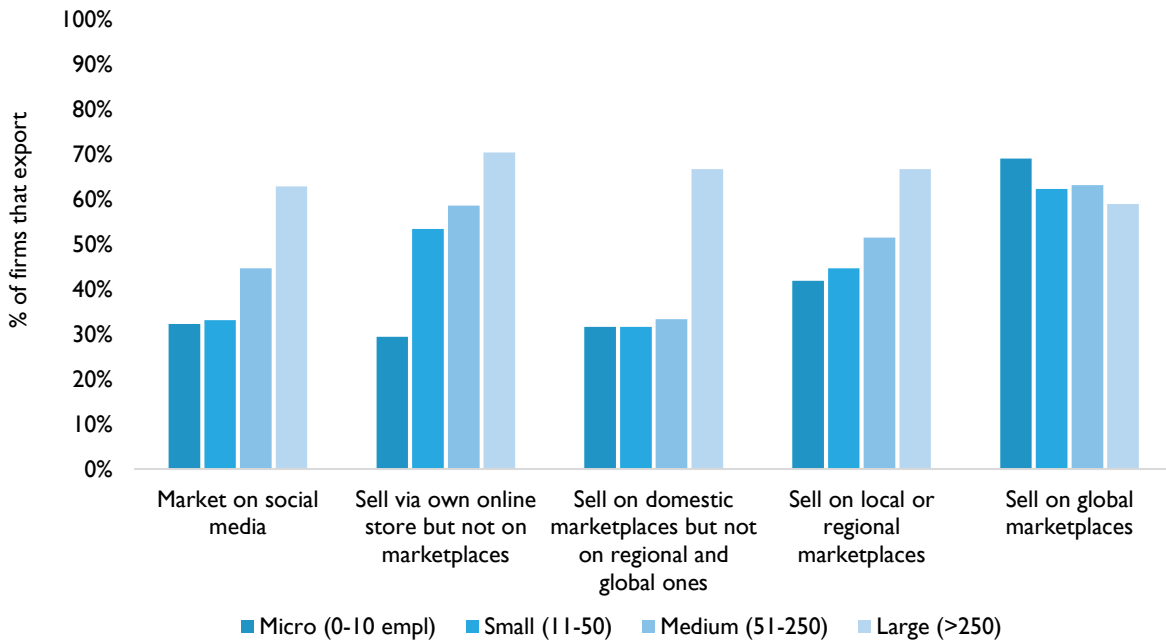
Source: Suominen (2021).

III. IMPORTANCE OF CROSS-BORDER PAYMENTS INTEROPERABILITY FOR SOUTHEAST ASIAN ECOMMERCE AND ECONOMIC GROWTH

A. HOW ECOMMERCE ENABLES SOUTHEAST ASIA MSMEs TO EXPORT

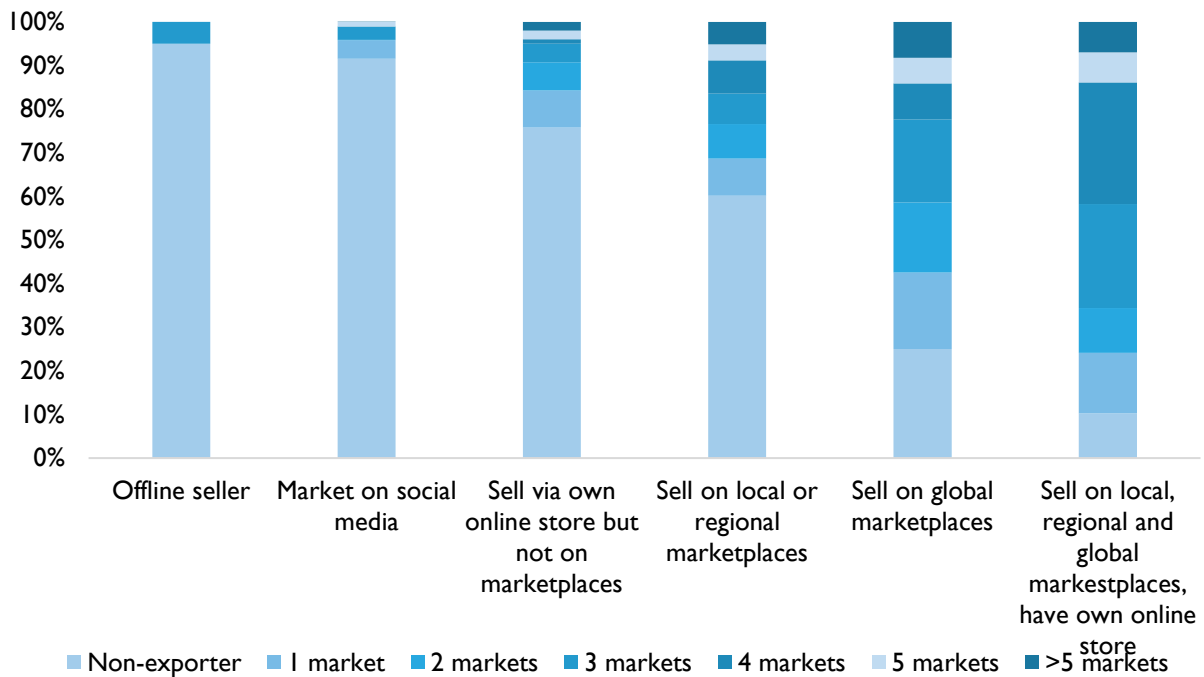
Southeast Asian MSMEs have set out to sell online especially during Covid-19, and by now over a quarter of even micro enterprises have an online store and a tenth use global marketplaces.¹⁴ The use of ecommerce opens especially existing opportunities for sales: as in other regions, we find that Southeast Asian firms with online presence are much more likely to export compared to offline firms. More than 60 percent of microenterprises that sell on global online marketplaces export (figure 12). Online seller-exporters are also more likely than offline sellers or sellers that have social media presence but no online stores to export to multiple ASEAN markets and extra-regional markets (figure 13).

Figure 12: Percentage of surveyed ASEAN firms that export, by online activity and size



Source: Suominen (2021).

Figure 13: Percentage of micro and small firms by number of export markets and sales channels

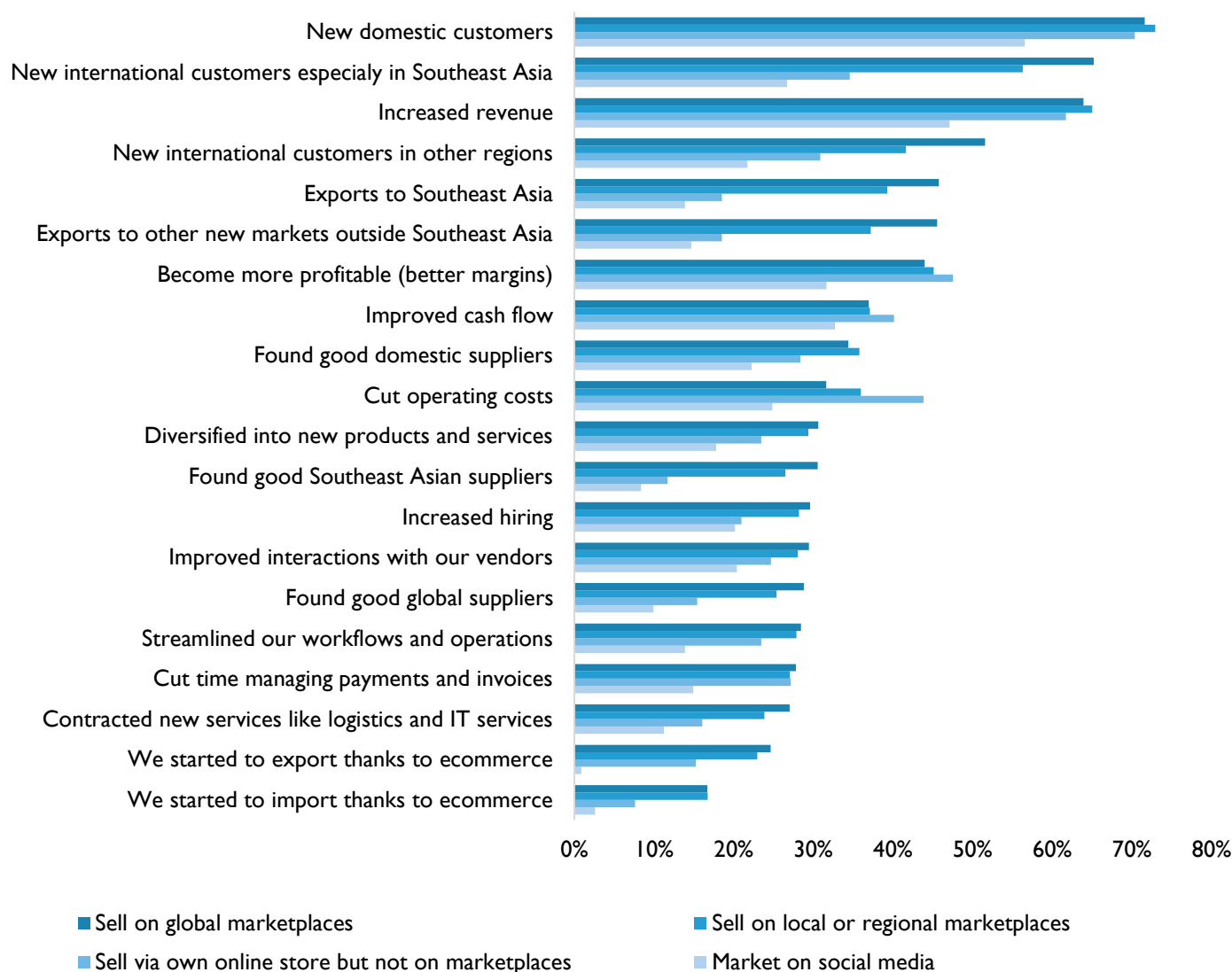


Source: Suominen (2021).

Online sellers report strong gains from ecommerce in terms of new clients, revenues, and export opportunities (figure 14). Firms that use ecommerce are also likely to import goods and services—most marketplace sellers are two-way traders or both export and import. Over and over again, data suggest that ecommerce enables MSMEs to trade in part because it essentially reduces the geographic distance that has for centuries curtailed visibility, trust, and trade between buyers and sellers located far apart.¹⁵

Southeast Asian online and marketplace sellers tend to also have diversified their product and service portfolios thanks to ecommerce – possibly because as they export and interact with customers around the world, online sellers are better placed than offline seller non-exporters to discover new needs, innovate, and introduce new products and services.¹⁶

Figure 14: Benefits from the use of ecommerce as reported by surveyed firms, by firm size and ecommerce maturity, percentages

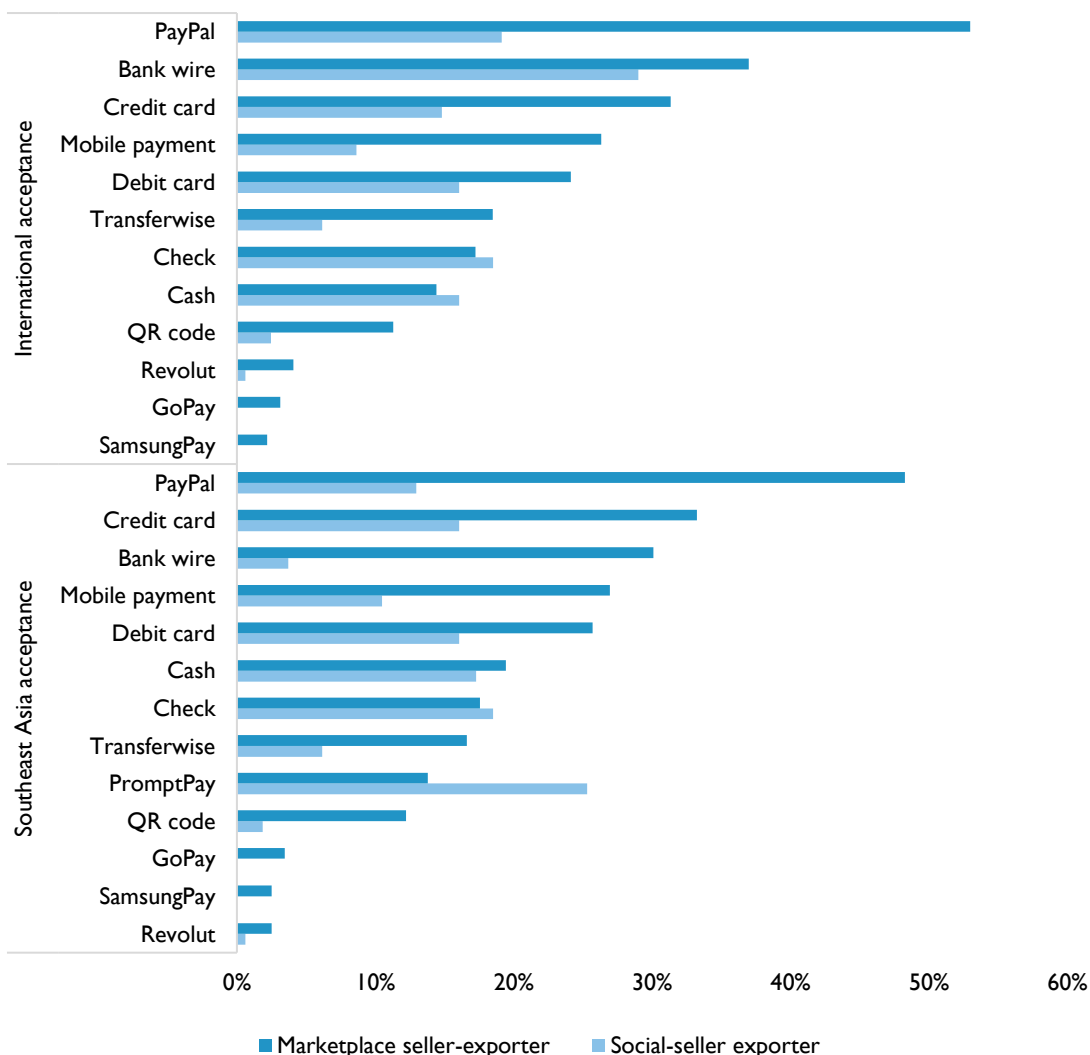


Source: Suominen (2021).

B. PAYOFFS FORM CROSSBORDER PAYMENTS ACCEPTANCE

Ecommerce is opening great opportunities for Southeast Asian MSMEs to export, import, and diversify their markets and offerings. In their cross-border ecommerce transactions, Southeast Asian MSMEs rely especially on PayPal, cards, and wires – however, the use of QR codes and mobile payments is also on the rise (figure 15). PromptPay that enables domestic transactions in Thailand and cross-border payments between Thailand and Singapore and is also gaining ground in the regional payment landscape.

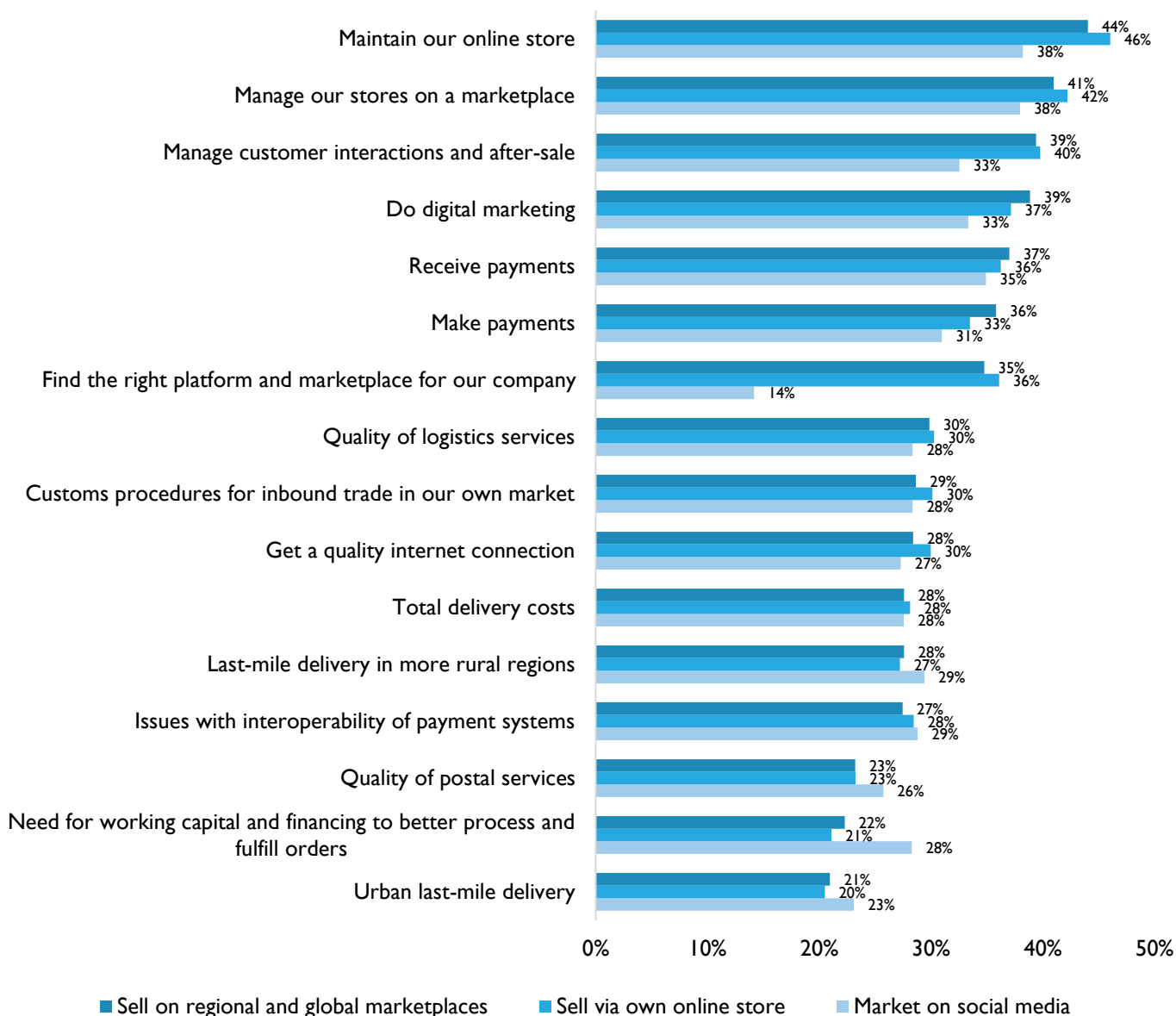
Figure 15: Payment methods for accepting payments from international and southeast Asian customers, social and marketplace seller-exporters



Source: Suominen (2021).

However, for many sellers, cross-border transactions are also still very challenging, and payments acceptance is one key challenge. When asked about their main impediments to engage in ecommerce, over 40 percent of mature online sellers that sell on marketplaces cite cross-border payments acceptance as a major challenge to their cross-border ecommerce (figure 16). Indeed, cross-border payments acceptance is among top-5 challenges for regional firms to export using ecommerce (figure 17). As many as a 34 percent MSME exporters and 31 percent of non-exporters in the region report having lost a sale because they could not receive payments the way the buyers wished to pay (figure 18).

Figure 16: Percentage of surveyed ASEAN firms citing areas in the enabling environment for ecommerce as “a huge challenge” or “one of the main challenges” for growing their ecommerce business, by online channel used

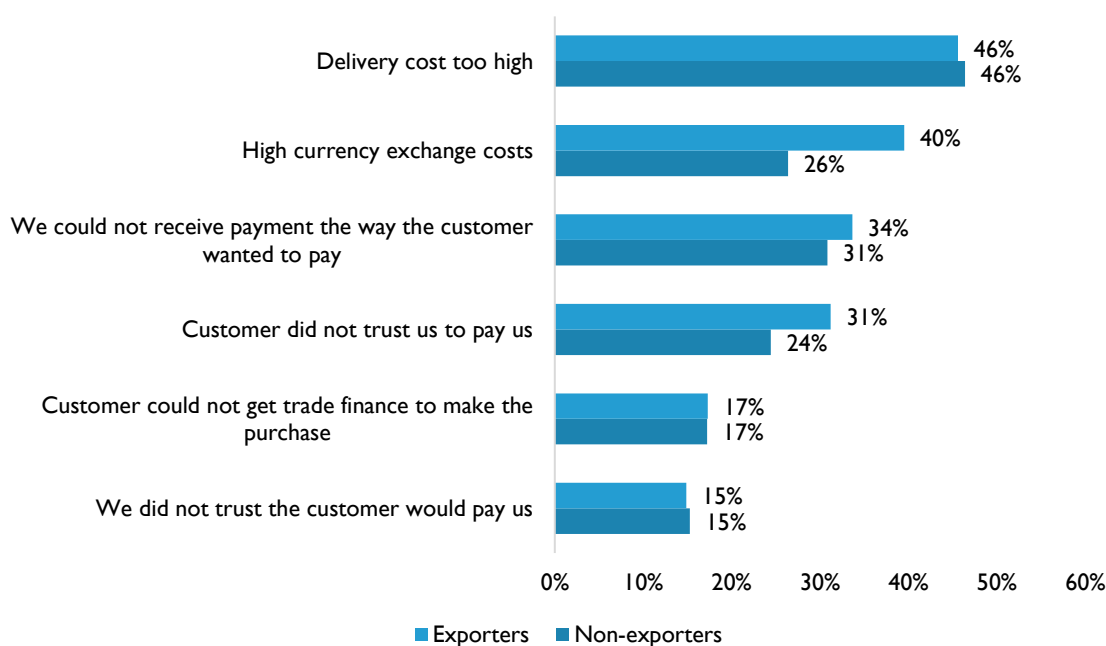


Source: Suominen (2021).

Figure 17: Ranking of surveyed ASEAN firms' top business and operational challenges to crossborder ecommerce, by online channel used

	Marketplace sellers					Sellers with own online store					Social sellers				
	Regional	Indonesia	Philippines	Thailand	Vietnam	Regional	Indonesia	Philippines	Thailand	Vietnam	Regional	Indonesia	Philippines	Thailand	Vietnam
Maintain our online store	1	1	11	3	1	1	1	9	3	1	1	1	1	3	1
Manage our stores on a marketplace	2	2	7	2	6	2	2	3	5	2	2	2	5	1	3
Manage customer interactions and after-sale	3	7	4	4	3	4	6	1	8	2	5	6	10	3	3
Do digital marketing	4	3	3	5	7	3	3	12	3	2	4	6	3	5	5
Receive payments	5	4	4	6	4	5	4	4	10	9	3	3	2	8	5
Make payments	6	6	1	7	5	7	8	2	11	9	6	8	7	8	9
Find the right platform and marketplace for our company	7	5	16	1	2	15	4	16	2	9	16	4	16	2	1
Quality of logistics services	8	8	15	8	8	9	9	4	5	13	9	9	12	6	16
Get a quality internet connection	9	10	12	12	8	9	7	15	11	6	13	10	13	6	14
Last-mile delivery in more rural regions	10	9	12	10	12	12	12	8	11	16	7	5	11	10	12
Issues with interoperability of payment systems	11	14	8	8	8	11	16	9	8	8	8	11	5	12	9
Total delivery costs	11	11	2	13	13	8	10	12	5	2	12	11	4	15	5
Customs procedures for inbound trade in our own market	11	12	10	11	11	5	10	9	1	6	9	16	7	10	8
Quality of postal services	14	16	8	14	15	14	13	4	15	14	14	11	13	14	9
Need for working capital and financing to fulfill orders	14	15	6	15	16	12	14	4	14	14	11	11	9	12	12
Urban last-mile delivery	16	12	12	16	14	15	14	12	16	12	15	11	13	15	15

Figure 18: Main obstacles to ecommerce (percentage of surveyed for ASEAN exporters and non-exporters that answered affirmatively when asked “Which of these has at some point stopped you from making a sale online?”)



These challenges reflect the frictions to payments interoperability. Even providers that are present in several countries do not necessarily interoperate: for example, a Gojek user in Indonesia can be unable to use her electronic wallet to hail a ride in Singapore or to send money to a Gojek user in Thailand.¹⁷

What would then be the payoffs from interoperability for Southeast Asian MSMEs and economies?

Payments interoperability is often discussed but its gains are poorly estimated. There can be various first-order gains, such as growth of export sales by existing online seller-exporters, and conversion of non-exporters into exporters. There can also be several second-order gains, such as MSMEs being able to hire new workers and contracting new services thanks to expanded ecommerce sales.

This report pioneers in estimating some of the gains from payments interoperability in Southeast Asia. To explore the first-order effects, we assume conservatively, based on survey data, that (table 4):

- There are nearly 74 million MSMEs in the region employing some 175.7 million workers per data from OECD and Asian Development Bank, with the bulk of them in Indonesia;
- MSMEs make up \$1.3 trillion or 44 percent of the region’s GDP;
- Over 35 percent of firms cite challenges to accept payments from foreign buyers in general;
- 34 percent of exporters and 31 percent of non-exporters report having lost an export sale due to challenges to accept payments from foreign buyers;
- Assuming that about 30 percent of MSMEs export at least once a year (a conservative assumption based on our survey data whereby 36 percent of micro enterprises and 56 percent of small firms report export sales), a total of 22.8 million MSMEs export with revenues or \$387

billion (and export revenues of \$77 billion, assuming exports make up on average some 20 percent of exporters' annual revenues); and

- There are 53 million MSMEs with \$900 billion in revenue that do not export.

The analysis, based on these assumptions, reveals the following potential gains from interoperability (tables 5 and 6):

- If interoperability was enabled, 34 percent of exporters and 31 percent of non-exporters could realize new export sales. Assuming these new exports unlocked by interoperability increased exporters' export revenues and non-exporters' sales by just 10 percent, there would be in total \$30.6 billion in new MSME sales and 2.4 percent growth in all regional MSMEs' revenue. Assuming that the new revenues would convert into new hires at similar revenue-per-worker ratio as is currently observed in the data (or \$7,321), these new sales could help open 4.2 million new jobs in the region.
- If however interoperability increased by 20 percent the sales of the MSMEs that report losing sales because of inability to accept payments the way customers wanted to pay, the region's MSME sales would increase by \$61.2 billion per year or 4.7 percent in total, and regional GDPs would grow by 2.1 percent. The new sales could lead to as many as 8.3 million new jobs, and as many as 10.6 million non-exporter MSMEs could start to export.
- If however payments interoperability enabled as many as 50 percent of exporters and non-exporters to realize new export sales and increase their revenues by even 10 percent, the regional MSME sales would increase by \$48.9 billion per year. If as many as 50 percent of MSMEs increased their sales by as much as 20 percent, regional MSMEs' revenues would grow by \$98 billion or 7.6 percent per year and regional GDPs would grow by 3.3 percent. The new sales would lead to 13.4 million new jobs.

In sum, depending on assumptions of the share of MSMEs and MSME revenue affected, cross-border payments interoperability could conservatively boost MSME sales by \$30.6 billion and create 4 million new jobs, and, under more balanced assumption, increase total MSME sales by nearly 5 percent, MSME employment by 8.3 million, and regional GDPs by 2.1 percent. Over three years, not taking into account dynamic gains such as spending by newly hired workers, contracting of new services by MSMEs, or creation of new MSMEs, the growth in MSME revenue could be conservatively over \$92 billion and in a more balanced assumption \$294 billion.

Table 4: MSMEs in Southeast Asian economies

Country	Micro enterprises	SMEs	GDP	MSMEs' contribution to GDP as %	MSMEs' contribution to GDP in USD	MSMEs' avg. revenue	MSMEs that export	MSME exporters' export revenue	Non-exporter SMEs' revenue
Brunei	2,575	3,415	12,000,000,000	27%	3,240,000,000	\$ 540,902	1,797	\$ 194,400,000	\$ 2,268,000,000
Cambodia	363,638	12,431	25,290,000,000	23%	5,816,700,000	\$ 15,467	112,821	\$ 349,002,000	\$ 4,071,690,000
Indonesia	64,194,057	815,717	1,058,000,000,000	58%	613,640,000,000	\$ 9,439	19,502,932	\$ 36,818,400,000	\$ 429,548,000,000
Lao PDR	118,592	8,103	19,140,000,000	30%	5,742,000,000	\$ 45,321	38,009	\$ 344,520,000	\$ 4,019,400,000
Malaysia	496,458	148,678	336,000,000,000	30%	100,800,000,000	\$ 156,246	193,541	\$ 6,048,000,000	\$ 70,560,000,000
Myanmar	110,754	17,340	7,190,000,000	33%	2,372,700,000	\$ 18,523	38,428	\$ 142,362,000	\$ 1,660,890,000
Philippines	743,250	73,509	361,000,000,000	30%	108,300,000,000	\$ 132,597	245,028	\$ 6,498,000,000	\$ 75,810,000,000
Singapore		280,000	340,000,000,000	36%	122,400,000,000	\$ 437,143	84,000	\$ 7,344,000,000	\$ 85,680,000,000
Thailand	225,477	2,646,549	502,000,000,000	45%	225,900,000,000	\$ 78,655	861,608	\$ 13,554,000,000	\$ 158,130,000,000
Vietnam	5,523,320	124,680	271,000,000,000	37%	100,270,000,000	\$ 17,753	1,694,400	\$ 6,016,200,000	\$ 70,189,000,000
Total	71,775,545.77	4,127,007.18	\$ 2,931,620,000,000	\$ -	1,288,481,400,000	\$ 16,975	22,770,766	\$ 77,308,884,000	\$ 899,668,980,000

Table 5: Potential payoffs from payments interoperability to MSMEs cross-border ecommerce in Southeast Asia assuming exporter MSMEs would gain 10% in new exports and non-exporter MSMEs would gain 10% in new sales

Country	Assuming 34% of non-exporters affected by payments frictions and forego 10% of export revenue	Assuming 31% of non-exporters affected by payments frictions and forego 10% of revenue	Total MSME sales unlocked by payments interoperability	Sales as % gain in MSMEs' revenue	New sales as % of GDPs	New MSME jobs
Brunei	\$ 6,609,600	\$ 70,308,000	\$ 76,917,600	2.4%	0.6%	1,570
Cambodia	\$ 11,866,068	\$ 126,222,390	\$ 138,088,458	2.4%	0.5%	146,321
Indonesia	\$ 1,251,825,600	\$ 13,315,988,000	\$ 14,567,813,600	2.4%	1.4%	2,777,073
Lao PDR	\$ 11,713,680	\$ 124,601,400	\$ 136,315,080	2.4%	0.7%	11,218
Malaysia	\$ 205,632,000	\$ 2,187,360,000	\$ 2,392,992,000	2.4%	0.7%	256,169
Myanmar	\$ 4,840,308	\$ 51,487,590	\$ 56,327,898	2.4%	0.8%	320,019
Philippines	\$ 220,932,000	\$ 2,350,110,000	\$ 2,571,042,000	2.4%	0.7%	135,657
Singapore	\$ 249,696,000	\$ 2,656,080,000	\$ 2,905,776,000	2.4%	0.9%	59,350
Thailand	\$ 460,836,000	\$ 4,902,030,000	\$ 5,362,866,000	2.4%	1.1%	331,179
Vietnam	\$ 204,550,800	\$ 2,175,859,000	\$ 2,380,409,800	2.4%	0.9%	133,608
Total	\$ 2,628,502,056	\$ 27,889,738,380	\$ 30,588,548,436	2.4%	1.0%	4,172,163

Table 6: Potential payoffs from payments interoperability to MSMEs cross-border ecommerce in Southeast Asia assuming exporter MSMEs would gain 20% in new exports and non-exporter MSMEs would gain 20% in new sales

Country	Assuming 34% of exporters affected by payments frictions and forego 20% of export revenue	Assuming 31% of non-exporters affected by payments frictions and forego 20% of revenue	Total MSME sales unlocked by payments interoperability	Sales as % gain in MSMEs' revenue	New sales as % of GDPs	New MSME jobs
Brunei	\$ 13,219,200	\$ 140,616,000	\$ 153,835,200	4.7%	1.3%	3,140
Cambodia	\$ 23,732,136	\$ 252,444,780	\$ 276,176,916	4.7%	1.1%	292,643
Indonesia	\$ 2,503,651,200	\$ 26,631,976,000	\$ 29,135,627,200	4.7%	2.8%	5,554,145
Lao PDR	\$ 23,427,360	\$ 249,202,800	\$ 272,630,160	4.7%	1.4%	22,436
Malaysia	\$ 411,264,000	\$ 4,374,720,000	\$ 4,785,984,000	4.7%	1.4%	512,338
Myanmar	\$ 9,680,616	\$ 102,975,180	\$ 112,655,796	4.7%	1.6%	640,038
Philippines	\$ 441,864,000	\$ 4,700,220,000	\$ 5,142,084,000	4.7%	1.4%	271,313
Singapore	\$ 499,392,000	\$ 5,312,160,000	\$ 5,811,552,000	4.7%	1.7%	118,700
Thailand	\$ 921,672,000	\$ 9,804,060,000	\$ 10,725,732,000	4.7%	2.1%	662,357
Vietnam	\$ 409,101,600	\$ 4,351,718,000	\$ 4,760,819,600	4.7%	1.8%	267,215
Total	\$ 5,257,004,112	\$ 55,779,476,760	\$ 61,177,096,872	4.7%	2.1%	8,344,325

The gains from enabling interoperability point to a clear agenda for regional policy makers, to remove barriers that would immediately unlock new export sales. Southeast Asian businesses and governments are already working on digital payments interoperability. The next section reviews the state of play.

IV. PROMOTING DIGITAL PAYMENTS INTEROPERABILITY IN SOUTHEAST ASIA: STATE OF PLAY

The growth of payments innovations have yet to be matched by regional let alone global payments interoperability. This is for a reason. Cross-border payments interoperability is often much more complex than domestic interoperability, as each country has its own standards such as differing messaging and communication formats and payments processing rules.¹⁸

This however is changing thanks to Southeast Asian economies' many payments interoperability initiatives. These efforts, reviewed below, also suggest that regional payments interoperability will not come about as a “big bang” but, rather, evolve more bottom-up, via iterative steps and improvements on ongoing bilateral and subnational pilots and initiatives. The following section will examine the ongoing interoperability initiatives in the region.

A. PAYMENTS INTEROPERABILITY INITIATIVES IN THE ASEAN

Southeast Asian governments have already worked a great deal to promote interoperability of instant and inexpensive payments. Already in 2017, the Master Plan for ASEAN Connectivity 2025 envisioned financial integration where member states adopt seamless cross-border transactions.¹⁹ There are also several regional initiatives to promote interoperability, such as (table 7):²⁰

- ASEAN Payments Connectivity initiative of 2019 that promotes financial integration in the region.
- ASEAN Working Committee on Payment and Settlement Systems (WC-PSS), which seeks to establish payment system linkages and interoperability, as well as policy harmonization and standardization in support of the 'ASEAN Economic Community.
- ASEAN Cross-border Payments Interoperability Network (XBPIN), an initiative to study the feasibility of, and subsequently launch a cross-border network for payments.
- ASEAN's many frameworks for the digital economy, such as the ASEAN Economic Community Blueprint 2025, Masterplan on ASEAN Connectivity 2025, and the Digital Integration Framework Action Plan (DIFAP) all include electronic payments as one important tenet for the regional digital economy. ASEAN has also pursued digital policy integration to create similar data governance frameworks such as the ASEAN Digital Data Governance Framework, Model Contractual Clauses, and ASEAN Framework on Personal Data Protection.

In addition, some recent trade agreements such as the Digital Economic Partnership Agreement (DEPA) of 2020 between Singapore, New Zealand, and Chile also explicitly call for parties to work on interoperable digital payments.

Table 7: Selected Regional payments interoperability initiatives in Asia-Pacific

Pilots/Projects in Place	Parties	Objectives
ASEAN Working Committee on Payment and Settlement Systems (WC-PSS)	ASEAN Nations	Goals to establish payment system linkages and interoperability, as well as policy harmonization and standardization in support of the ‘ASEAN Economic Community.’
ASEAN Cross-border Payments Interoperability Network (XBPIN)	ASEAN Nations	Monetary Authority of Singapore (MAS), Thai Banker’s Association (TBA), and the Association of Banks in Singapore set out to develop a single payment rail (network) amongst ASEAN nations to facilitate cross-border transactions.
Digital Economy Partnership Agreement (DEPA)	Singapore, Chile, New Zealand	Promote digital trade and interoperability of digital services, and digital inclusion; builds on CPTPP’s Ecommerce Chapter

In addition, the region’s private sector has its own interoperability initiatives – for example, banks such as DBS and OCBC, among others, have promoted interoperability of payment among their customers across different countries, integrating their foreign exchange services into their digital wallets to enable interoperability among their users based in many countries.²¹ Broad-based and concrete progress on payments interoperability can also be enabled by global payment networks and open-loop systems, as well as interoperability initiatives and pilots already on the way at bilateral levels, in three main ways:

First, several country pairs too have made progress on **bilateral interoperability initiatives for QR codes and RTPs**, with the leadership of central banks (Figure 19, table 8). For example:

- In 2017, Singapore’s NETS, Malaysia’s PayNet, Thailand’s ITMX, Vietnam’s Napas, and Indonesia’s Rintis came together to sign an MOU to push regional collaboration for real-time, cross-border payments.
- In 2019, Malaysia and Singapore’s payment service infrastructures PayNet and NETS, respectively, officially launched real-time, cross-border debit card payments; the two are now collaborating to enable instant credit transfers and QR code payments between Singapore and Malaysia.
- In 2019, in the world’s first RTO interoperability initiative, Thailand and Singapore connected their PromptPay and PayNow real-time retail payment systems into a seamless cross-border payment system, which enables customers of participating banks in Singapore and Thailand to be able to transfer funds of up to about \$800 daily across the two countries, using just a mobile number.²²
- The Bank of Thailand and has launched interoperable QR code payments, a promising method for cross-border payments, with Lao (2019), Cambodia (2020), and Vietnam (2021).²³ In 2021,

Bank of Thailand connected the person-to-merchant RTP system with payment systems in Vietnam, Malaysia, Indonesia and Singapore.²⁴

Figure 19: Bilateral payments interoperability initiatives in the ASEAN region



Table 8 – Payments Interoperability Initiatives in Southeast Asia

Country 1	Country 2	Focus	Operational	Description and impacts
Singapore	Thailand	Connected domestic RTP of respective countries	2021	Monetary Authority of Singapore (MAS) and Bank of Thailand (BOT) launched the linkage of Singapore's PayNow and Thailand's PromptPay RTP systems; customers of participating banks will be able to transfer up to S\$1,000 or THB25,000 across the two countries using just a mobile number, and transfers will complete in just minutes.
Japan	Thailand	Cross-border QR system	2020	One of Thailand's leading commercial banks, Bank of Ayudhya (BAY), and parent company Mitsubishi UFJ Financial Group (Japan), developed a cross-border QR code payment platform with NTT DATA Corp., one of Japan's primary providers of electronic payment infrastructure, known as MyPromptQR
Malaysia	Thailand	Cross-border QR system	2021	The Bank of Thailand and Bank Negara Malaysia launched a cross-border QR (Quick Response) payment linkage to enable consumers and merchants in both countries to make and receive instant cross-border QR code payments. It is the first phase in linking the real-time retail payment systems of Malaysia's RPP/DuitNow and Thailand's PromptPay
Vietnam	Thailand	Cross-border QR system	2021	Bank of Thailand (BOT) and State Bank of Vietnam (SBV) released a cross-border interoperable QR payment code linkage
Singapore	Malaysia	Connected domestic RTP of respective countries	Q4 2022	Monetary Authority of Singapore (MAS) and Bank Negara Malaysia (BNM) commence a phased linkage of Malaysia's DuitNow and Singapore's PayNow RTP systems which will allow for real-time funds transfers between countries with a mobile number, as well as retail payments by scanning QR codes. The two RTPs were initially linked in 2019 to facilitate real-time cross-border debit payments.
Indonesia	Malaysia	Cross-border QR system	2022 - Pilot Q1, full commercial Q4	Bank Indonesia (BI) and Bank Negara Malaysia (BNM) launched a cross-border QR payment linkage that will enable instant, secure and efficient cross-border payments between Indonesia and Malaysia. Consumers in both countries will be able to make retail payments by scanning the QRIS (Quick Response Code Indonesian Standard) or DuitNow QR codes
Cambodia	Thailand	Cross-border QR system	2020	Bank of Thailand and National Bank of Cambodia launched interoperable QR code payments that will allow Cambodian tourists in Thailand and Thai tourists in Cambodia to pay for goods and services by scanning the QR codes of merchants in the respective countries
Philippines	Singapore	Connected domestic RTP of respective countries	2021	The Monetary Authority of Singapore (MAS) and the Bangko Sentral ng Pilipinas (BSP) signed an enhanced FinTech Cooperation Agreement (CA) to facilitate the linkage of both countries' real-time and QR payment systems (PayNow and InstaPay), to provide instant, seamless and low-cost cross-border payments.

Hong Kong	Thailand	Cross-border instant payments	2021	Added PromptPay to the EMQ network for instant payments and settlements
Indonesia	Thailand	Cross-border QR system	2021	The Bank of Thailand (BoT) and Bank Indonesia (BI) launched a cross-border pilot enabling instant cross-border payments using QR codes. The pilot links the two countries' retail payment systems. The full commercial phase is set to launch in 2022 and more banks and Fis are expected to join. The service will also expand to enable real-time P2P funds transfers with just a mobile number.
Laos	Thailand	Cross-border QR payments and settlement	2019	The Bank of Thailand (BoT) and the Bank of Lao PDR signed a Memorandum of Understanding (MOU) to collaborate on financial innovation and payment services to promote efficient and secure cross-border payment transactions. The two central banks are working together to develop interoperable QR code payments, as well as a means for SMEs to make and receive payments across their borders, and a blockchain based system for processing corporate transfers between the two countries.

Second, there have also been recent **multiparty real-time payment interoperability proofs of concept (POC)** and pilots. One prominent example of a POC is Project Nexus by the Bank of International Settlements, which is aimed to accelerate the interoperability of multiple RTP systems (case I). The partners include the Monetary Authority of Singapore, Bank of Italy, Central Bank of Malaysia, BCS in Singapore and PayNet in Malaysia (case x). The initiative aims at rapid interoperability and scalability: rather than a payment system operator building custom connections for every new country, the operator can simply plug into the Nexus platform.

Case I: Project Nexus Building a platform connecting national real-time payment systems ²⁵

Project Nexus is a research and development effort led by the Bank for International Settlements (BIS) to accelerate and streamline cross-border payments through inter-connections of national real-time payment systems.

Roughly 60 countries have launched domestic RTP systems but each has its unique technical and legal configurations.²⁶ Nexus is to enable any one country's RTP system to easily connect to the common platforms without having to build bilateral custom connections, and enable payments settlement in 60 seconds. To pilot it, BIS has partnered with the Monetary Authority of Singapore (MAS), Central Bank of Malaysia (BNM), Bank of Italy, and IPS providers BSP in Singapore and PayNet in Malaysia to experiment with simulated cross-border payments through the Nexus network.²⁷

The pilot focused on two areas – Nexus Scheme that addressed the operational and governance components of the network, such as defining the guidelines and obligations of the participants, and Nexus Gateways that established the technical components of the network's software, such as compliance, messaging, FX

conversion, and payment sequencing. The pilot yielded a range of recommendations such as: utilizing ISO20022, pre-validation of payment instructions, confirmation of payee functionality, and support for sanctions pre-screening.

Third, **CBDCs are tested in Southeast Asia as a means for low-cost and fast cross-border payments** by reducing settlement time and errors, and by eliminating the need for numerous intermediaries. Three basic models have emerged for making CBDCs interoperable: one, country-specific systems where private entities can configure and provide correspondent and clearing services; two, interlinked CBDC systems that share technical interfaces and utilize the same clearing system; and third, single multi-CBDC system with universal rules and supporting infrastructure.²⁸ There are various types emerging with various countries in Southeast Asia – such as multi-CBDC Project Dunbar and mCBDC Bridge, and the interlinked Project Jasper-Ubin project (table 9, case 2).

By exchanging CBDC tokens, there is no need for the paying bank to have a bank account at the destination or use a correspondent bank. Bank to bank payments become real-time peer-to-peer payments. In the banking world, this instant settlement is referred to as Payment versus Payment (PvP).²⁹

Table 9: Cross-border CBDC pilots with Southeast Asian nations

Name	Parties	Technology partners	Results to date
Project Dunbar	BIS Innovation Hub, Reserve Bank of Australia, Bank Negara Malaysia, Monetary Authority of Singapore, South African Reserve Bank	R3 (Corda), Partior (Quorum)	Developed two prototypes of a shared, multi-CBDC platform to process settlements amongst central banks. The blockchain based platforms were designed to facilitate cross-border transactions in different currencies
mCBDC Bridge	BIS Innovation Hub, Hong Kong Monetary Authority, People's Bank of China, Bank of Thailand, Central Bank of the UAE	Consensys, FORMS HK	Originally project Inthanon-LionRock between HKMA and BoT, it evolved to include BIS, PBoC DCI, and CBUAE. The project developed a prototype using DLT to deliver real-time cross-border payments and settlements with multiple CBDCs
Project Inthanon-LionRock	Hong Kong Monetary Authority (HKMA) and the Bank of Thailand; with ten banks - two Hong Kong banks were HSBC and new online bank ZA. In Thailand, the financial institutions involved were HSBC, Standard Chartered, Bangkok Bank, Krungthai, Krungsri, Kasikornbank, Siam Commercial Bank, and Thanachart Bank.	R3 (Corda) and CryptoBLK,	Settlement efficiency was improved because it involves real-time settlement without correspondent banks. Liquidity is more efficient because CBDC tokens replace Nostro accounts, which usually tie up assets. ³⁰
Project Jasper-Ubin	Bank of Canada and Monetary Authority of Singapore	R3 (Corda), Consensys (Quorum)	The BoC and MAS tested the interoperability of their respective DLT projects for clearing and settlement of payments and securities: Project Jasper + Project Ubin. The two prototypes were able to successfully settle cross-border payments on central bank digital currencies, and demonstrate the potential for interoperable, heterogeneous blockchain platforms used by central banks.

**Case 2: Project Dunbar
Pioneering in CBDC Interoperability and Cross-border Settlement**

Project Dunbar is a collaborative effort by the Reserve Bank of Australia, Bank Negara Malaysia, the Monetary Authority of Singapore, and the South African Reserve Bank, along with leadership from the BIS Innovation Hub, to develop a platform for conducting settlements of CBDCs issued by multiple central banks (“mCBDC”). A single platform for settling payments across countries with different currencies offers significant advantages over the existing correspondent banking system, which is highly intermediated and thus both slow and costly.

The bulk of the project was carried out over a nine-week span and centered around three coinciding work streams – one design and two technical. The design work stream was led by private sector partner Accenture and supported by Temasek, while the technical work streams were managed by R3 and Partior (a joint venture by DBS Bank, J.P. Morgan, and Temasek). The project utilized the technological capabilities of blockchain DLT to address three primary challenges of a single multi-CBDC platform: *governance* (how oversight of the platform will be conducted with multiple parties), *access* (what banks should have access to the platform, given that oversight of local banks is unique to each country), and *regulation and jurisdiction* (how different regulations across nations can be managed under a single platform, and how is jurisdiction determined).

Two prototypes were successfully developed on the Corda (R3) and Quorum (Partior) DLT platforms, and the technical capabilities of each demonstrated progress in addressing some but not all components of the aforementioned challenges. Blockchain programmability enabled specific governance frameworks such as defined collective decision making, and the isolation of failures to individual parties to prevent issues from impacting the entire platform. It also reduced jurisdictional complexities by reducing the amount of banking parties that transactions pass through in the current system. However, controlling access to the platform required the either (i) the application of a “sponsoring bank” (to manage KYC, AML/CFT), reducing the gains from the “disintermediated” functionality of DLT, or (ii) an explicit “harmonization” of regulations across central banks, a complex and coordinated policy endeavor.

The project concluded in March 2022, and while it was able to successfully address significant challenges of a multi-CBDC platform, it also left some unresolved and produced further questions. A report was released by BIS outlining the project and its findings, as well as encouraging further collaboration by central banks, payment companies, and the blockchain community to continue exploration of viable multi-CBDC platforms that can enhance cross-border payments.

Source: BIS - <https://www.bis.org/about/bisih/topics/cbdc/dunbar.htm>.

Granted, also crypto currencies, if they overcome the challenges of volatility and potential for money laundering, could dramatically improve cross-border payments. One example of how useful crypto currencies were was in response to the war and refugee crisis in Ukraine (case 3).

Case 3: Example of fluid cross-border payments: crypto aid to Ukraine

From the start of Russian attack on Ukraine, donations in cryptocurrency have poured into Ukrainian government agencies and local nonprofits in excess of \$100M.³¹ While that only accounts for a portion of the total aid flowing into Ukraine, it has proven to be a valuable means of channeling relief funding from sources all over the world.

The Ukraine crisis has revealed use cases for crypto in cross-border payments, illustrating both the benefits and the issues cryptocurrencies have yet to overcome. There were two benefits in particular.

First, crossborder crypto transfers proved fast and efficient. As soon as Ukraine's government, via its Ministry of Digital Transformation, approved donations in cryptocurrency, funding started to flow in and was credited to Ukrainian crypto accounts instantly (within minutes of sending). This is a significant improvement over traditional international money transfers, which pass funds through multiple parties along the way to the final destination, and can take several days before the funds are available for the recipient.

Second, cryptocurrency facilitates access to funds. In order to receive donations, the Ukrainian government merely published the digital wallet addresses where the crypto should be sent, and anyone from around the world could simply plug them in and send their crypto in just a few clicks (and do so with confidence that it reached its intended destination). Other non-profit and international aid agencies working in the country solicited and received crypto funding in the very same manner. As a result, cryptocurrency enabled quick, low-cost, and highly inclusive payments to people in need.

However, there are challenges to using cryptocurrency for cross-border money transfers, such as volatility of crypto currencies. As such, cryptos need offramps to be easily converted to fiat currency used for the payment for goods and most services. Stable coins tied to the value of a currency like U.S. dollar are in principle readily convertible. The crypto funds sent directly to the Ukrainian government were converted to fiat and issued to the National Bank of Ukraine (with the help of FTX, a global crypto exchange) solely for discretionary government use, but any funds sent to individuals or local aid organizations were ultimately subject to exchange fees and the domestic banking restrictions imposed under martial law (which includes caps on cash withdrawals).³²

Due to the dire circumstances, some suppliers of aid agreed to take on the price volatility risk and accept payments of goods in crypto, providing some relief to conversion obstacles. There was an additional problem of fraudulent solicitations of funds to Ukraine – the lack of regulatory structure around crypto offers little recourse to the victims of such schemes. Nonetheless, the episode gave a glimpse of the promise of crypto currencies of crossborder transactions.

V. TOWARD A “REGIONAL PAYMENTS SUPERAPP”: ROADMAP TO PAYMENTS INTEROPERABILITY IN SOUTHEAST ASIA

Southeast Asia is filled with innovative payments systems and platforms, and excellent fast payments, as well as pioneering payments interoperability initiatives. How to then accelerate region-wide payments interoperability to ensure that regional MSMEs and consumers can transact across borders and gain from ecommerce?

Regional payments interoperability is entirely possible – Europe, for example, has long championed its Single Euro Payments Area (SEPA) that converged fragmented national markets for euro payments into a single domestic one, enabling recipients of intra-European payments to receive funds within 10 seconds.³³ The European Payments Initiative (EPI) now in progress is envisaged as a “payments superapp” that would bring together payments into a single continent-wide and low-cost payment system during 2022.³⁴

In addition, global payment providers’ fintech developer platforms and APIs enable fintechs access these large providers’ networks, which also promotes interoperability.

There are at least five ways in which ASEAN region too could promote such as regional payments superapp – even if bottom-up based on the various ongoing payment initiatives:

- High-quality and interoperable payments and financial regulations and application;
- Convergent data and digital regulatory regimes;
- Stepped-up work to promote the use of CBDCs in crossborder payments;
- Piloting regulatory frameworks for cryptocurrencies and decentralized finance models to over time support crossborder transactions;
- Promotion of regional MSME digital identity to accelerate authentication and trust-building; and
- Promotion of “born interoperable” networks that have built interoperability in from the start. With these elements in place, it is easier to ensure the network is secure, mitigate risks, and build resilience.

Let’s consider these in turn.

A. PROMOTE HIGH-QUALITY AND INTEROPERABLE PAYMENTS REGULATIONS ACROSS THE REGION

ASEAN Member States have made significant progress in advancing electronic payments, specifically through national programs designed to reduce the use of cash, and promote payments innovation and interoperability. All or most ASEAN members have by now:

- Promoted cashlessness and digital payments

- Established e-payment laws that govern electronic payment providers' access to market and behaviors.
- Advanced countries in particular are enabling payment providers to apply the risk-based approach (RBA) to Anti-Money Laundering/Combating the Financing of Terrorism (AML/CFT) checks, which helps payment providers focus resources on high-risk customers.
- Adopted a risk-based approach (RBA) as part of their e-payments laws.
- Adopted regulatory sandboxes to promote payments and Fintech innovation.
- Put in place risk-based approach (RBA) to enable payment providers to focus resources on high-risk customers and transactions.
- Promote open-loop networks that provide resilience and fraud prevention through for global datasets and risk management – which in turn support interoperability.
- Raised limits on payments requiring customer authentication, to enable small ecommerce transactions.
- Encouraged technology solutions such as AI to improve and facilitate customer authentication.
- Adopted regulations or programs to fuel cross-border payments.
- Promoted regulations or programs to fuel interoperability of domestic and crossborder online payments.

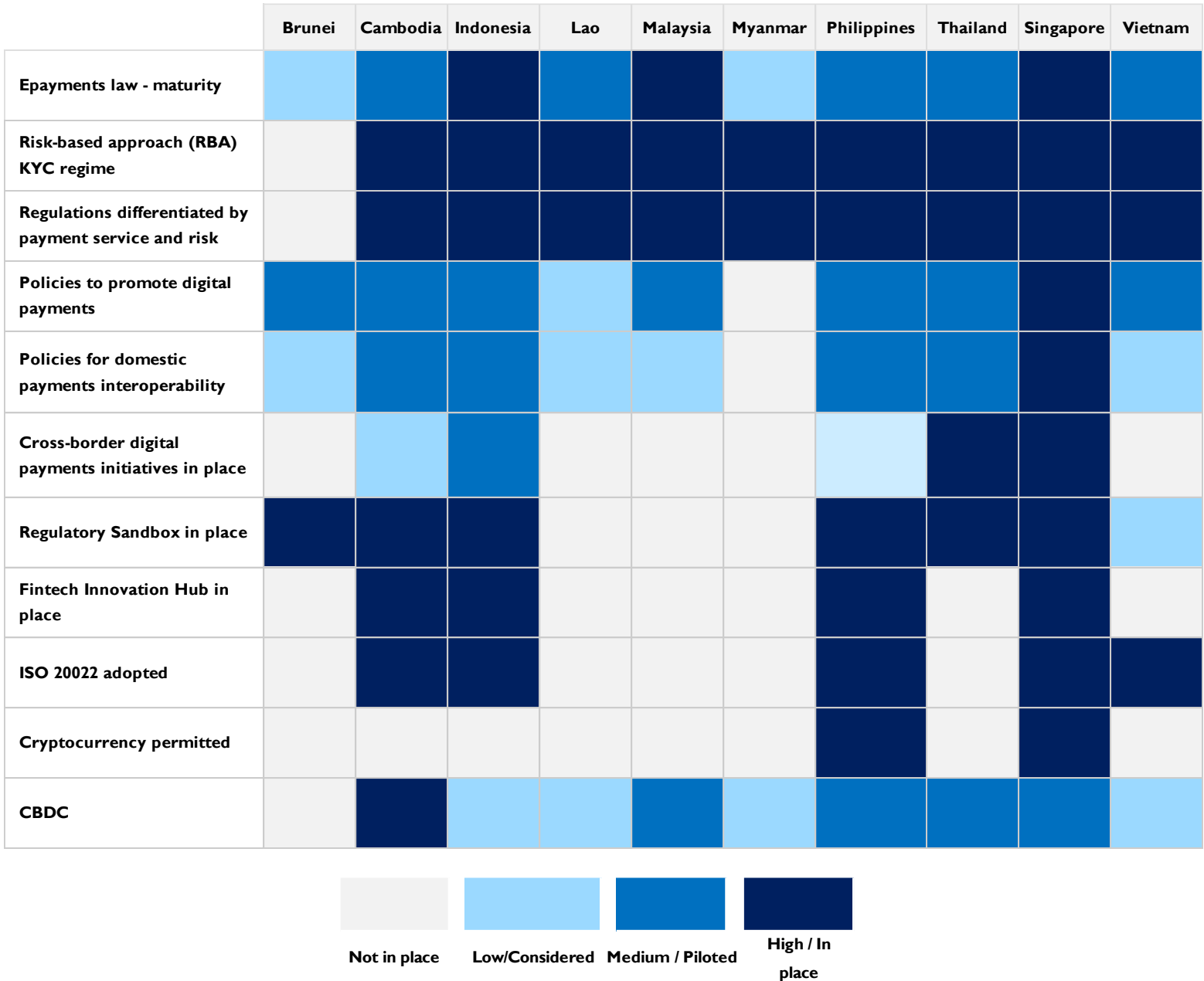
As the e-payments space diversifies and new providers emerge, governments are increasingly considering payment regulations that are proportionate to the risk profile of the payment providers – many of which are niche businesses that pose lower risks than deposit-holding banks and other traditional financial institutions. For example, in 2020, Singapore introduced a three-tiered regulation for payment companies that encourages innovation in smaller businesses and imposes appropriate oversight on larger ones.³⁵

However, the adoption of high-quality regulations pertinent to payments is uneven in Southeast Asia, limiting interoperability of regulations, scale economies, and cross-border transactions (figure 20).

- To generalize, Singapore has robust and sophisticated payments and financial regulations and Thailand is a leader in bilateral cross-border payments arrangements. However, the poorer economies like Laos and Myanmar lag farther behind.
- ASEAN economies differ in their policies to promote and regulate digital payments and payments innovation and develop national electronic payments systems and infrastructures.
- ASEAN economies are also at different stages of adopting CBDCs and promoting payments and Fintech innovation, for example via Regulatory Sandboxes.

- There is a need for ASEAN economies to adopt ISO 2022 standards and their implementation: ISO 2022 message formats and data components must be harmonized between sending and receiving entities.
- Also anti-money laundering/combating the financing of terrorism (AML/CFT) rules and procedures need to be aligned, for interoperability of financial services.

Figure 20: ASEAN Payment Regulations and Policies Compared, 2022

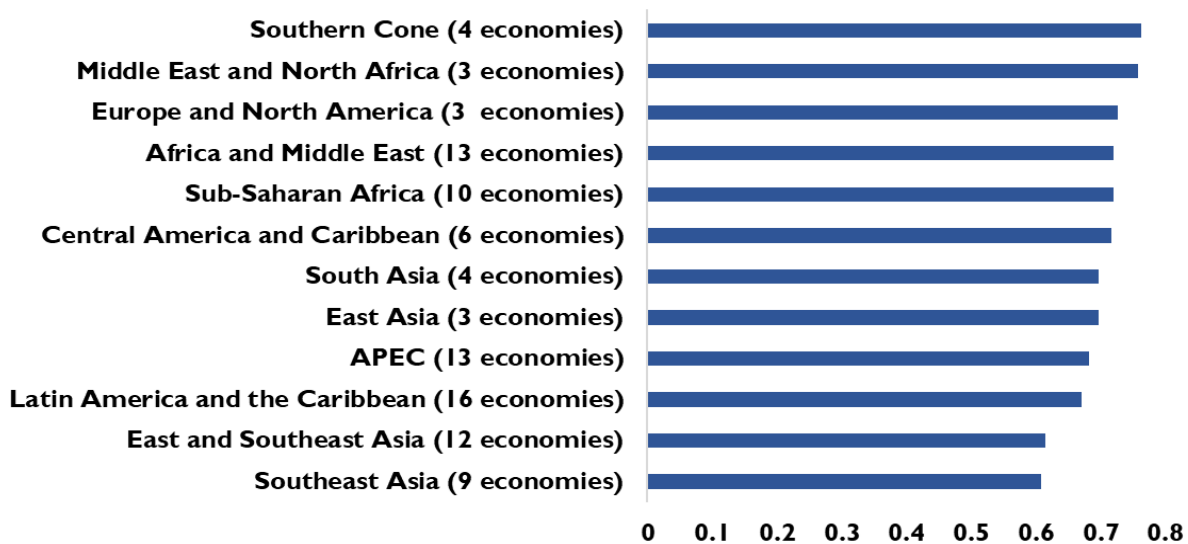


B. PROMOTE DIGITAL REGULATORY CONVERGENCE AND FREE DATA FLOWS

In the past few years, ASEAN economies have worked on setting the rules of the game for the digital era also beyond payments, such as for data privacy, online liability, cross-border data flows, consumer protection in online transactions, and taxation of digital services. This progress is in general positive, but it has also resulted in two challenges.

The first is the emergence of a checkerboard of diverse national digital regulations that are not necessarily compatible with each other (figure 21). As such, they hamper startups and online seller MSMEs' diversification across markets. In our survey, well over a third of marketplace sellers and over 40 percent of social sellers report being concerned about the diversity of digital regulations across markets for the future of ecommerce growth (figure 22).³⁶

Figure 21: Similarities in national digital regulations within regions (1 = all countries within a region share the same regulations; 0 = all countries have different regulations)



Source: Suominen, Vambell, and Furtek (2021).

Figure 22: MSME’s Concerns about the Diversity of Digital Regulations in Southeast Asia and Globally and to their Ecommerce

		Indonesia	Philippines	Thailand	Vietnam
Marketplace sellers	Compliance with consumer protection rules	31%	28%	43%	40%
	Compliance with data privacy rules	35%	30%	49%	32%
	Concerns with our copyright	9%	30%	36%	36%
	Cybersecurity challenges	55%	34%	55%	41%
	Diversity and complexity of national data privacy, consumer protection, and other regulations	35%	28%	37%	37%
	Making sure the customer pays us	39%	29%	46%	28%
	Taxes on online sales	55%	26%	50%	33%
Social sellers	Compliance with consumer protection rules	43%	42%	53%	24%
	Compliance with data privacy rules	33%	42%	51%	52%
	Concerns with our copyright	48%	38%	45%	29%
	Cybersecurity challenges - When doing online business in Southeast Asia	59%	43%	59%	33%
	Diversity and complexity of national data privacy, consumer protection, and other regulations	43%	49%	39%	33%
	Making sure the customer pays us	52%	45%	29%	19%
	Taxes on online sales	63%	38%	44%	33%

The second challenge is the rise of law initiatives that would limit cross-border flow of financial data. For example, Vietnam’s draft Personal Data Protection Decree (PDP) requires companies to store “original” personal data in Vietnam, seek approval to transfer personal data cross-border, and keep record for three years of data transfers made – regulation at odds with Vietnam’s CPTPP commitments to data transfer.³⁷

Meanwhile, Indonesia requires that storing and processing of data offshore by any “Electronic Systems Providers (ESPs)” will require prior approval from the government, posing a barrier to digital trade and limiting firms’ participation in ecommerce market in Indonesia.

These types of rules could undermine payment providers’ ability to develop and leverage regional and global datasets to improve customer service and manage risk, and force them to mount expensive duplicate operations to manage and process data domestically.

They call for further efforts to counter digital protectionism and promote convergence in digital regulations – such as via the forthcoming ASEAN Digital Economy Framework Agreement that will be negotiated among the members and hopefully help promote alignment of digital regulations; and possibly via further accessions by ASEAN members to the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and other trade agreements with robust and binding ecommerce chapters.³⁸

A particularly useful is Singapore-Australia Digital Economy Agreement(SADEA) of 2020 that calls for the parties to:³⁹

- Adopt international standards for electronic payment messaging, such as the ISO 20022 standards, for electronic data exchange between financial institutions and services providers, to enable interoperability between electronic payment systems; and
- Facilitate the use of open platforms and tools such as APIs' and
- Encourage payment service providers to make APIs available to third parties to facilitate greater interoperability, innovation and competition in electronic payments.

C. SCALE CBDC PILOTS TO ENABLE CROSSBORDER PAYMENTS INTEROPERABILITY

CBDCs, now piloted furiously around the world including in Southeast Asia, can open opportunities for low-cost and fast cross border payments and payments interoperability – and also between CBDCs and other digital currencies. There are several pending questions also for using CBDCs in cross-border transactions. One is around the choice of currency used for settlement.⁴⁰ Another is how the use of CBDCs in cross-border transactions would interact with AML/CFT regulations. Still another, broader question is whether CBDCs should be used at all at retail level between buyers and sellers even domestically – or, rather, only in wholesale transactions between banks, including when used in cross border payments.⁴¹

It is critical going forward that CBDCs be designed with interoperability in mind, using the kind of open standards and protocols that have been so successful in the globalization of information via the Internet. It is also important for Southeast Asia to build on the momentum and experiments with mCBDCs; these could be scaled further as further Southeast Asian nations launch CBDCs, to test genuinely regional interoperability.

D. PIONEER DEFI REGULATIONS CONDUCIVE TO SECURE AND LOW-COST CROSS-BORDER PAYMENTS

The crypto meltdown has undermined the potential of decentralized finance to promote financial inclusion and crossborder payments. At the same time, cryptocurrencies are promising for cross-border payments due to the speed and low cost. Key challenges that need to be overcome involve volatility, cybersecurity, and conversion – on- and off-ramps to move from fiat currency to crypto and vice versa.⁴² Fiat-backed stablecoins could be over time the best and relatively easy means to access to crypto without the need for immediate conversion.

Southeast Asian governments can usefully keep pioneering crypto and DeFi regulations that limit the risks while promoting innovation and experimentation in the sector. Singapore has already made

considerable progress by regulating DeFi tokens (via the 2020 Securities and Futures Act and Payment Services Act (PSA)).⁴³ In 2022, the Monetary Authority of Singapore (MAS) reportedly partnered with the financial services industry to introduce “Project Guardian,” aimed to investigate potential use-cases of asset tokenization and DeFi in Singapore’s journey to a cryptocurrency hub.⁴⁴

E. SCALE DIGITAL IDENTITY FOR MSMEs TO BUILD TRUST AND TRANSACT MORE EASILY WITH CLIENTS AND VENDORS ACROSS SOUTHEAST ASIA

Southeast Asian MSMEs struggle to build trust quickly with online shoppers, who are worried about online fraud, and with numerous different service providers such as marketplaces, banks, border agencies, and logistics service providers that need to perform KYC processes and authenticate MSMEs every time they log in to use a service.⁴⁵ One solution to enable interoperability across digital services is to arm companies with data-rich regional corporate digital IDs. Such an ID would help MSMEs to be authenticated by, and transact more easily with, customers and service providers across the region. The solution could be built as a private sector-led, decentralized, self-sovereign solution drawing on publicly available and private data on MSMEs’ corporate vitals and transactions—and readily build on several ASEAN countries’ extensive open corporate registry data and recent successes toward developing a digital identification system for individuals.

CONCLUSION

Asia-Pacific, and Southeast Asia in particular, is the world's most vibrant region for innovative instant digital payment solutions that facilitate MSMEs' online transactions and sales.

Now innovation need to be coupled with regional interoperability. Much work is already on the way, especially among pairs of countries; integrating Southeast Asia's many instant payment systems to a point where anyone could receive an instant payment from anyone in the region would provide a major boost to cross-border ecommerce, MSMEs' sales, and job-creation – in a conservative scenario, increase MSMEs sales by \$30.6 billion and create over 4 million new jobs. Interoperable cross-border payments could also enable MSMEs to export for the first time and also more regionalized services MSMEs need for their cross-border ecommerce.

This report has discussed business solutions and policies to promote interoperable payments, such as interoperable payments and financial regulations and application; convergent data and digital regulatory regimes; further pilots to promote the use of CBDCs in crossborder payments; new regulatory frameworks for cryptocurrencies and decentralized finance models to over time support crossborder transactions; and promotion of regional MSME digital identity to accelerate authentication and trust-building.

Agreement Officer's Representative:

Paul Fekete

USAID, Center for Economics & Market Development

pfekete@usaid.gov

Project Director:

Brett Johnson, Palladium

Brett.Johnson@thePalladiumgroup.com

Technical Director:

Kati Suominen, Nextrade Group

Kati@Nextradegroupllc.com

www.allianceforetradedevelopment.org

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