ALLIANCE FOR ETRADE DEVELOPMENT

EXPANDING MSME ECOMMERCE IN DEVELOPING COUNTRIES: DIGITAL AND ECOMMERCE POLICY INDEX AND PATH FORWARD

30 September 2021

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EXPANDING MSME ECOMMERCE IN DEVELOPING COUNTRIES: DIGITAL AND ECOMMERCE POLICY INDEX AND PATH FORWARD

Agreement No:

7200AA19CA00021

Submitted to:

USAID Bureau for Development, Democracy & Innovation

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ACKNOWLEDGEMENTS

This report was produced for the Alliance for eTrade Development, a Global Development Alliance supported by the U.S. Agency for International Development. The authors would like to thank Chelsea Hamati for skillful copyediting and excellent suggestions.

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EXECUTIVE SUMMARY

Ecommerce – the sale and purchase of goods and services online – has opened tremendous new opportunities for micro, small and mid-size enterprises (MSMEs) to export and grow. Using global payment platforms and marketplaces such as Etsy, eBay, PayPal, Amazon, Jumia, and Mercado Libre, small businesses can reach and transact with hundreds of millions of buyers around the world. While a small minority of offline sellers export, typically to one or two markets, online sellers are more likely to export, and export to multiple markets.

In recent years, developing country governments have grown more aware of the power of ecommerce to enable MSMEs to engage in trade and grow, and gained a deeper understanding of the kinds of policies and practices that are conducive to MSME ecommerce. The Covid-19 crisis has intensified governments' quest to enable MSMEs to digitize and establish online sales capabilities. At the same time, governments still seek answers to such questions as:

- Which types of regulations, policies and practices their country should adopt to best enable MSMEs in ecommerce;
- How their country compares to other countries, including other developing nations, in the adoption of policies conducive to MSME ecommerce;
- How other countries have designed their regulations and policies to enable MSME ecommerce;
- What policy innovations and best practices that enable MSME ecommerce are emerging around the world;
- How similar or different are national digital regulations and policies – can MSMEs apply similar regulations and policies when transacting with buyers and sellers in other countries; and
- How local governments are promoting MSME digitization and ecommerce, and complementing national efforts.

The purpose of this report is to bridge these knowledge gaps. We map the adoption of 130 specific policies conducive to MSME ecommerce in 10 major policy areas in 52 countries, most of them developing and emerging nations in Africa, Asia, Middle East, and Latin America. The report is supported by the USAID-backed Alliance for eTrade Development II (eTrade Alliance), and updates and builds on the 2018 report produced by Alliance for eTrade Development I. This report includes:

- **A compilation of 100 regulations, policies, and practices conducive to MSMEs' use of ecommerce in 10 main policy areas** – digital regulations, payment regulations, digital infrastructure policies, MSME finance, MSME export promotion, ecommerce logistics and trade facilitation, cybersecurity, e-procurement, and national ecommerce plans.
- **A comprehensive map of the adoption of these policies and practices in 52 countries,** 90 percent of which are developing or emerging economies.

- **An Ecommerce Policy Index,** a composite policy index based on the policy mapping that enables countries to measure their adoption of policies conducive to MSME ecommerce vis-à-vis the adoption by other countries.

- **Links to an interactive policy dashboard** that presents the policy data in a quantitative format, and to an Excel file that catalogues the various national policies and practices in a qualitative format.

- **Comparisons between countries' adoption of pro-ecommerce policies between 2018 and 2020.**

- **18 case studies and several brief summaries of good and innovative ecommerce-related policies and practices** in advanced and developing countries.

- **Pioneering measurement of regional digital integration** aimed at capturing similarities and differences in different countries' digital policy frameworks.

- **A review of key policies adopted by cities around the world to enable and regulate ecommerce**.

- **Policy guidance for developing countries to advance MSME ecommerce,** tailored to countries' unique starting points and circumstances.

Throughout, we pay particular attention to policies conducive to women-led firms and rural enterprises' ecommerce. The findings and recommendations of this study are as follows:

- **The ecommerce policy index developed in this report is strongly correlated with countries' development levels, but there are also countries that notably outperform their peers at the same level of development.** Overall, advanced countries and selected East Asian and Latin American economies have adopted about 60-80 percent of the good policies and practices mapped here, while less developed countries in Africa, South Asia, Southeast Asia, and Central America have adopted only 25-45 percent. In the top quartile of countries with highest policy coverage are seven OECD nations (Canada, Chile, Costa Rica, Germany, Japan, Korea, Singapore, and UK) as well as India, Brazil, Malaysia, Colombia, China, Thailand, and Indonesia. India, Thailand, Malaysia, Brazil, Mexico, China, and Rwanda outperform their peers at the same level of development in the adoption of the mapped policies.

- **Most countries have adopted the basic policies that regulate online transactions, but many countries, especially Least Developed Countries (LDCs), lag behind in the adoption of the more sophisticated digital regulations and even some basic trade facilitation measures key to MSMEs in ecommerce.** Most countries have adopted electronic transactions and signatures laws, national broadband plans, and online portals for customs compliance information, and offered credit guarantees on bank loans to MSMEs. However, certain essential digital policies have yet to be adopted widely, such as safe harbors that provide internet intermediaries partial immunity from user-generated content and are key to promoting online ecosystems; online dispute resolution systems that build consumers' trust in ecommerce; and export promotion practices that help MSMEs use global online marketplaces and secure financing for their digital transformation projects. Some governments are adopting policies that undermine MSME ecommerce, such as adopting new taxes on digital transactions and data localization policies, and holding onto low customs *de minimis* levels.

- **There is significant positive innovation and experimentation with policies conducive to ecommerce around the world**. Both advanced and developing countries have pursued exciting policy innovations to promote MSME ecommerce. For example, many countries have followed the lead of Singapore, Switzerland, Germany, and Canada to revamp their postal services to facilitate ecommerce fulfillment; Latin American economies such as Peru, Brazil, and Costa Rica have built creative online programs, public-private partnerships, and digital transformation initiatives to help MSMEs use marketplaces to export; and several countries' customs agencies are piloting artificial intelligence and blockchain to better manage the mushrooming volumes of inbound ecommerce. Countries are also increasingly adopting Fintech sandboxes to test new financial and payment products useful for MSMEs. Notably, many countries have launched in recent years programs to empower women-led firms with technology and financing.

- ***De facto* digital regulatory integration is strongest in Latin America, weakest in sub-Saharan Africa.** This study enables an early diagnostic of convergence (and divergence) of national regulatory frameworks pertinent to ecommerce. Countries are adopting key policies and regulations at different speeds, often with little coordination with each other. The risk is that MSMEs would as a result have to comply with a diverse range of consumer protection, data privacy, copyright, and other national rules when engaging in ecommerce even with neighboring countries. We find "families" of countries with similar policy regimes, usually clustered regionally, such as in the Southern Cone of Latin America and in Central America. However, there are rather significant differences in rules and their adoption across countries in Southeast Asia and in the various sub-regions in Africa.

- **City governments and local stakeholders such as local chambers of commerce play an increasingly important role in ecommerce development, especially in terms of building MSMEs' ecommerce capabilities, developing warehousing and last-mile delivery strategies, and seeking to attract investment in ecommerce-related sectors, such as logistics and digital services.** This opens an opportunity both for national governments and for the international development community to work with local leaders to enable ecommerce in developing nations, and to help bridge in-country disparities in ecommerce use.

Value-Added and Next Steps

There are several ongoing efforts to identify a composite policy index, or mix of policies, necessary for successful economic outcomes. For instance, the Organization for Economic Cooperation and Development (OECD) has an MSME Policy Index that tracks dozens of policies found to be conducive to MSME development, and the United Nations (UN) tracks countries' implementation of various paperless trade policies, and World Bank's Doing Business measures regulations conducive to private sector development. This report seeks to capture the policy mix that optimizes MSME use of ecommerce, and aims to offer new value in six ways:

- Deepen developing country governments' understanding of policies conducive to MSME ecommerce.

- Accelerate the design and adoption of policies conducive to MSME ecommerce and learn about policy innovations and best practices. By tracking policy *adoption*, this study complements the many indices that track policy *outcomes*, such as the eTrade Alliance's "Best Place for MSME Ecommerce"-index, and the 2017 USAID-sponsored survey-based data developed by Nextrade Group on MSMEs' views about the enabling environment for ecommerce.

- Empower governments to rigorously compare themselves to their peers and see how "far" they are from the global frontier in the adoption of pro-MSME ecommerce policies.

- Enable governments and regional organizations to identify policy frictions to regional digital integration.

- Highlight potential ways in which city governments and stakeholders can promote the development of MSME sellers in their regions.

- Provide best practice case studies and examples on ecommerce development policies from around the world, for developing country stakeholders to learn from their peers.

The data and results in this report can be leveraged in various ways, such as:

- Expanding the set of countries analyzed to enable rigorous cross-country comparisons and identify a wider range of policy innovations to enable MSME ecommerce;

- Creating a real-time online database to continually track countries' progress in adopting and implementing policies essential to ecommerce;

- Developing a succinct measure of *de facto* digital integration among countries;

- Rigorously assessing the impacts of various policies on ecommerce; and

- Generating more data on city-level policies and activities to enable ecommerce, to support local leaders with their ecommerce development work.

I. INTRODUCTION

Ecommerce has opened tremendous new opportunities for micro, small and mid-size enterprises (MSMEs) to export and grow. Using their own online stores, payment platforms, and global marketplaces such as Etsy, eBay, Amazon, PayPal, Jumia, and Mercado Libre, small businesses can reach and transact with hundreds of millions of buyers around the world. As opposed to traditional brick-and-mortar businesses, of which only a small minority export, online sellers – and particularly firms that sell on global marketplaces – are more likely to export, and export to many markets. Equally important, ecommerce opens developing country firms' access to a wider variety of high-quality inputs and services that can improve their competitiveness.

In addition, by encouraging firms to differentiate ecommerce can also promote intra-industry trade and integration even among countries with similar factor endowments. By enabling rural firms and consumers access to the same varieties of goods and services that are available to their urban peers, ecommerce can reduce geographic disparities and promote welfare in rural areas. And ecommerce appears to bridge disparities among comparable women- and men-led firms: women-led firms appear to do just as well if not better online in terms of growth, export intensity, and employment growth as men-led firms.

The Covid-19 crisis has dramatically increased small firms' interest in acquiring better digital and ecommerce capabilities. Developing country governments too see ecommerce as an urgent priority for small business recovery and empowerment. While governments around the world have gained a deeper understanding of the kinds of policies and practices that help MSMEs to engage in ecommerce, they still seek answers to such questions as:

- Which regulations, policies and practices are most conducive to MSME ecommerce;
- How their country compares to other countries in adopting policies and regulations conducive to MSME ecommerce;
- How other countries have designed their regulations and policies to enable MSME ecommerce;
- What policy innovations and best practices helpful for MSME ecommerce are emerging around the world;
- How similar or different are national regulations and polices impacting ecommerce – whether MSMEs face similar or vastly different national regulations in such areas as consumer protection and data privacy when seeking to transact with buyers across numerous markets; and
- How local governments are promoting MSME digitization and ecommerce in different countries and complementing national ecommerce development work.

The purpose of this report is to bridge these knowledge gaps. We map the adoption of 100 specific policies conducive to MSME ecommerce in 10 major policy areas in 52 countries, most of them developing and emerging nations of Africa, Asia, Middle East, and Latin America. The report is supported by the USAID-backed Alliance for eTrade Development II, and updates and builds on the 2018 report produced by Alliance for eTrade Development I.

The following section describes the methodology. Section four describes the results of the scoring and presents the index. Section five details various illustrative national practices and policies in the ten mapped areas, and presents numerous case studies from around the world. Section six summarizes.

II. POLICY DATABASE ON MSME ECOMMERCE

A. WHY ECOMMERCE MATTERS

Ecommerce has revolutionized MSMEs' opportunities to reach customers in new markets. Survey data suggest that by using ecommerce, firms of all sizes are more visible to prospective customers around the world and likelier to export, import, and grow faster than firms that do not use ecommerce. Numerous Nextrade Group surveys with firms in various developing economies show that online sellers are 2-3 times more likely to export than "offline" sellers, and export to multiple markets (Figures 1 and 2). Similarly, online buyers are likelier to import than offline buyers. These patterns repeat themselves across developing countries.

Granted, many of the online-seller exporters are firms that have traditionally exported and then migrated online; however, about a third to one-half of MSMEs, depending on the country, report that ecommerce has enabled them to *start* to export and to further diversify their export markets.

Ecommerce enables MSME trade in part because it in effect reduces the geographic distance that has for centuries curtailed visibility, trust, and trade between buyers and sellers located far apart.[1] Online stores and marketplaces enable buyers to find sellers from around the world. Furthermore, online customer reviews, payment tools, and dispute settlement mechanisms give the buyer a sense of trust, the lubricant of trade that historically was built through numerous repeat interactions between buyers and sellers.

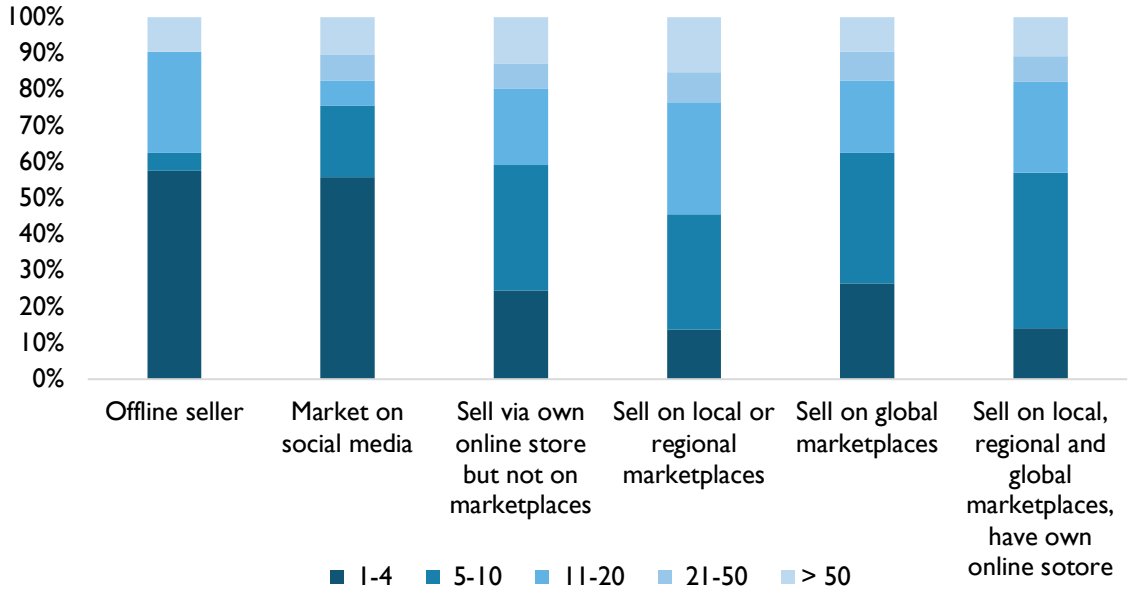
Global online marketplaces that bring together hundreds of millions of buyers from around the world are a particularly powerful means for MSMEs to reach new markets. In the first eTrade Alliance, we found that over 95 percent of developing country firms using global online marketplaces export; and over 90 percent of these firms export to 10 or more markets and derive over 90 percent of their revenue from exports (Figure 3).[2] These patterns are dramatically different from traditional patterns of firm internationalization where fewer than 10 percent of MSMEs in any one country export, and if they do, they export to only 1-3 markets. These patterns are also not accidental: developing country firms use global online marketplaces *in order to* expand their markets and reach the hundreds of millions of foreign buyers that shop on these marketplaces.

Ecommerce use is found to have broader positive impacts on developing country economies. For example, several studies find that ecommerce use raises consumer welfare, for example by helping rural consumers access the same variety of products and services as are available to their urban peers.[3] In addition, ecommerce can help reduce in-country disparities in enterprise formation and growth, level the playing field between men- and women-led firms in access to markets and services, and deepen regional economic integration among developing nations.[4]

Figure 1 - % of Developing Country Firms that Export, by Size and Online Activity

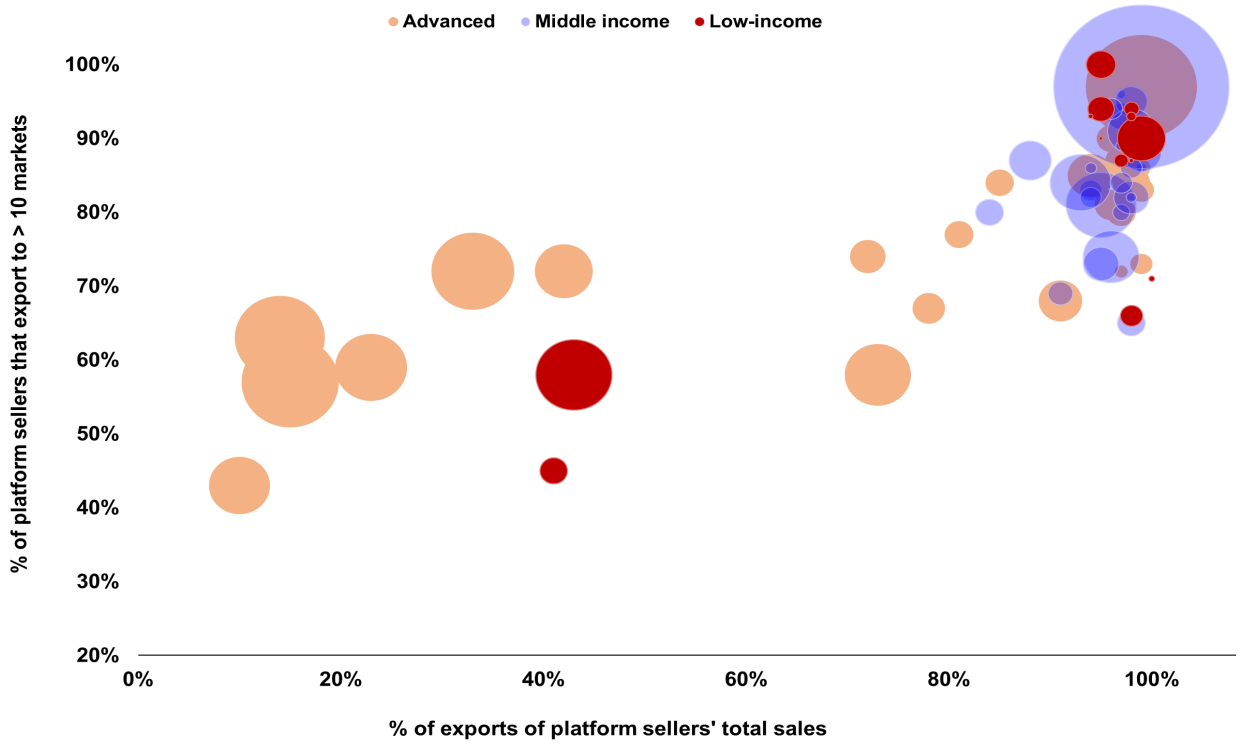
SOURCE: SUOMINEN (2021) WITH 1,300 DEVELOPING COUNTRY FIRMS.

Figure 2 - Export Diversification by Micro and Small Developing Country Firms, by Online Activity



SOURCE: SUOMINEN (2021) WITH 1,300 DEVELOPING COUNTRY FIRMS.

Figure 3 - % of Global Marketplace Sellers' Revenues Stemming from Exports and % of Sellers Exporting to 10 or More Markets by Country (Size of Bubbles is GDP in Current US$)



SOURCE: SUOMINEN (2018).

B. DEVELOPING COUNTRY MSMES' CHALLENGES TO ENGAGE IN ECOMMERCE

Developing country MSMEs are still in relatively early stages of building their online stores and onboarding onto local and global marketplaces. This is in part due to the many challenges faced by developing country firms to engage in ecommerce, such as limited access to high-quality internet connections and knowledge and skills for doing ecommerce; complex data privacy and consumer protection regulations sprouting across world markets; inadequate access to working capital to fulfill orders received online; inefficient customs procedures and last-mile delivery; and challenges to operate as a formal business.[5]

Partly because of these challenges, most developing country firms are still so-called "social sellers" that market their goods and services on social media sites like Facebook and Instagram, interact with their customers on WhatsApp or other messaging apps, and receive cash on delivery. These sellers typically operate only in their domestic markets, rather than growing into export-driven ecommerce businesses.

In recent years, governments have gained a more nuanced sense of policies and practices to enable MSME ecommerce. However, governments often lack knowledge about the various economic effects of the different ecommerce-related policies; the kinds of policies their peer economies are adopting to

propel MSME ecommerce; and the various policy innovations and best practices countries around the world adopt to enable MSME ecommerce. This report seeks to bridge these knowledge gaps and offer developing country policymakers a roadmap of policies and practices that enable their countries' MSMEs to use ecommerce, especially to engage in cross-border trade.

C. POLICY ANALYSIS: METHODOLOGY

In the first Alliance for eTrade Development in 2017-19, we defined dozens of regulations, policies, and practices conducive to MSME ecommerce, and mapped their adoption in 40 countries. This Alliance updates that mapping and expands it to 52 countries (table 1). The policy mapping and case studies presented in this report are to enable developing countries to rigorously assess their own countries' adoption of policies conducive to MSME ecommerce; compare their own countries' policies and practices to those adopted in other countries; and learn about policy innovations emerging around the world.

Table 1 - 52 Countries Mapped

Advanced	Africa	Middle East and North Africa	Latin America and the Caribbean	South Asia	East Asia
UK	Botswana	Egypt	Argentina	Bangladesh	Cambodia
Germany	Cameroon	Jordan	Bolivia	India	China
Singapore	Ethiopia		Brazil	Pakistan	Indonesia
Canada	Ghana		Chile	Sri Lanka	Lao
South Korea	Ivory Coast		Colombia		Malaysia
Japan	Kenya		Costa Rica		Myanmar
	Morocco		Dominican Republic		Philippines
	Mozambique		Ecuador		Thailand
	Namibia		El Salvador		Vietnam
	Nigeria		Guatemala		
	Rwanda		Honduras		
	South Africa		Mexico		
	Tanzania		Panama		
	Uganda		Paraguay		
	Zambia		Peru		
			Uruguay		

We deem a policy "conducive to MSME ecommerce" in three ways – (1) through surveys and discussions with MSMEs themselves; (2) through surveys and discussions with ecommerce ecosystem players such as marketplaces and logistics and payment providers; and (3) through a review of academic literature and case studies on the impacts of various policies and practices on MSME trade, ecommerce, and development. This method paved the way for the selection of policies that enable, govern, and promote MSME ecommerce in 10 distinct policy areas (also summarized in figure 4):

- Digital infrastructure development policies and measures, such as incentives for broadband usage and pilots to roll out 5G networks;

- Digital regulations governing online transactions, such as digital signatures and e-invoicing laws;

- Digital regulations governing online behaviors, such as internet intermediary liability rules, copyright protection, consumer protection, and data privacy rules;

- Digital payment regulations, such as demonetization initiatives and regulations governing e-payment providers;

- Ecommerce logistics and trade facilitation, such as policies and processes for sending and receiving goods across borders and shipping in urban and rural areas;

- Cybersecurity-related laws and programs to support MSMEs' cybersecurity readiness;

- MSME capacity-building for ecommerce, such as online training programs for MSMEs to learn to use online marketplaces, and digital transformation programs to bolster MSMEs' online sales and marketing capabilities;

- MSMEs' access to credit, such as working capital and credit guarantee programs, equity financing facilities, and open banking and Fintech regulations;

- Government procurement policies, such as adoption of e-procurement practices favorable to MSMEs; and

- Ecommerce plans and statistics, such as national strategies or plans for ecommerce development, and national statistics to track firms' ecommerce adoption, use, and transactions.

Altogether this report maps 100 regulations, policies, practices, and policy innovations conducive to MSME ecommerce within each of these 10 policy areas. These 100 "sub-components" are listed in Appendix I. We pay particular attention where feasible to policies and programs that support women-led and rural firms in ecommerce.

Figure 4 – Policy Areas Covered, with Examples of Sub-Components Mapped

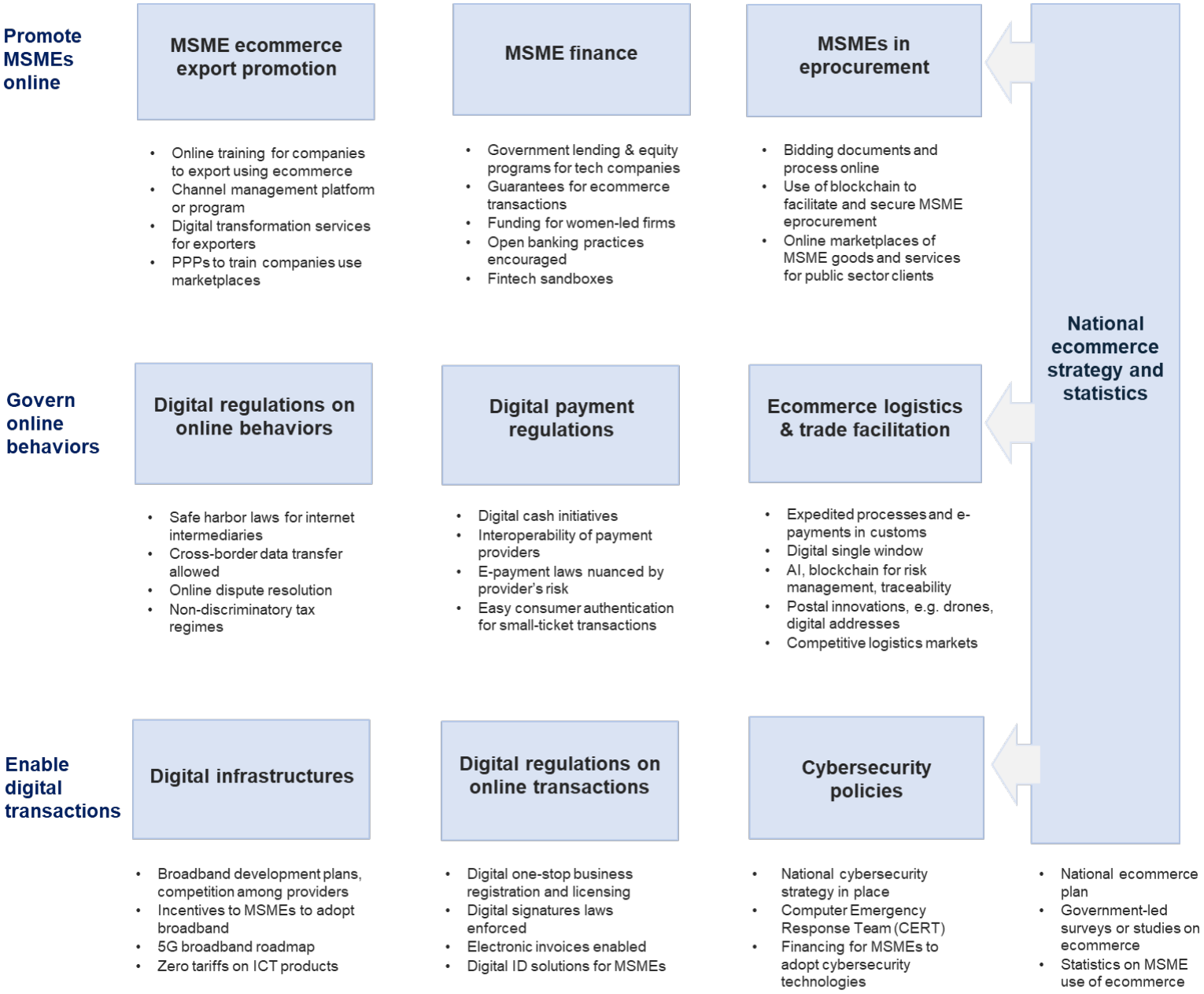
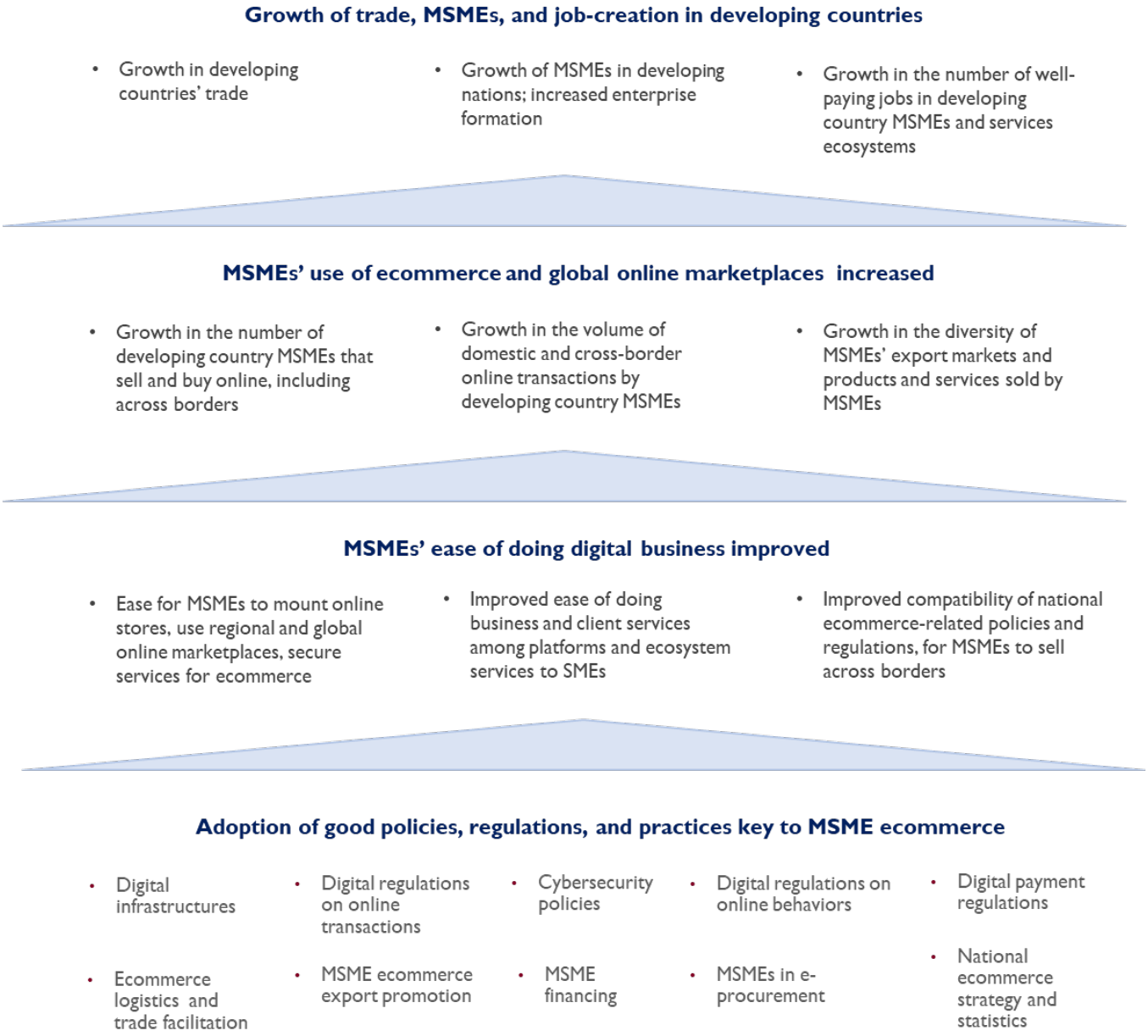


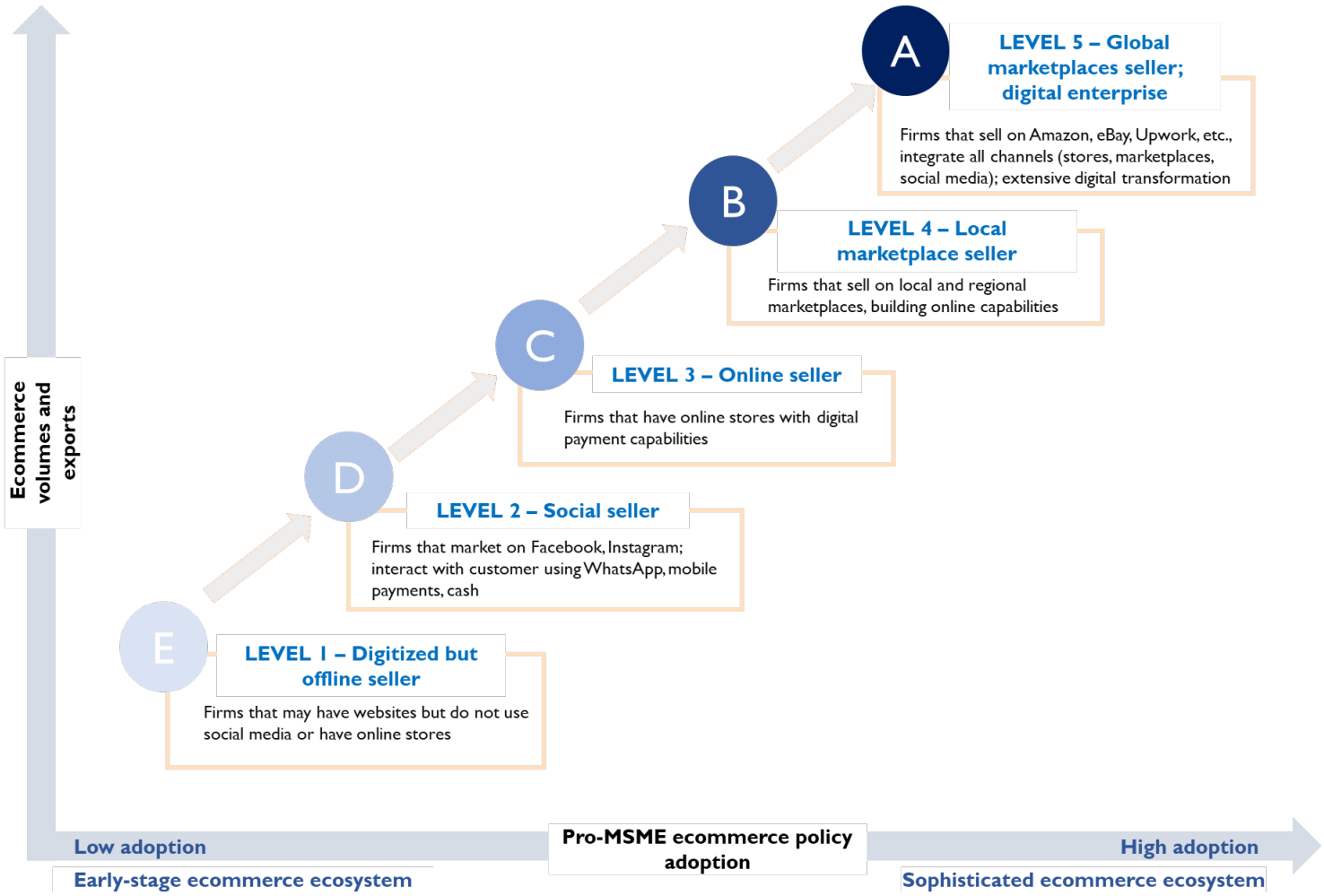
Figure 5 describes the theory of change of this project: with good regulations, policies and practices in place, countries are expected to be well-placed to expand MSMEs' use of ecommerce, and, over time, score new trade and development gains.

Figure 5 – Theory of Change



We anticipate that as countries adopt policies conducive to MSME ecommerce, their ecommerce eco-systems grow more sophisticated and digitized, and a larger number of MSMEs will be able to "graduate" from social sellers to formal online and global marketplace sellers, generating more ecommerce sales and exports (figure 6).

Figure 6 – MSMEs' Progression as Online Sellers



Source: Nextrade Group.

To what extent then are countries around the world adopting the various policies conducive to ecommerce? We explore this question in a granular and rigorous fashion in two stages:

In the first stage, we created a matrix of countries' regulations, policies and practices in the various policy areas. Each cell of the matrix contains a qualitative summary of how a given country regulates or approaches a policy issue. This mapping was accomplished through extensive desk research between March and December 2020.

The policy mapping helps governments identify what their peers are doing to enable ecommerce. Using the mapping, policymakers can assess their own country's adoption of the many ecommerce-related policies. They can also track the adoption of a specific policy across 51 other countries, and thus quickly learn about the types of policies their peers are adopting around the world.

In the second stage, we translate the qualitative data into quantitative data, in order for countries to easily compare themselves to their peers in the adoption of policies and practices conducive to MSME ecommerce. The scoring methodology is as follows: a desirable regulation, policy or practice merits a score of 1. The total possible score is 75, roughly equally distributed across the 10 policy areas. A brief summary of scoring criteria is as follows:

- Some of the areas covered are straight-forward yes / no questions (such as whether a country is a member of the Information Technology Agreement). These are coded either 1 or 0.
  If a country has a good draft law or policy planned but has not yet implemented it, it receives 0.5 points instead of 1 point.

- In some areas we qualify a score of 1. For example, a policy of free cross-border data transfer receives a score of 1; however, when a country has also adopted a restrictive practice or regulation such as an adequacy requirement that qualifies the policy of allowing data transfer, we reduce the score of 1 by 0.20.

- In the digital infrastructure policy area, the mapped 5G-related policies receive partial points depending on how far a country has come in operationalizing 5G connections. Various variables that capture the level of competition in digital infrastructure providers each receive 0.20 points when full competition is in place.

- Other policies require more analysis and interpretation. One such area is whether a country's postal service is innovating to enable ecommerce. In the case of these more open-ended questions, we establish criteria that merit a score of 1 (such as, a score of 1 is assigned if a country's postal service has piloted with one or more of the following: parcel lockers, self-service kiosks, drone delivery, door-to-door ecommerce delivery, ecommerce fulfillment centers, marketplace, or partnerships with ecommerce marketplaces).

- Still other areas are scored using a pre-existing index or dataset. Some examples include customs tariffs on ICT products, customs *de minimis* thresholds, and level of postal development. In these cases, we translate different existing data and indices into a standardized index, employing the "distance from the frontier" score used in the World Bank's Doing Business Index, where the globally worst performer gets a zero and the globally best performer receives a score of 1, and everyone else falls in the continuum between 0 and 1. The formula for this calculation is (worst performer score – country score) / (worst performer score – best performer score).

The variables and their scoring are included in Appendix I. As is typical with policy indices, there are also several methodological challenges; these are described in Appendix II.

III. RESULTS OF POLICY MAPPING

The policy mapping yields rich insights about countries' adoption of policies conducive to MSME ecommerce. The following two parts analyze these further.

A. ADOPTION OF POLICIES CONDUCIVE TO MSME ECOMMERCE, BY COUNTRY

The adoption of pro-ecommerce policies is quite strongly correlated with countries' development levels. Advanced economies have adopted many of the policy measures mapped, while developing countries in Africa, the Middle East, and South Asia tend to lag behind (Figures 7 and 8). Overall, advanced countries and selected East Asian and Latin American countries have adopted about 65-75 percent of the policies mapped, while less developed countries in Africa, South Asia, Southeast Asia, and Latin America have adopted only 20-35 percent of these policies and practices.

In the top quartile of countries with highest policy coverage are seven OECD nations (UK, Canada, Germany, Korea, Japan, Singapore, and Chile), as well as India, Brazil, Malaysia, Colombia, China, Thailand, Costa Rica, and Indonesia. In part, the growth of ecommerce in these nations has created an urgency to build a robust policy environment; in part, the adoption of good policies has likely fueled ecommerce development.

Figure 7 - Coverage of Policies Conducive to Ecommerce, by Region and Main Policy Area (maximum possible: 75)

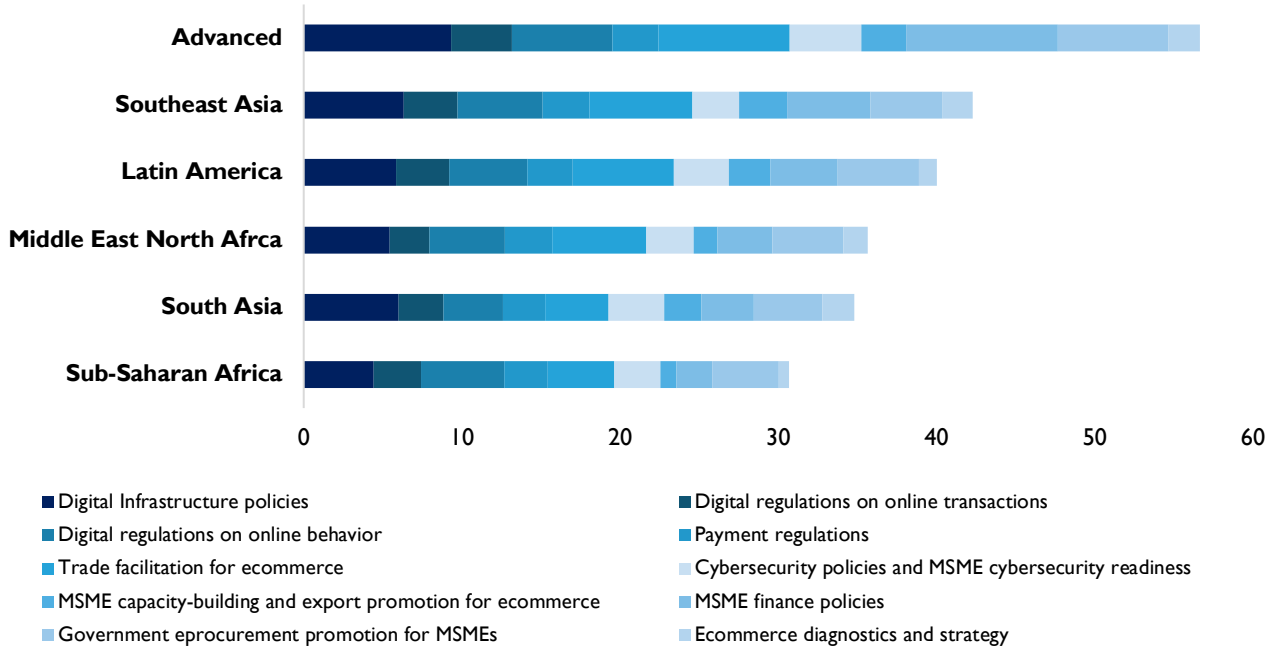
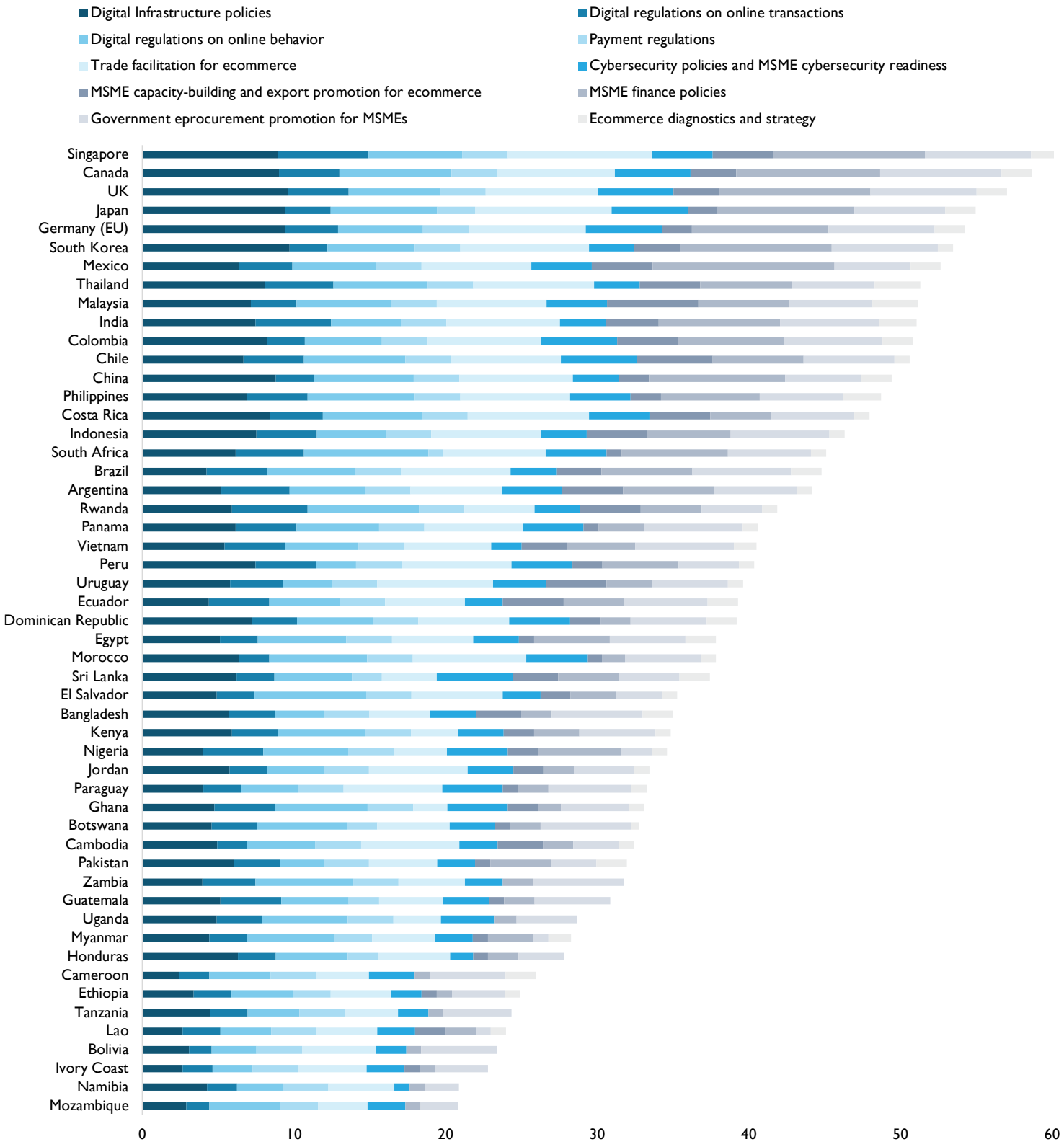


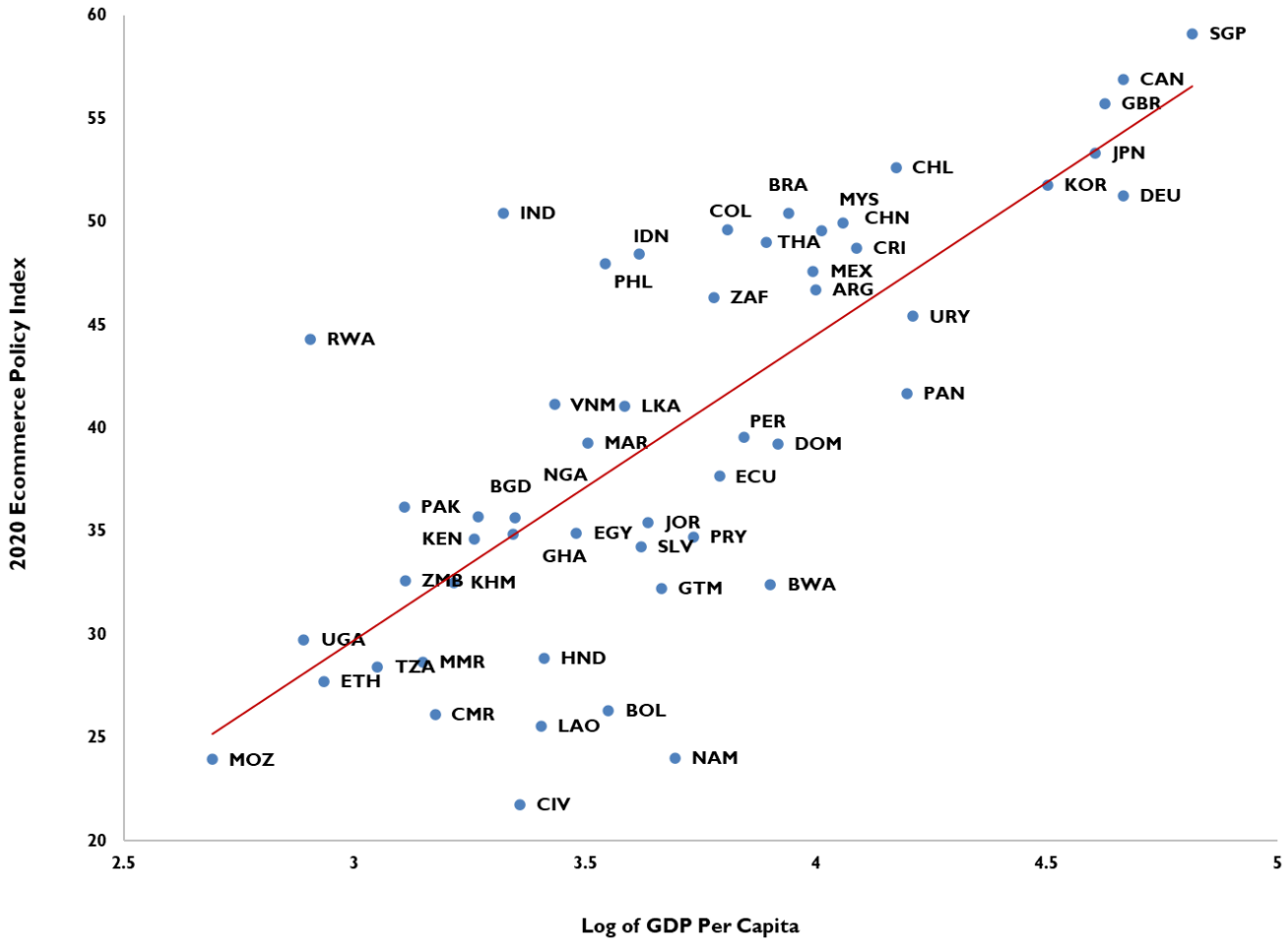
Figure 8 - Coverage of Policies Conducive to Ecommerce, by Country and Main Policy Area (maximum possible: 75 points)



The index is heavily correlated with income levels and with the Alliance's "Best Place for MSME Ecommerce"-index based on two dozen policy outcome variables in such areas as internet connectivity, logistics quality, presence of leading technology companies, and so on (figures 9 and 10) – the variables used for this index are included in Appendix III. [6] There are positive surprises and developments. India, Indonesia, Rwanda, Philippines, Brazil, Colombia, and Chile in particular outperform their peers at the same level of development in the adoption of the mapped policies. India, Argentina, Chile, and Mexico, are among the "biggest gainers" 'compared to the first Alliance's 2018 mapping, having accelerated the adoption of digital infrastructure policies, MSME finance policies, and MSME export promotion policies conducive to ecommerce, in particular (figure 11).

The policy index is also correlated with Nextrade Group's ecommerce development survey data, including data produced with USAID's support and based on business surveys in developing countries: countries where MSMEs report greater struggles to use ecommerce due to regulatory, logistical, payment, and other reasons also lag behind in adopting good policies and practices for ecommerce.

Figure 9 – Digital Policy and MSME Ecommerce Policy Index and Level of Development



Source for GDP per capita, World Development Indicators.

Figure 10 – eTrade Ecommerce Policy Index and Best Place for MSME Ecommerce Index[7]

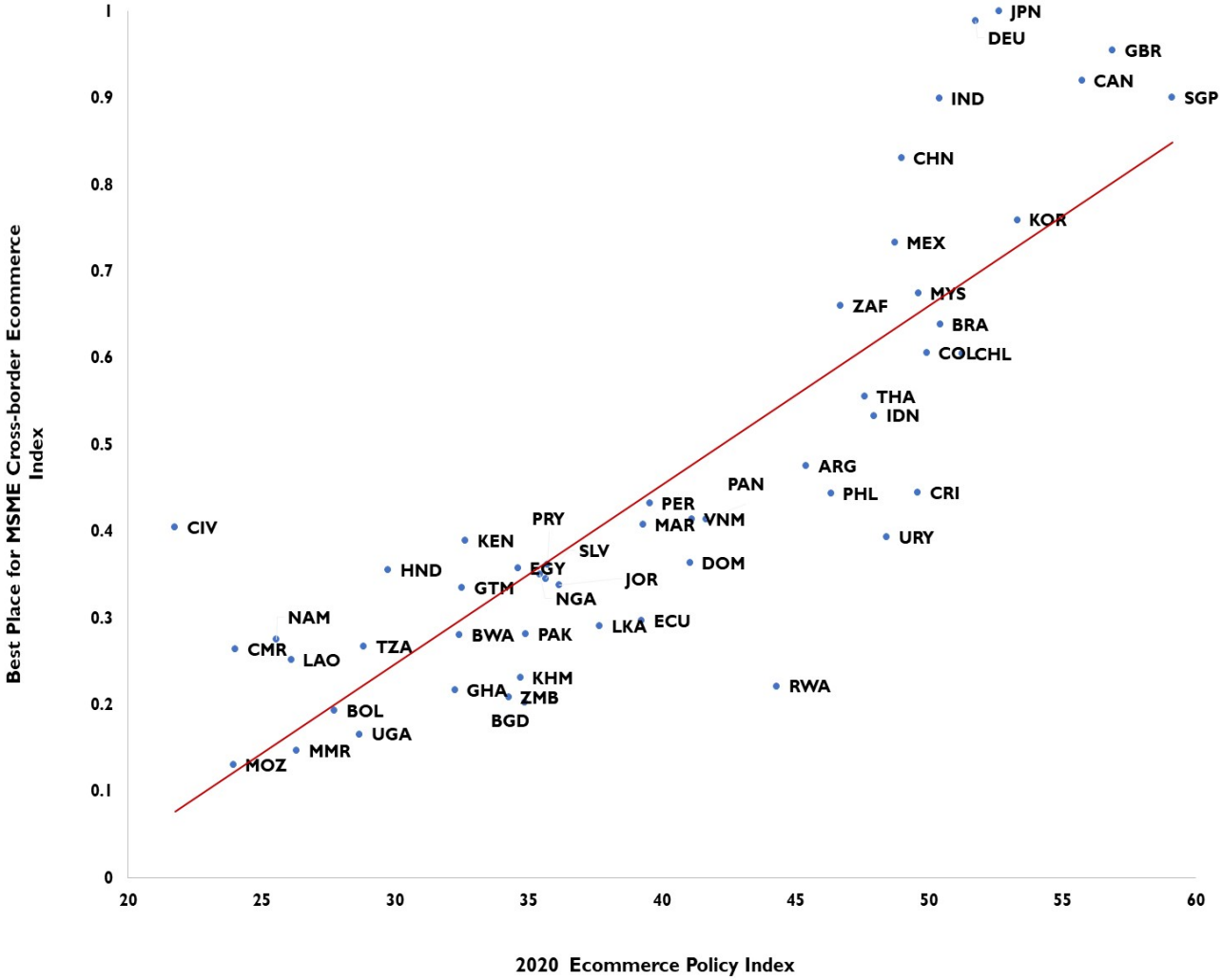
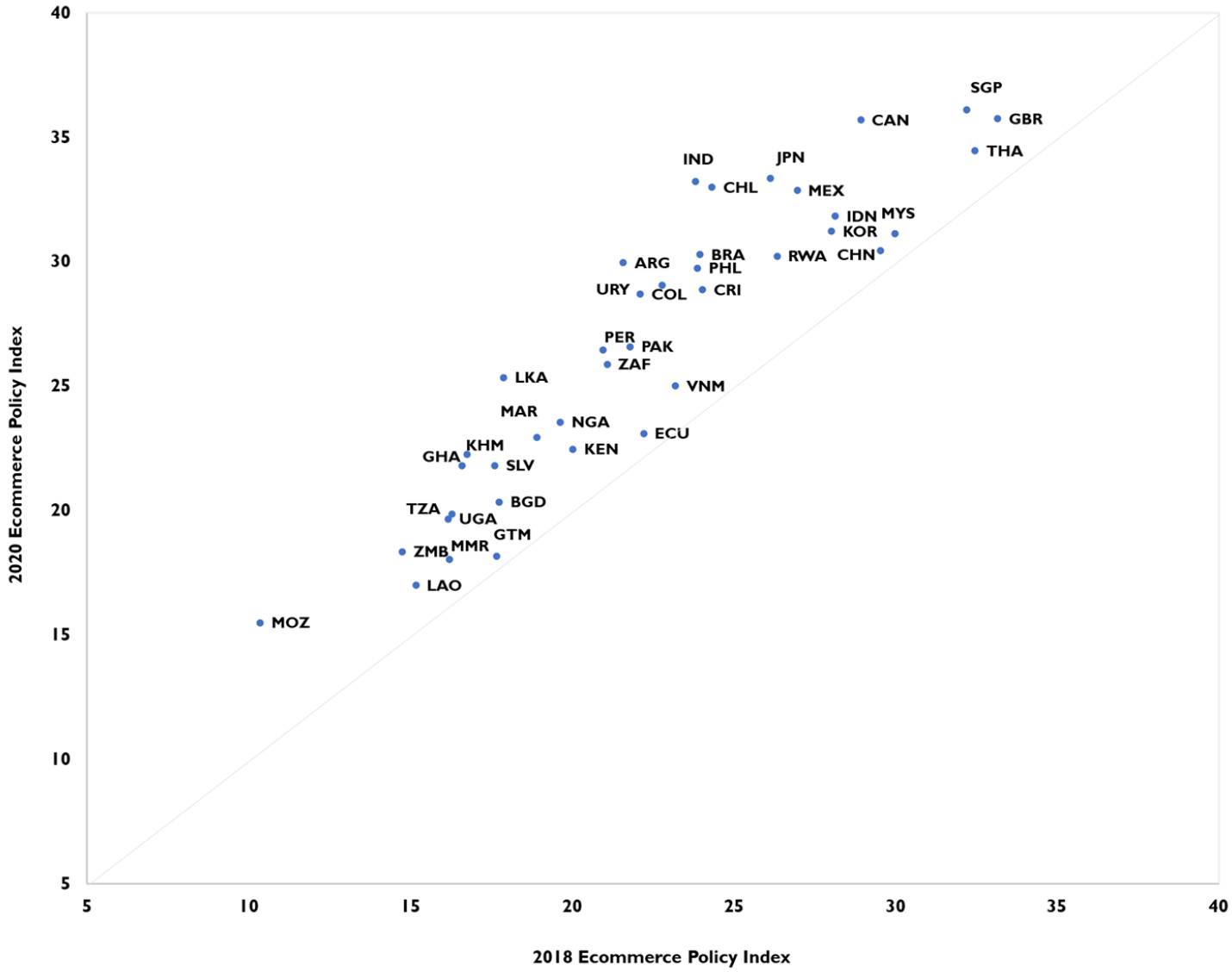


Figure 11 – eTrade Ecommerce Policy Index 2018 And 2020 (Only Originally Mapped 40 Countries)



Source for 2018: Suominen (2018).

B. CONTENT AND ADOPTION OF POLICIES CONDUCIVE TO MSME ECOMMERCE AROUND THE WORLD

Most countries have adopted some of the more basic policies to help MSMEs engage in ecommerce, such as digital signature laws, national broadband plans, and guarantees on working capital loans issued by banks to MSMEs. A growing number of countries are also adopting such essential policies as safe harbors that enable ecommerce and digital platforms to operate with greater ease, online dispute resolution systems that build consumers' trust in ecommerce, and export promotion practices and financing

programs that enable MSMEs to acquire ecommerce capabilities and use marketplaces to export. Many countries have launched programs to increase women-led firms' capacities to digitize and export. The Covid-19 crisis has pushed many countries to accelerate the rollout of e-government services, promote online payment capabilities, and digitize key trade-related documents such as customs declarations.

Based on our review of the specific policies in the 52 countries, we present a series of main findings and high-level policy recommendations. Section V of this report will detail the findings and economic effects of the various mapped policies in each area as well as showcase good practice case studies from around the world.

Digital Infrastructures and Technologies

Broadband connectivity is a leading driver of MSME ecommerce development. While the cost of internet connections has dropped in many developing countries over the past decade, enabling more firms and consumers to get online, the quality of connections is often still wanting. Significant gender disparities also persist in the use of the Internet and broadband and among urban and rural areas.

A combination of supply-side policies (such as long-term broadband development plans, PPPs, and competition among broadband providers) and demand-side policies (such as provision of financial incentives for businesses to adopt broadband) are found to help drive broadband adoption. In the 52 countries mapped here, 49 countries have adopted a broadband plan and/or strategies and initiatives to promote broadband use (Figures 12 and 13). Thirty-three (33) countries have also launched demand-side programs and initiatives to promote small firms', especially small women-led firms', use of information technologies.

Policies to encourage competition among mobile and wireless broadband providers further help diffuse the Internet in the developing world; 38 countries have full competition in fixed wireless broadband and 36 in mobile broadband.

5G connectivity is becoming a differentiator in ecommerce, enabling sellers to turn to virtual and augmented reality tools that allow shoppers to browse and test products. A growing number of countries such as Brazil, Chile, Ecuador, Peru, Bangladesh, and Malaysia announced plans to auction 5G spectrum in 2020. In our mapping, 10 countries, including various advanced economies and China, Sri Lanka, Thailand, and Uruguay, have already held 5G auctions; UK, Germany, Canada, South Korea, Japan, Uruguay, and China are already on their way to rolling out 5G networks.

High cost of devices that MSMEs need to access the internet and ecommerce tools (laptops, smart phones, computers, and so on) is the leading reason for limited adoption of these devices. A simple remedy to overcoming this barrier is to lower taxes and tariffs on ICT products. Twenty-three (23) countries in our mapping have joined the Information Technology Agreement (ITA), an agreement that removes tariffs on 97 percent of ICT products. However, six (6) countries still have tariffs in excess of 10 percent on mobile devices including smartphones, the most frequently used tool among MSMEs to start to engage in ecommerce and access digital services.

Figure 12 – Digital Infrastructures Policy Scores for 52 Countries (countries in blue were mapped and scored, in gray were not mapped or scored)

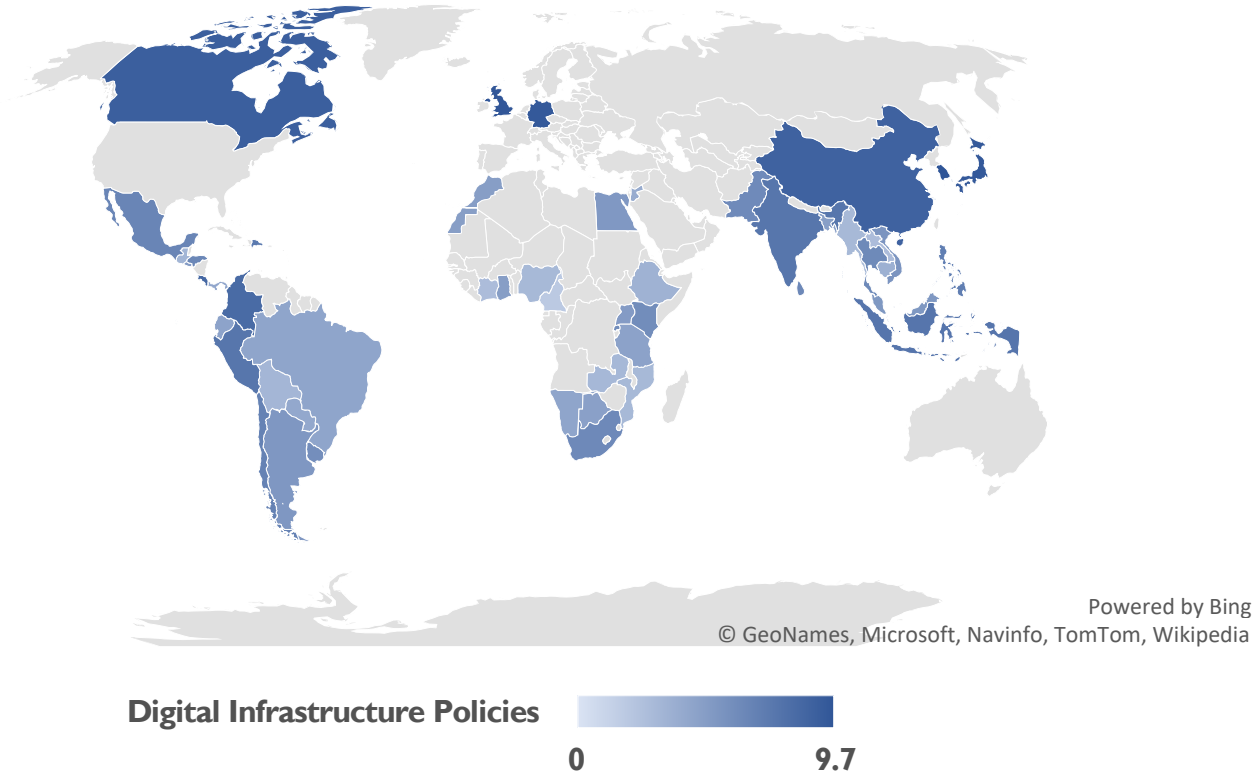
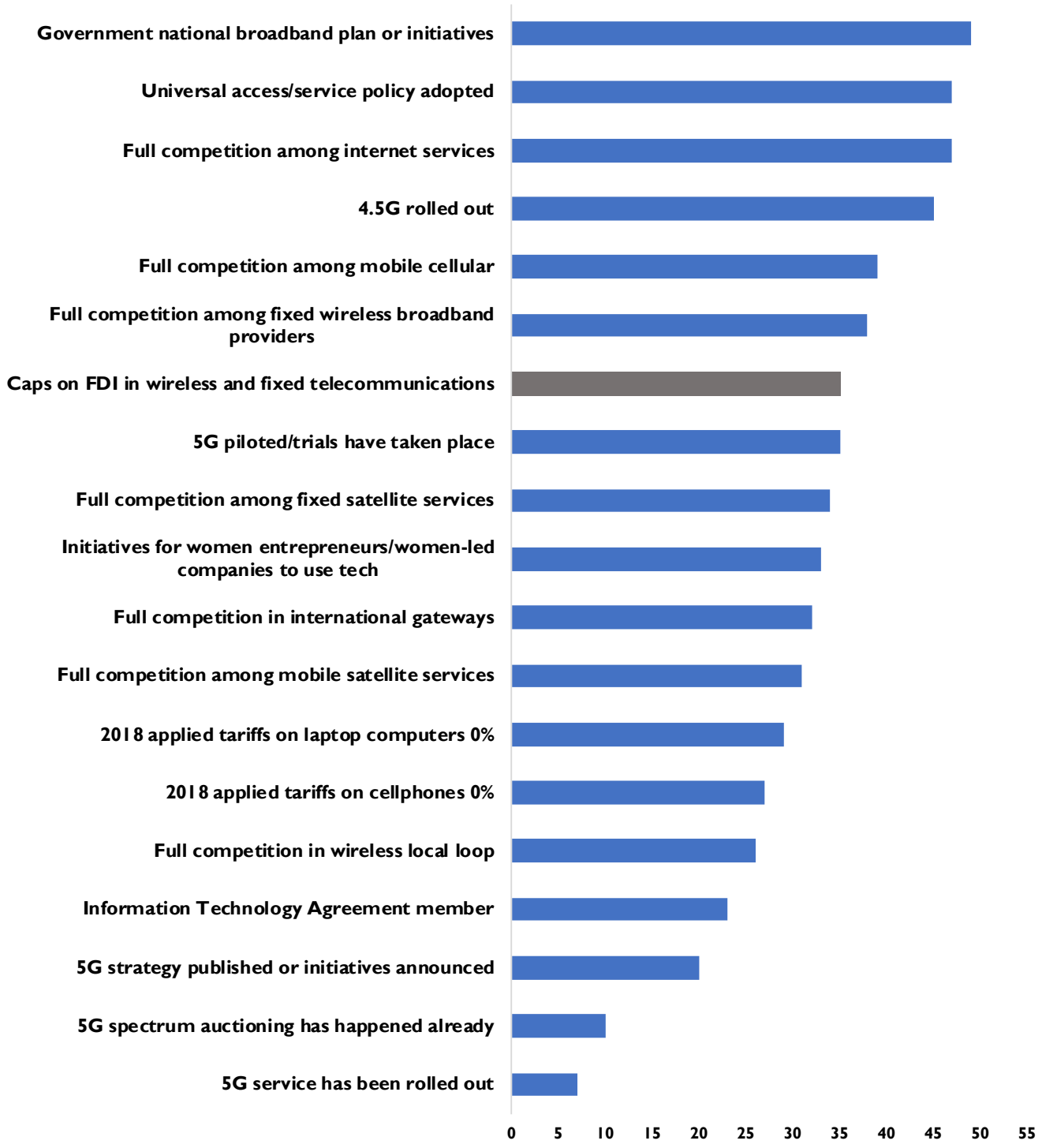


Figure 13 - Number of Countries (out of 52 Countries) that Have Adopted Digital Infrastructures Policies Conducive to MSME eCommerce- bars in gray are negative measures



Examples of good digital infrastructure and technology policies:

- Prioritize the diffusion of broadband to MSMEs, especially women-led MSMEs.
- Ensure full competition in telecom and ICT services.
- Pilot and roll out 5G networks enabling high-speed and high-capacity connections and competitive, next generation retail and services.
- Undo taxes and tariffs on ICT products essential for small businesses to engage in ecommerce, such as laptops and smartphones.

Regulations to enable digital registration and transactions

Developing countries are increasingly adopting key policies to enable MSMEs to conduct business online – online business registration, digital signatures, electronic invoicing, and digital identity.

The process of registering and formalizing a new business with the relevant government agencies has historically been a long, paper-based process in many countries. Thirty (30) countries in our mapping are now using technology to simplify and facilitate business registration for small businesses. Some countries such as Botswana, Kenya, Tanzania, Chile, Guatemala, Peru, India, Indonesia, and Pakistan have transitioned the entire registration process online (Figures 14 and 15).

In order to be valid, online transactions require electronic signatures to be legally equivalent to handwritten signatures. All countries mapped here have accepted digital signatures as enforceable in courts.

Electronic invoicing, the practice of submitting all business invoices to the government, can also enable ecommerce. While typically seen as a means to improve tax collection, in Latin America, the broad-based adoption of e-invoicing has pre-empted fraud, improved businesses' accounting practices, and helped businesses use their accounts receivables as collateral to secure working capital and factoring services. Fifteen (15) governments in our mapping have adopted electronic invoicing.

A growing number of governments are adopting digital identities that enable citizens and residents to easily access and navigate e-government and online business services. Twenty-three (23) countries in our mapping have adopted some form of digital ID for individuals, and 20 are piloting or building one. Some governments – most notably Singapore, Estonia, Azerbaijan, and Netherlands – have also established digital IDs for businesses. Using the ID, representatives of a company can authenticate and authorize themselves to access a wide range of e-government services. Corporate digital IDs in particular provide new and important value by enabling a company to associate its data submitted to various government agencies with its ID. As a result, service providers (banking institutions, credit agencies, etc.) can seek a company's permission to access its government and ecommerce marketplace data through Application Programming Interfaces (APIs).

Figure 14 – Digital Transactions Policy Scores for 52 Countries (countries in blue were mapped and scored, in gray were not mapped or scored)

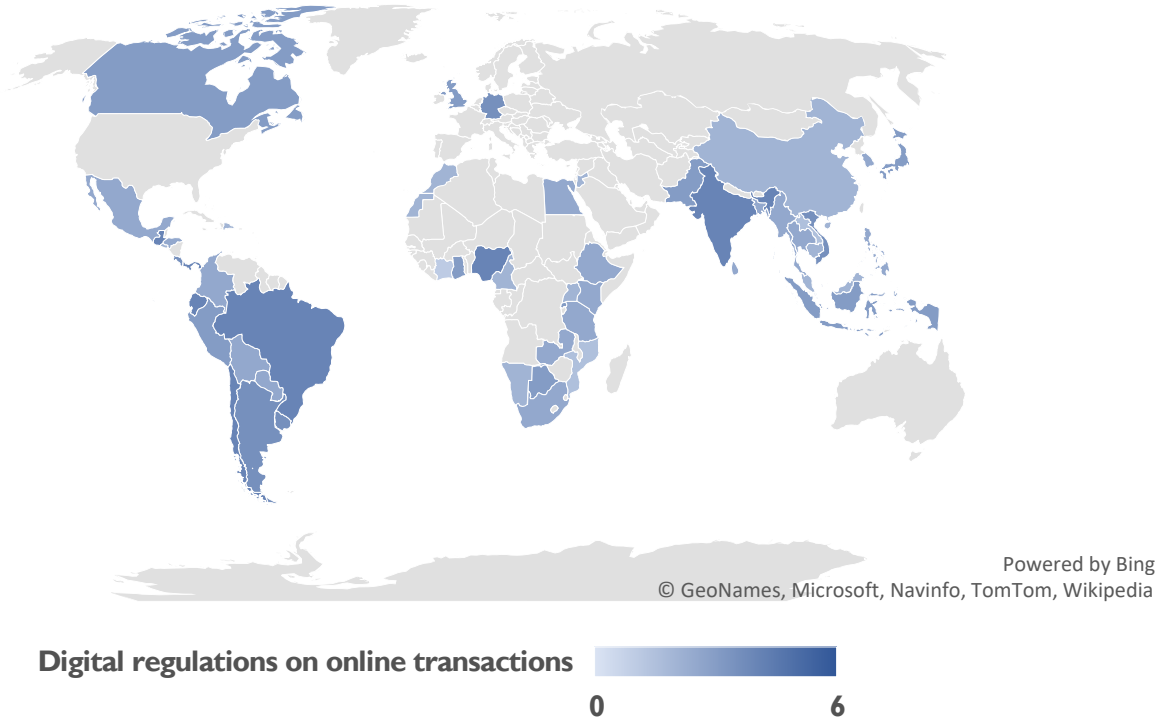
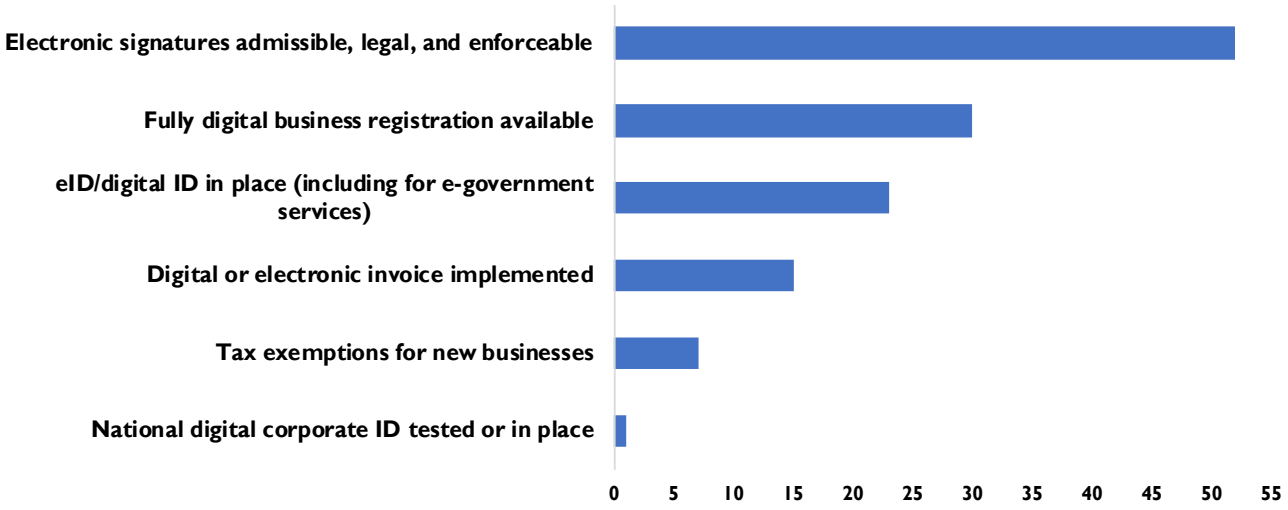


Figure 15 - Number of Countries (out of 52 Countries) that Have Adopted Digital Transactions Policies Conducive to MSME eCommerce



Good policies pertinent to digital registration and transactions:

- Establish fully online one-stop business registration and licensing system.
- Enforce digital signatures laws.
- Pilot e-invoicing systems and train MSMEs to use digital invoicing.
- Develop with the private sector a self-sovereign, data-rich digital identity for MSMEs.

Digital Regulations to Govern Online Activity

Issues such as online liability, cross-border data flows, consumer protection in online transactions, and taxation of digital services have become highly contentious and politicized in recent years. Countries are currently considering and adopting rules pertinent to online platforms' liabilities for content and potential copyright violations on their sites, treatment of consumers' data privacy and transfer of data across borders; and consumer protection online. We find the following trends in these areas.

Safe harbors provide some protection to internet intermediaries from illegal or infringing behavior of their users' activities, such as copyright infringement. These safe harbor policies enable platforms and marketplaces to better service small firms; for example, platforms can accept content that is innovative and protected by free speech without fearing liability for user content. Safe harbors also provide confidence to investors that look to invest in startup platforms. Out of the 52 countries reviewed, 25 countries in our mapping have adopted safe harbors (Figures 16 and 17). However, in some jurisdictions such as European Union and China, safe harbors are increasingly under attack as policymakers look to force platforms to become sturdier gatekeepers of acceptable online content.

All countries in our mapping allow cross-border data transfer, though almost all qualify or restrict data transfer in some fashion. For example, in roughly one-half of the mapped countries, companies must adhere to a combination of requirements to transfer data, such as ensure the "data subject" gave permission to the transfer and that the country receiving the data has an "adequate" data protection regime. A number of countries have also in recent years sought to outright bar the transfer of data across borders. Empirical evidence across multiple studies and reported in section V below is squarely on the side of free transfer of data.[8] Access to data across borders and the ability to send it to other markets is also key to MSME ecommerce, enabling online sellers to access information about their customers, markets, and use global cloud computing and other global digital services.

Consumers' trust of online sellers and transactions is essential for ecommerce markets to prosper. Firms that sell online are highly incentivized to build consumers' trust in online transactions, in order to build their reputation as trustworthy sellers and promote repeat customers. Governments too are cultivating this trust by implementing policy programs intending to promote and verify good online behavior. For example, some countries encourage online sellers to undergo private certification programs that then help consumers identify trustworthy sellers. Many leading governments also protect consumers through laws that govern online advertisements, the purchase process, and return policies. Notably, countries are also offering consumers information on ways to report fraud and present complaints

online and hosting their own online dispute resolution (ODR) to resolve small-scale disputes; in 36 countries, consumers can submit electronically complaints about online transactions to a consumer protection agency.

Taxation of online transactions is a controversial area of policy change that is disputed across governments and is shaping online platforms and sellers' cost structures. Taxing a good or a service after all disincentivizes its use. Further, as digital services have grown as ubiquitous as transportation, financial services, or energy in national economies, taxing these services can raise costs on multiple businesses and undermine productivity. In our mapping, a growing number of countries have levied VAT on digital sales, typically at a level that is at a par with VAT on offline transactions. However, digital services taxes (DST) that tax gross revenue derived from digital goods or services where they are sold (rather than where the technology company producing them is located) can be viewed as discriminatory against countries that are home to leading technology companies.

Figure 16 – Online Behavior Policy Scores for 52 Countries (countries in blue were mapped and scored, in gray were not mapped or scored)

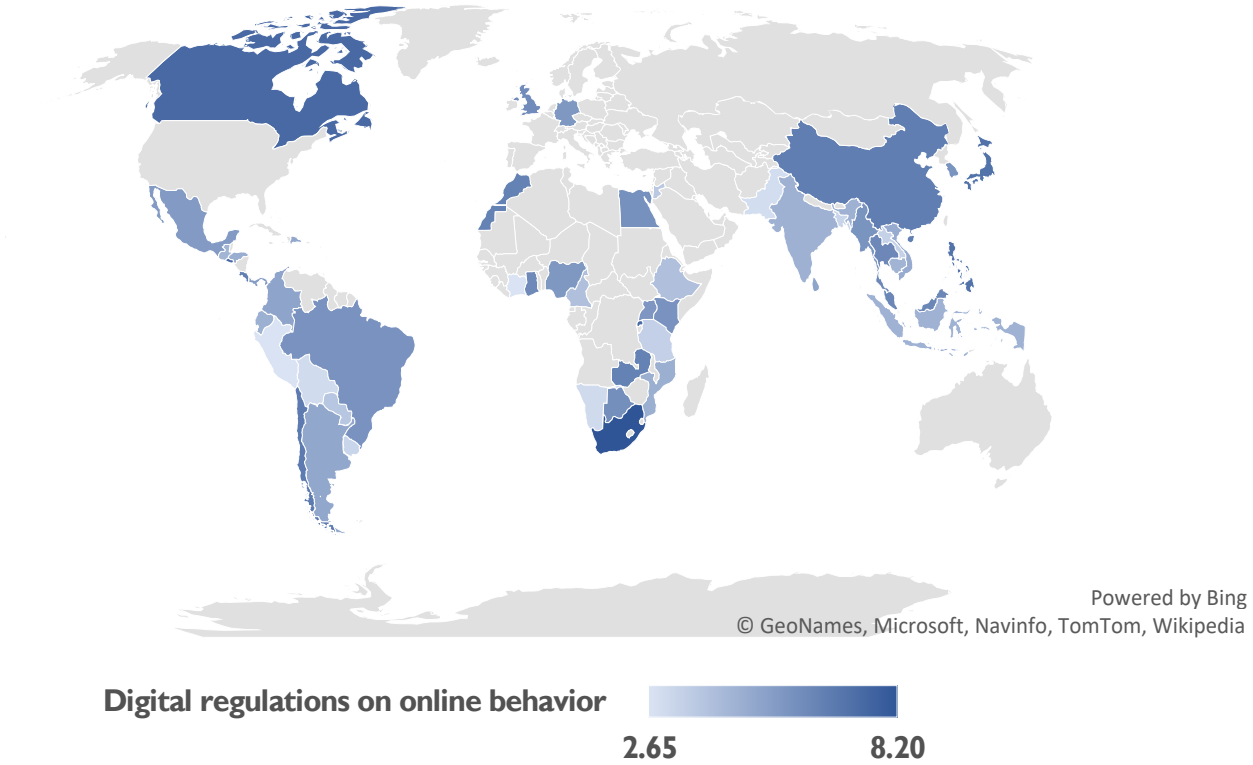
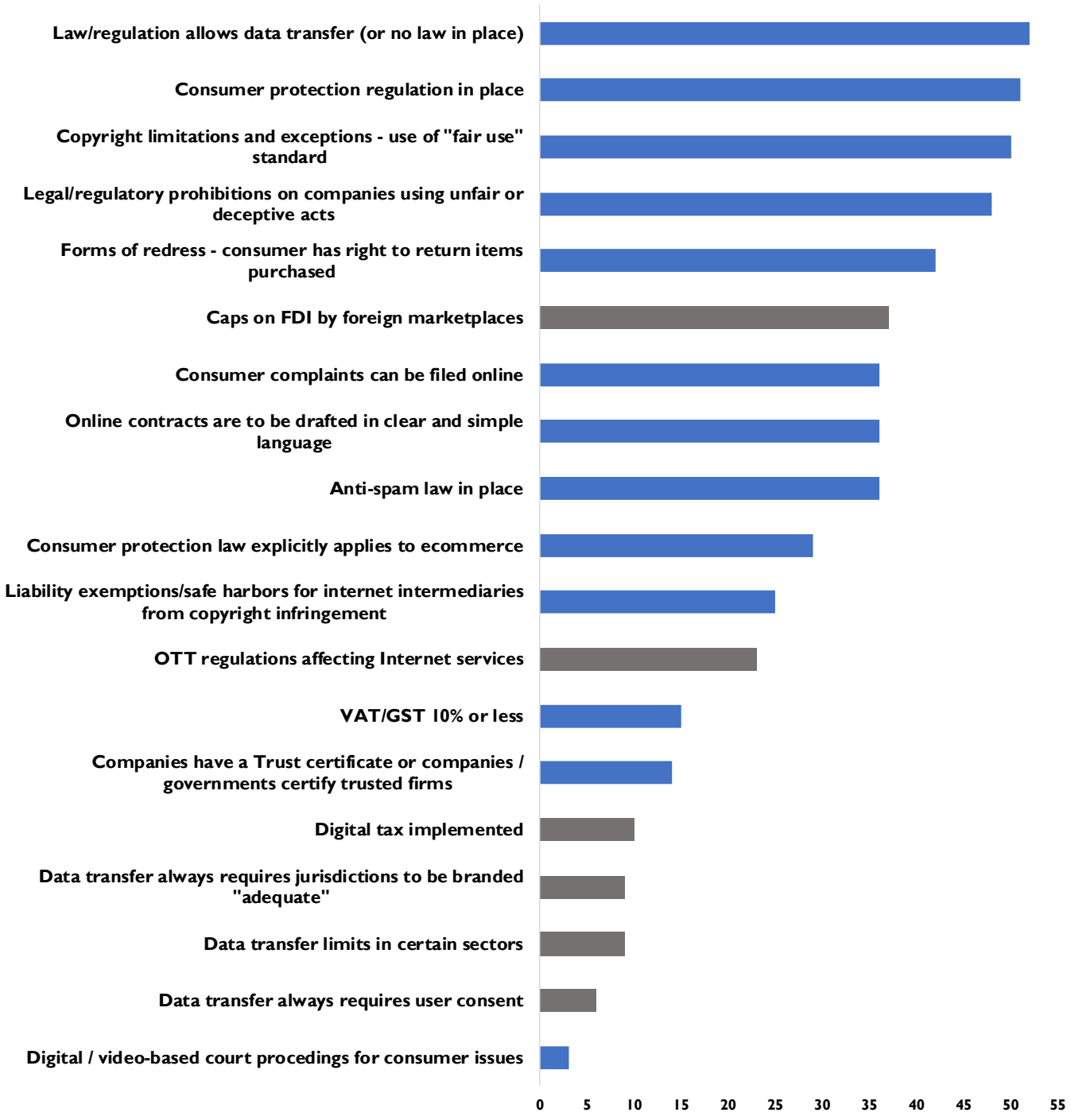


Figure 17 - Number of Countries (out of 52 Countries) that Have Adopted Online Behavior Policies Conducive to MSME eCommerce- bars in gray are negative measures



Good practices on digital regulations governing online behaviors:

- Establish and uphold safe harbor regimes to enable internet platforms to have limited liability for user-generated content.
- Establish data transfer regimes that enable MSMEs to easily access to customer and operational data across markets, global cloud computing services, and global payment networks.
- Create balanced consumer protection laws and practices that build consumer confidence without placing onerous compliance costs on MSMEs; work with the private sector on private certification schemes and trust marks for trustworthy MSMEs.
- Promote online dispute resolution (ODR) systems to resolve small disputes over ecommerce transactions.
- Limit taxation of digital services in order to not disincentivize the use of digital services among local businesses and consumers.

Digital payments

The benefits of digital payments as opposed to cash-based transactions are by now firmly established. Digital payments, especially mobile payments, have proliferated rapidly around the developing world in recent years, and both governments and private providers have helpfully sought to promote interoperability among the many payment systems. The use of digital and contactless payment methods at the point of sale, such as facial recognition, Quick Response (QR) codes, and near-field communications (NFC) has especially grown around the world during Covid-19.

Almost all countries in our mapping have pursued demonetization campaigns and promoted interoperability among payment providers (Figures 18 and 19). All governments have also established e-payment laws that govern electronic payment providers' access to market and behaviors. As the e-payment 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. Singapore's 2020 Payment Services Act usefully calibrates compliance requirement by providers' risk profile. 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. Many developing countries have some risk-based assessment as part of their e-payments laws.

Covid-19 has provoked further discussions on regulations requiring MSMEs to authenticate and authorize buyers in digital transactions. Ecommerce platforms and other ecosystem players are concerned that excessive regulations, especially on the small-ticket transactions that are the backbone of MSME ecommerce, can cause frictions in payment processing and result in cart abandonment and poor user experience. Questions about the best ways to authenticate customers and the potential of technology for doing so are growing in importance; we explore these questions further in section V.

Figure 18 – Payment Regulations Policy Scores for 52 Countries (countries in blue were mapped and scored, in gray were not mapped or scored)

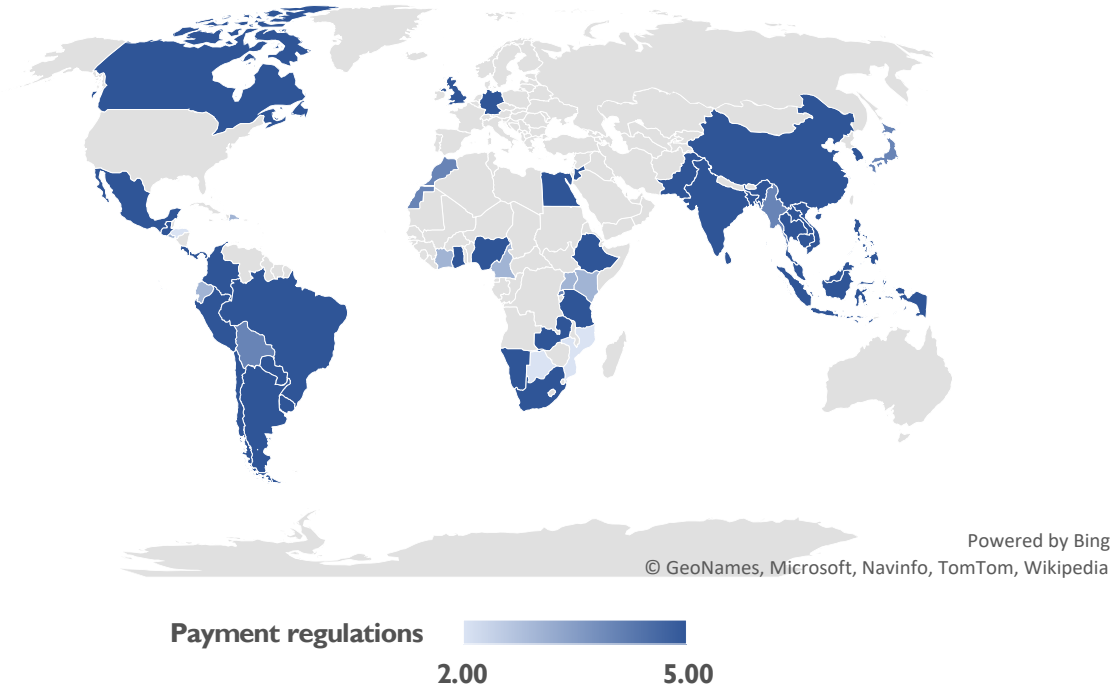
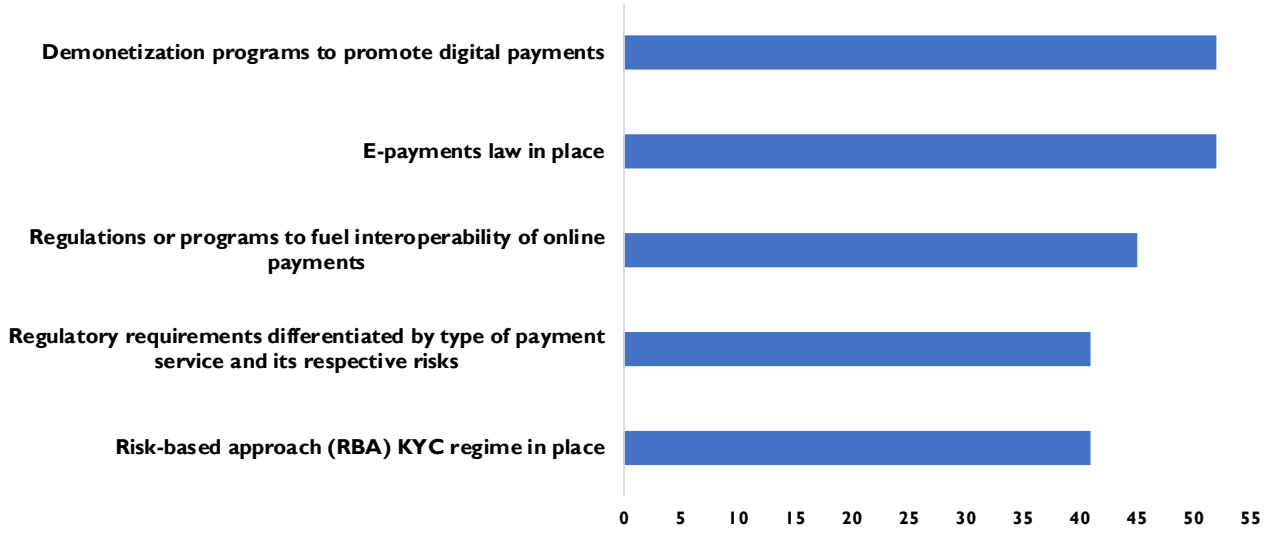


Figure 19 - Number of Countries (out of 52 Countries) that Have Adopted Payment Regulations Policies Conducive to MSME eCommerce



Good digital payment regulations and policies:

- Promote digital payments, such as through incentives and apps for interoperable online payments and low transaction fees.
- Encourage interoperability among digital payment systems, domestically and cross-border, including in consultation with private sector leaders.
- Enable vigorous competition among payment providers and ensure level playing fields among domestic and foreign payment providers.
- Provide clear and nuanced regulatory frameworks calibrated by payment providers' respective services and risk profiles.
- Put in place risk-based approach (RBA) to enable payment providers to focus resources on high-risk customers and transactions.
- Raise limits on payments requiring customer authentication, to enable small ecommerce transactions.
- Encourage technology solutions such as AI to improve and facilitate customer authentication.

Ecommerce logistics and trade facilitation

Efficient ecommerce logistics and customs procedures are critical for MSMEs' participation in cross-border ecommerce. Border processes and logistics also tend to be the main constraint of most countries' MSME ecommerce: surveys shows that MSMEs in the developing world struggle with the total cost of delivery, arcane customs procedures, and costly last-mile delivery, especially in rural areas.

The growth of inbound ecommerce poses a significant challenge for border agencies that need to manage new, large volumes and a greater diversity of discrete items. Numerous countries such as Japan, Netherlands, India, and Jamaica have responded to this "parcel tsunami" by adopting disruptive technologies such as AI and blockchain to automate customs risk management, trace the origin of the shipped goods, and enable border agencies to interoperate, for example by permitting them to access the same data in real-time. In our mapping, 27 countries have adopted or are piloting these types of disruptive technologies in border clearance (Figures 20 and 21). Singapore, Thailand and Japan have built what could be seen as "single windows+", or blockchain-based national trade platforms that enable data sharing on any one shipment among all public and private sector actors that are involved with the shipment.

Many governments have also made progress in recent years on trade facilitation, including implementing various provisions of the Global Trade Facilitation Agreement (TFA). These efforts have been further accelerated by the Covid-19 pandemic, as governments have sought to digitize trade documents and processes to be able to process documents and data remotely. However, many countries, especially less developed countries, have yet to implement even many of the basic TFA provisions such as paperless trade practices, expedited clearance, separation of duty payments from customs release, e-payments, and digital single windows. Most countries also remain reluctant to increase customs *de minimis* levels

even though many studies show that administering duties and taxes on low value items costs more than the duty generates in revenue, and overall raises costs to importers and consumers.[9]

Ecommerce logistics challenges do not of course stop at the border; inland logistics and last- and first-mile delivery systems are critical to delivery times and costs. One key reform to improve national logistics is to liberalize maritime and hinterland logistics markets; another is to upgrade national postal services to facilitate ecommerce. In our mapping, 40 postal services have adopted innovative practices for ecommerce delivery, such as parcel lockers, distribution hubs, drone delivery, or digital addressing systems – a significant increase from just two years ago. Many countries such as Rwanda and South Africa are also testing contactless delivery and drone delivery models in response to Covid-19.

Figure 20 – Trade Facilitation and Ecommerce Logistics Policy Scores for 52 Countries (countries in blue were mapped and scored, in gray were not mapped or scored)

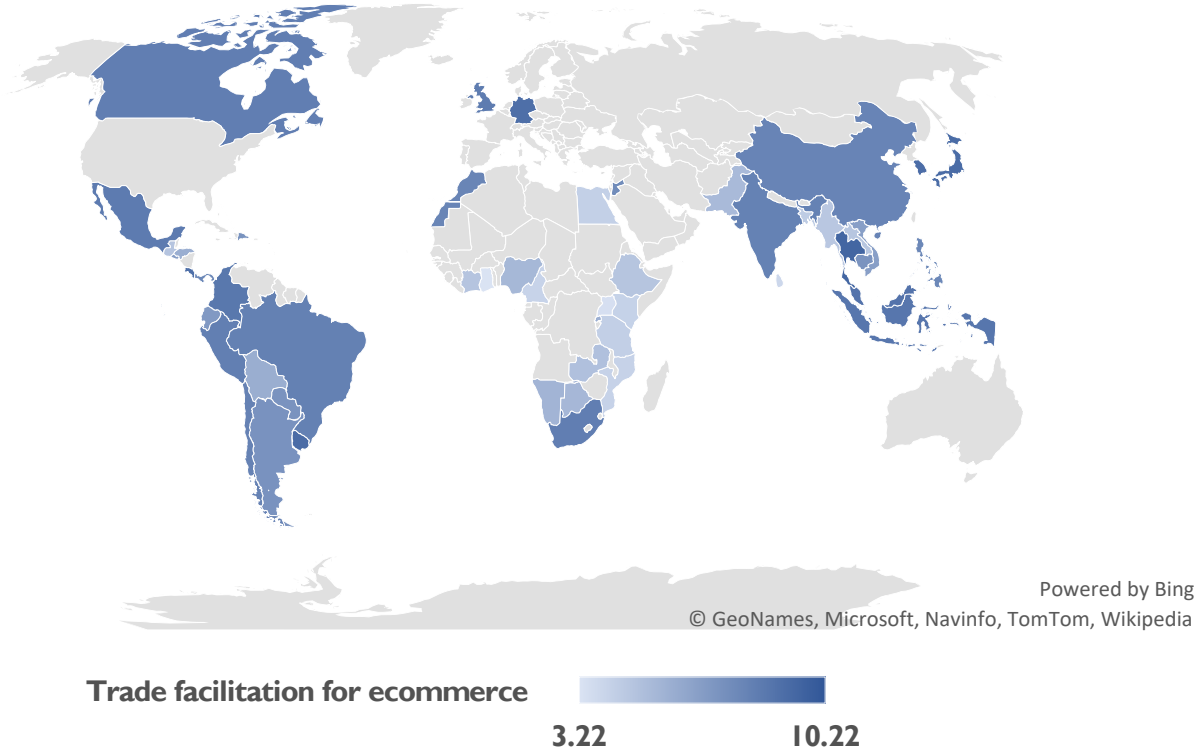
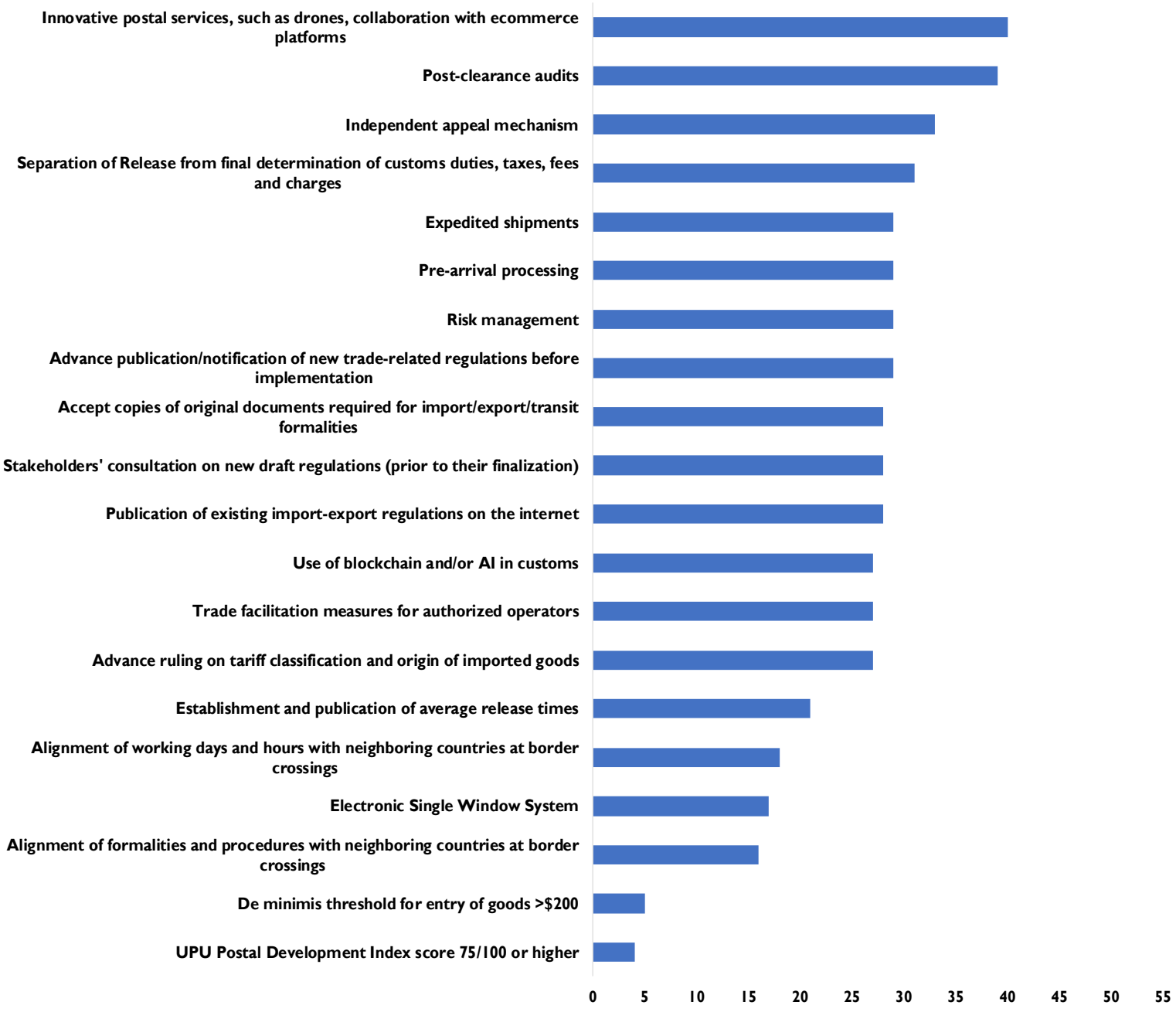


Figure 21 - Number of Countries (out of 52 Countries) that Have Adopted Trade Facilitation and Ecommerce Logistics Policies Conducive to MSME eCommerce



Good ecommerce-related trade facilitation and ecommerce logistics policies:

- Implement TFA and paperless trade commitments.
- Accelerate the consideration of disruptive technologies such as AI and blockchain in border management, especially to handle the burgeoning ecommerce volumes.
- Accelerate the adoption of digital single windows and consider next-generation single window systems to share data among public and private sector service providers.
- Encourage postal services to facilitate MSMEs' domestic and cross-border ecommerce fulfilment, perform door-to-door delivery, and adopt digital addresses for the address-less.
- Set up centers of innovation in inland and rural logistics, such as to test middle-mile and last-mile drone delivery.
- Stimulate international competition in courier, warehousing, and land and air cargo sectors.

Cybersecurity policies pertinent to MSMEs

Countries around the world are concerned about cybersecurity risks, especially ones that face MSMEs, which are often especially vulnerable to attacks. Firms that have extensive data on customers and transactions, such as online MSMEs, are perhaps particularly attractive to cyber criminals. Cybercrime is also an inherently transnational challenge where one attack or attacker can quickly inflict serious damage on firms and supply chains across multiple countries.

The leading international response to cyber threats is the 2004 Budapest Convention on Cybercrime, which aims to harmonize national cybersecurity laws, improve investigations, and increase cooperation among nations. Seventeen (17) countries in our mapping belong to the Convention. In addition, a majority of the 52 countries in the sample have been working on cyber strategies and laws and either have recently passed them or are currently discussing them, many of which are aligned with the Budapest Convention (Figures 22 and 23). A growing share of governments also have Computer Emergency Readiness Teams (CERTs) that analyze and pre-empt cyber threats and vulnerabilities, and coordinate incident responses.

Several governments in our mapping have also sought to build MSMEs' awareness about cyber risks, using websites, informational campaigns, and workshops. Some governments have also been proactive in supplying MSMEs with cybersecurity technologies. For example, Singapore, Australia, and local governments in the United States are helping MSMEs purchase cybersecurity capabilities and catalyzing investments in startups that provide cybersecurity solutions tailored to the needs and budgets of MSMEs.

Figure 22 – Cybersecurity Policy Scores for 52 Countries (countries in blue were mapped and scored, in gray were not mapped or scored)

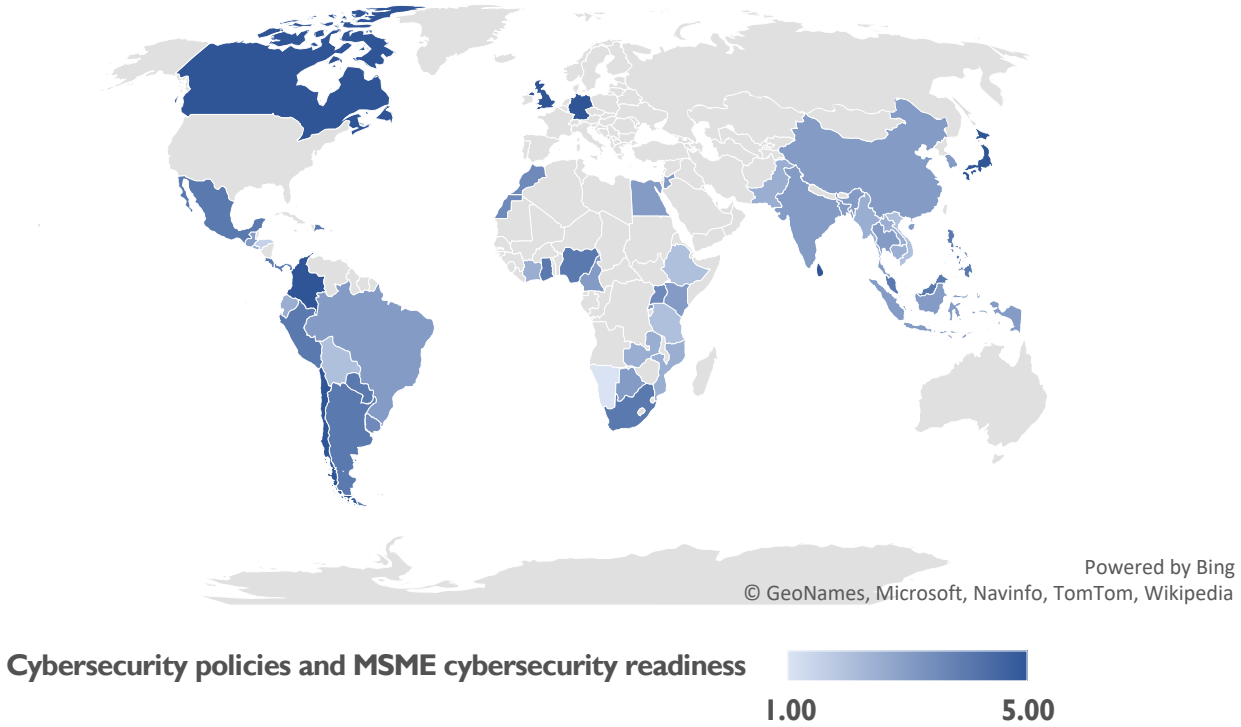
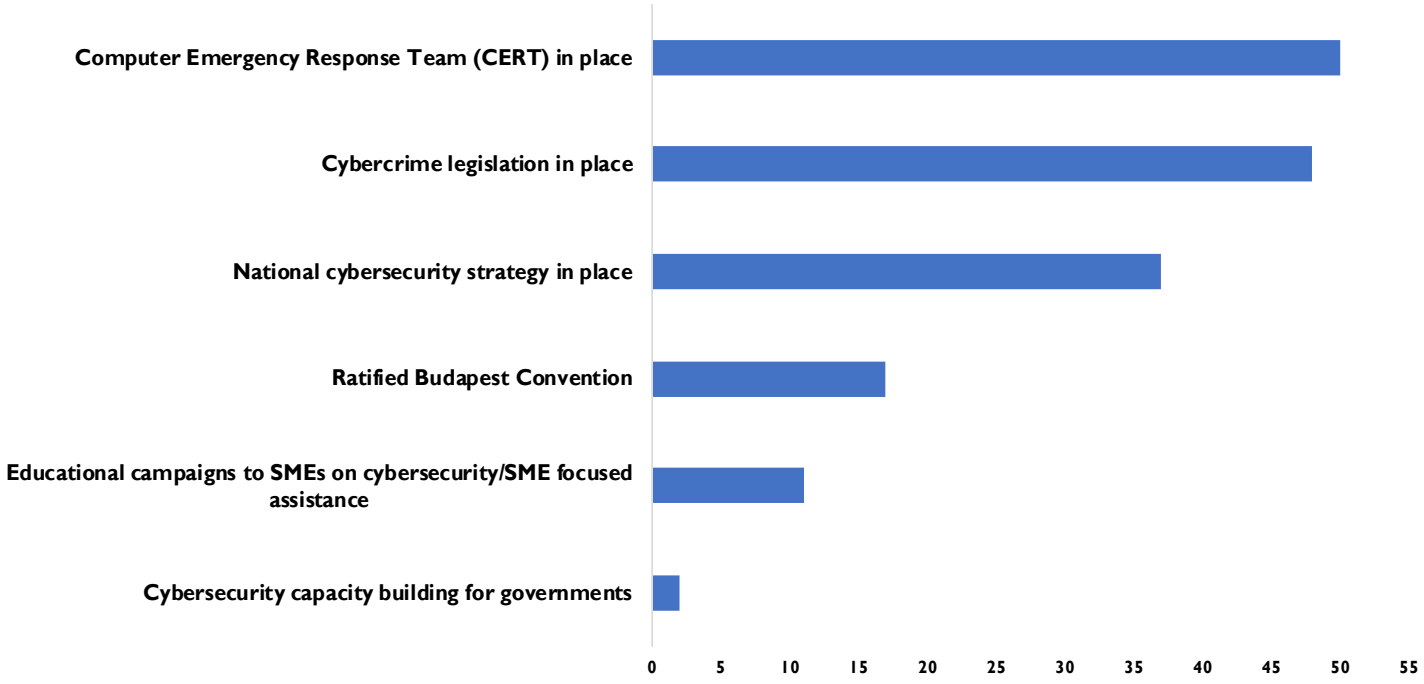


Figure 23 - Number of Countries (out of 52 Countries) that Have Adopted Cybersecurity Policies Conducive to MSME eCommerce



Good cybersecurity policies and practices

- Adopt CERTs and the baseline recommendations of the Budapest Convention.
- Leverage the 2018 U.S. Commerce Department's National Institute of Standards and Technology (NIST) Cybersecurity Framework Version 1.1 as a public-private model for addressing cybersecurity challenges.
- Provide funding for MSMEs to acquire cybersecurity technologies and staff capabilities.
- Create innovative campaigns with private investors to promote the development of cybersecurity solutions tailored to MSMEs.
- Promote MSMEs' awareness about cybersecurity solutions and encourage adoption of cybersecurity capabilities through innovative approaches, such as by requiring MSME government contractors have certain cyber-defenses.

Export promotion and digital capacity building for MSMEs

Ecommerce opens great opportunities for MSMEs to export, but many small non-exporting firms in developing countries often feel they lack the capabilities. Further, firms that sell online domestically, whether as social sellers or via their own online stores or local marketplaces, still rarely export using ecommerce.

To address these constraints, leading export promotion agencies around the world have focused on enabling MSMEs through public-private partnerships with online marketplaces and other ecommerce ecosystem service providers. Twenty-four (24) governments have formed public-private partnerships to promote MSME ecommerce (Figures 24 and 25). Some export promotion agencies have gone as far as building their own marketplaces, but these are unlikely to generate many sales; developing a marketplace brand and buyer base requires larger investments that are not available to export promotion agencies. A far better strategy is for export promotion agencies to partner with global online marketplaces that have world-class capabilities and resources to promote their MSMEs sellers.

Export promotion agencies encounter a perennial tension between offering customized services that meet the needs of each specific firm while extending those services at scale to reach firms across their countries. Thirty (30) governments have sought to resolve this tension through technology; for example, some governments have mounted online training campaigns that provide ecommerce-related capacity-building in a scalable fashion to firms around their countries. Some export promotion agencies, perhaps most notably Malaysia's MATRADE, also offer financing for firms to build online marketing and sales capabilities.

Figure 24 – MSME eCommerce Export Promotion Policy Scores for 52 Countries (countries in blue were mapped and scored, in gray were not mapped or scored)

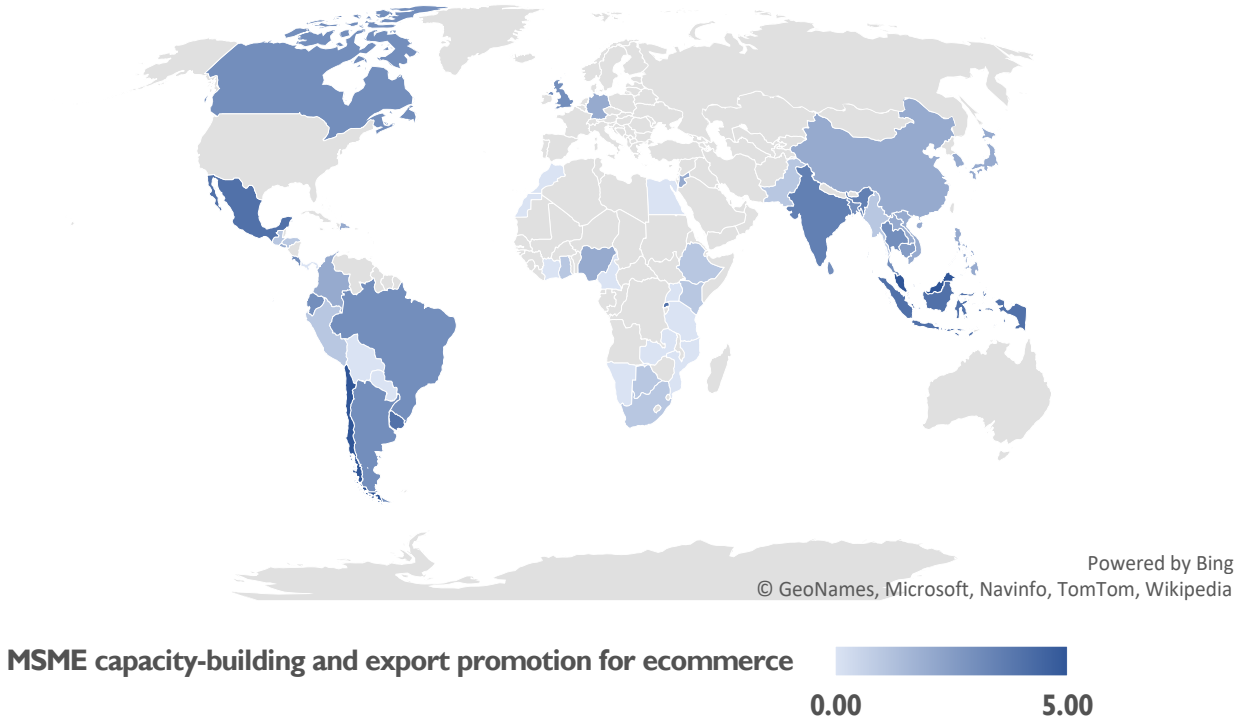
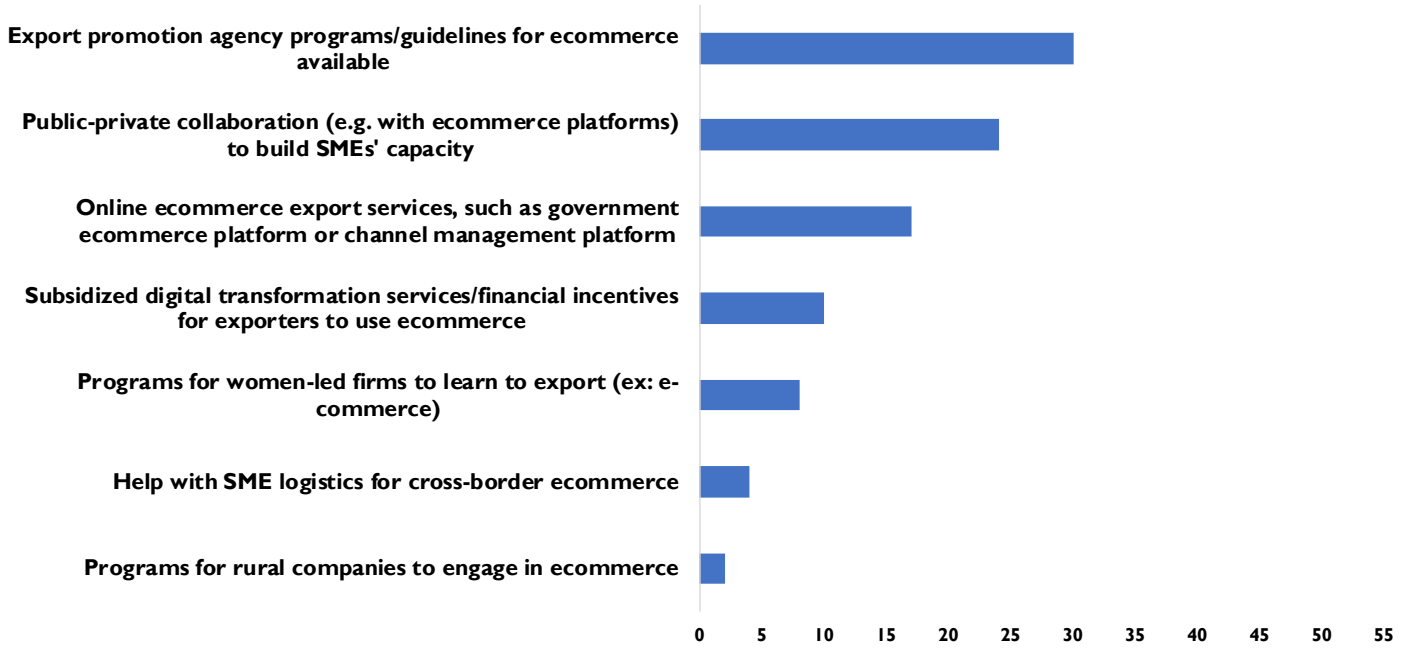


Figure 25 - Number of Countries (out of 52 Countries) that Have Adopted eCommerce Export Promotion Policies Conducive to MSME eCommerce



Good ecommerce export promotion practices:

- Develop scalable and customizable online training services for MSMEs to learn about using platforms to export.
- Build public-private partnerships with regional and global marketplaces to select and onboard MSMEs poised to succeed in ecommerce; partner also with logistics providers (for example for cargo consolidation), payment providers, and digital marketing firms to offer MSMEs a holistic set of services to engage in cross-border ecommerce.
- Provide financial support for companies and collectives to export using ecommerce, and to fund their digital transformation.
- Use AI-powered online training portals customized to each company's unique circumstances, market opportunities, and needs.
- Promote peer learning among MSMEs that are seeking to sell on marketplaces or have successfully done so.
- Promote women-led firms' online exports, such as through training and financing.

MSME finance

In surveys, MSMEs highlight lack of access to finance as the key constraint for them to engage in ecommerce and export. The main challenges range from the difficulty of securing working capital to fulfill online orders, finding longer-term funding for digital transformation, and obtaining trade finance to ensure exporters gets paid for a cross-border shipment, especially in B2B transactions.

Most governments have for years sought to bridge MSMEs' financing gaps by offering guarantees on bank loans, including export working capital loans (Figures 26 and 27). Many governments have sought to expand MSMEs' access to finance further in recent years, such as by lending to MSMEs directly; these efforts have been amplified in response to Covid-19. In our mapping, 25 countries offer such direct financing.

In recent years, governments have also rolled out early-stage financing facilities to nurture technology start-ups, including new online marketplaces or logistics companies. Evidence suggests these facilities can deliver results if the government plays a more indirect role and acts as a limited partner or a "fund of funds" that invests in privately managed funds that then invest in startups.[10] In 15 of the mapped countries, the government has taken the role of a limited partner; in 20, it acts as a general partner, investing directly in startups.

A rapidly growing number of countries – 40 in our mapping – have specific financing programs for women entrepreneurs. The leading example is Business Development Canada's $200 million Women in Technology Fund that seeks to create the next generation of Canadian women technology entrepreneurs. Such government funding is catalytic, helping to mobilize private investors to back women-led firms.

In addition to creating new MSME financing windows, a growing set of governments are establishing modern regulatory frameworks to facilitate MSMEs' access to finance from alternative providers unhampered by the heavy financial regulations to which traditional banks are subject. These regulatory frameworks found in our sample include open banking practices (12 countries), regulatory sandboxes for Fintechs (22 countries), and equity crowdfunding laws (14 countries). Governments can also guarantee loans offered by Fintechs to encourage Fintech lending to a broader set of MSMEs and lower Fintechs' cost of capital. Mexico has a nascent program to help guarantee financing from investors to Fintechs that lend to MSMEs.

Figure 26 – MSME Finance Policy Scores for 52 Countries (countries in blue were mapped and scored, in gray were not mapped or scored)

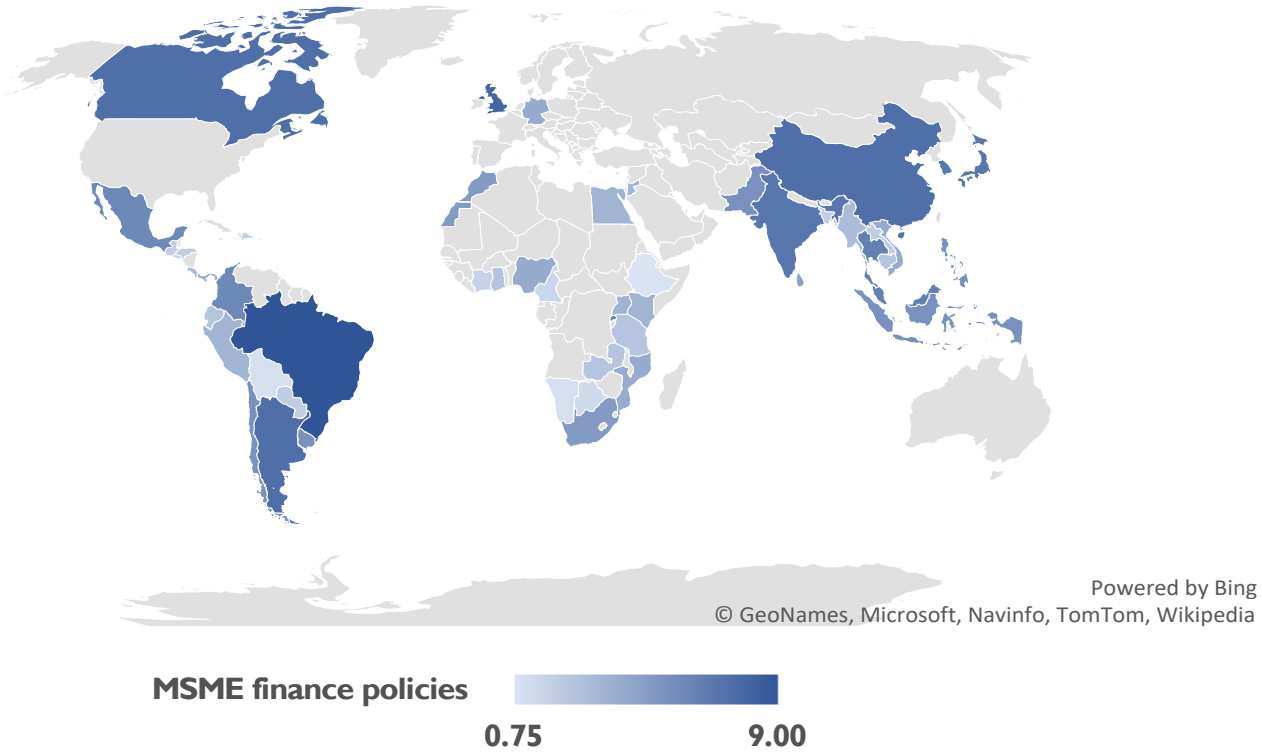
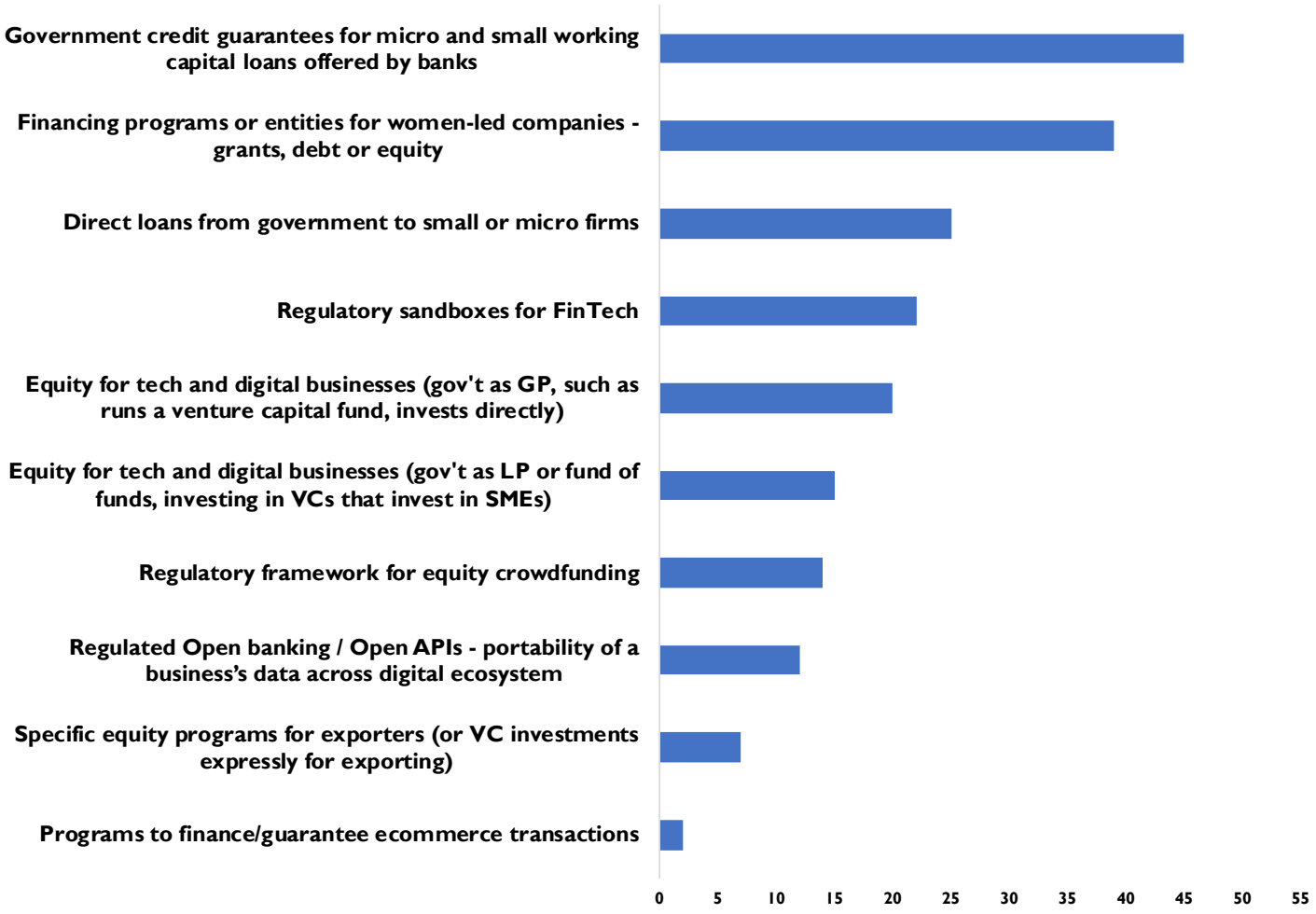


Figure 27 - Number of Countries (out of 52 Countries) that Have Adopted MSME Finance Policies Conducive to MSME eCommerce



Good MSME finance policies and practices:

- Provide direct loans to MSMEs to support their ecommerce businesses.
- Expand MSME loan guarantees traditionally offered to banks to Fintechs, for them to lend to a wider set of MSMEs at lower cost.
- Promote alternative finance solutions, such as through open banking practices, regulatory sandboxes, and equity crowdfunding laws.
- Encourage open finance – portability of businesses' data across digital ecosystem, such as between ecommerce platforms and banks.
- Develop financing programs to support firms' digital transformation campaigns aimed to streamline and strengthen their online presence and backend operations.
- Support women's financial inclusion and offer loans and equity financing for women-led companies.
- Adopt a fund-of-funds approach to expand early-stage investments in ecommerce and digital businesses.

E-procurement to encourage public sector purchases from MSMEs

MSMEs have traditionally been outclassed by large firms in government procurement, securing fewer contracting opportunities than their aggregate economic weight would suggest. Bidding processes can easily become stacked against small firms, as public sector entities tend to prefer larger procurements due to the fixed costs associated with each procurement. Thus, procurements will often be large in terms of quantity, scope, and geographic area. Further, MSMEs are likelier than large firms to have capacity constraints and limited geographic footprint to execute on such projects.

E-procurement – essentially, B2G ecommerce – is increasingly used to create new efficiencies and greater transparency in the public procurement process, especially to help MSMEs better access bid documents, prepare bids online, and easily see the universe of available bids. In our mapping, 50 countries have digitized procurement notices, and 38 have made procurement documents available online (Figures 28 and 29). Governments have also used technology to subdivide larger contracts and publicize them online to encourage MSME participation. Some governments, such as Mexico and Canada, have been testing blockchain to track and validate bidders and purchases as well as combat corruption and human error in procurement processes.

A number of governments have also created innovative processes and policies to further improve MSME e-procurement, such as create product catalogues of government suppliers, contractors and consultants that government buyers can then peruse to understand best-in-class supply in the market regardless of the size of the firm. India has promoted women-led firms in government procurement in this fashion. Some governments have long promoted MSME access to some "fair proportion" of government contracts through practices such as quotas and set-asides. Such practices have been adopted in Australia,

Canada, Malaysia, South Africa, the UK, and the United States. Economic research reviewed in section V sides with procurement processes that do not necessarily involve quotas or set-asides, but that are focused on transparency, easier and faster processes, and ensuring a level playing field in access to procurement information and documents. E-procurement, when well-designed and executed, can be an effective means to help MSMEs compete for government contracts, and potentially pre-empt the need for quotas.

Figure 28 – E-procurement Policy Scores for 52 Countries (countries in blue were mapped and scored, in gray were not mapped or scored)

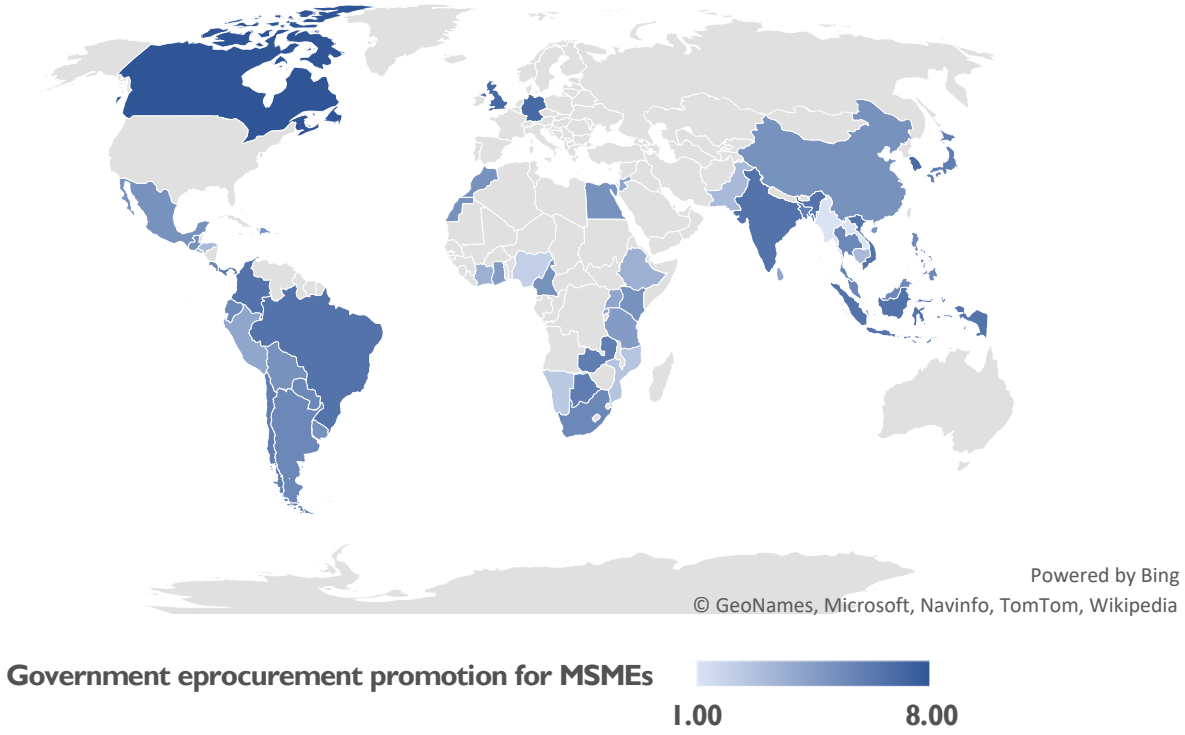
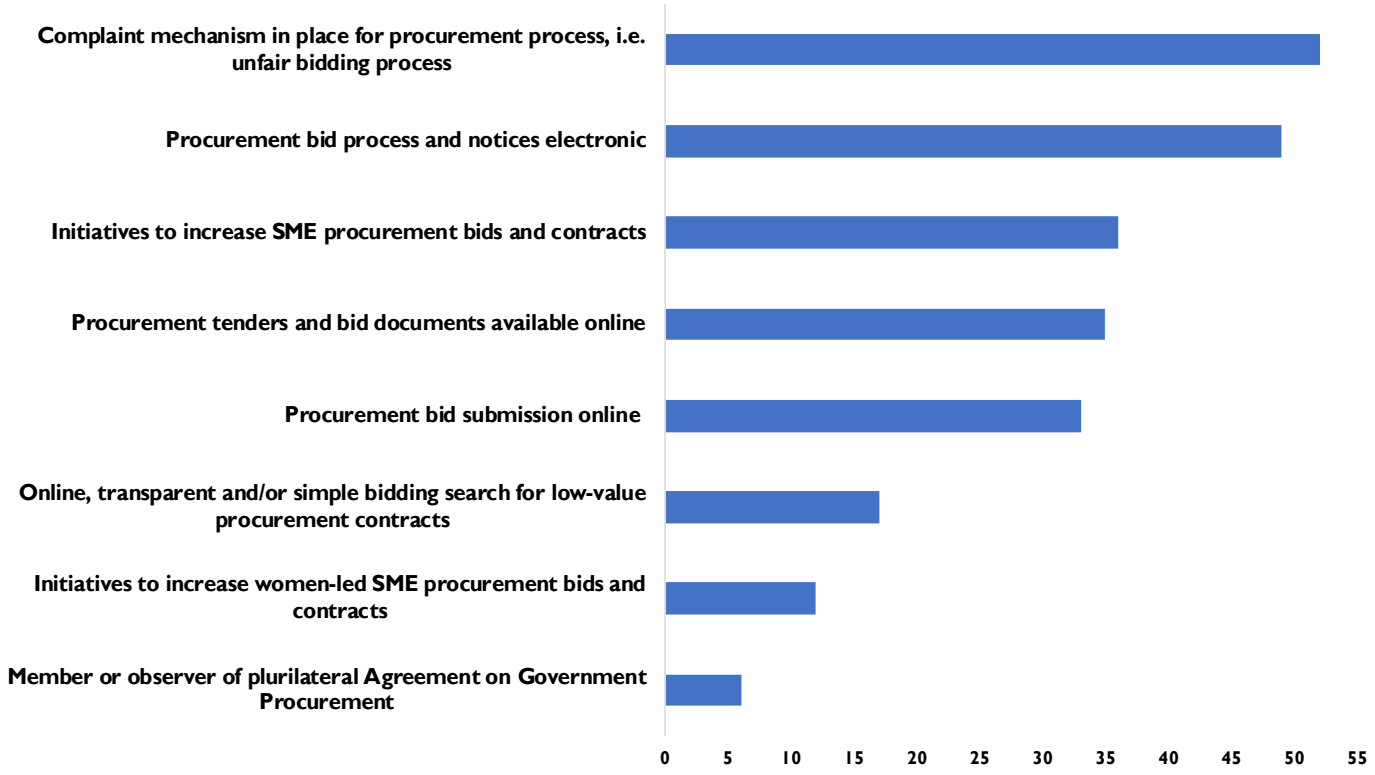


Figure 29 - Number of Countries (out of 52 Countries) that Have Adopted E-procurement Policies Conducive to MSME eCommerce



Good practices in E-procurement for MSMEs:

- Use e-procurement to enable MSMEs to better access information on public procurement markets and bid documents and to manage their profiles and bids.
- Ensure MSME contractors have adequate cash flow to execute on contracts, for example by increasing advance payments.
- Subdivide larger contracts and publicize them online to encourage MSME participation.
- Pilot technologies such as blockchain-based solutions to safeguard the integrity of the procurement process and build new efficiencies for MSMEs, such as reducing duplicate entries and enabling data-share with local government bidding processes.
- Monitor agencies' implementation of procurement mandates aimed to help MSMEs compete for bids.
- Join the plurilateral WTO Agreement on Government Procurement (GPA) to enable MSMEs to participate in public procurement processes in foreign countries.

National ecommerce plans, strategies, and statistics

Governments around the world have been building national digital strategies in recent years, to encourage the digitization of transactions and government services, and to ensure benefits of digital technologies reach the poor and traditionally underserved segments. By now a growing number of the mapped countries such as Cameroon, Brazil, and Pakistan, have also set out to develop national ecommerce strategies or plans, especially to promote MSME ecommerce (Figures 30 and 31). These strategies typically involve extensive consensus-building among numerous stakeholders to secure and assign resources to identified priorities.

Governments around the world are also seeking to measure ecommerce use among consumers and MSMEs, as well as to better track their countries' domestic and cross-border ecommerce volumes. Most countries in our mapping have yet to produce statistics on ecommerce use, although some have collected smaller samples of data through entities like export promotion agencies. A number of advanced nations have measured ecommerce flows and use of ecommerce in their economies through national censuses and business surveys. In emerging markets, Mexico's National Institute of Statistics and Geography (INEGI) stands out for collecting data on the gross value-added of ecommerce in the economy, and for surveying the extent to which households use ecommerce to sell and buy online. Thailand's Electronic Transactions Development Agency (ETDA) has done exceptional work in surveying firms and consumers' use of ecommerce every year. Overall, however, the measurement of ecommerce flow and use is globally still in its infancy, but will be key to tracking the results of the various ecommerce strategies and plans countries are now putting in place.

Figure 30 – eCommerce Strategy and Statistics Policy Scores for 52 Countries (countries in blue were mapped and scored, in gray were not mapped or scored)

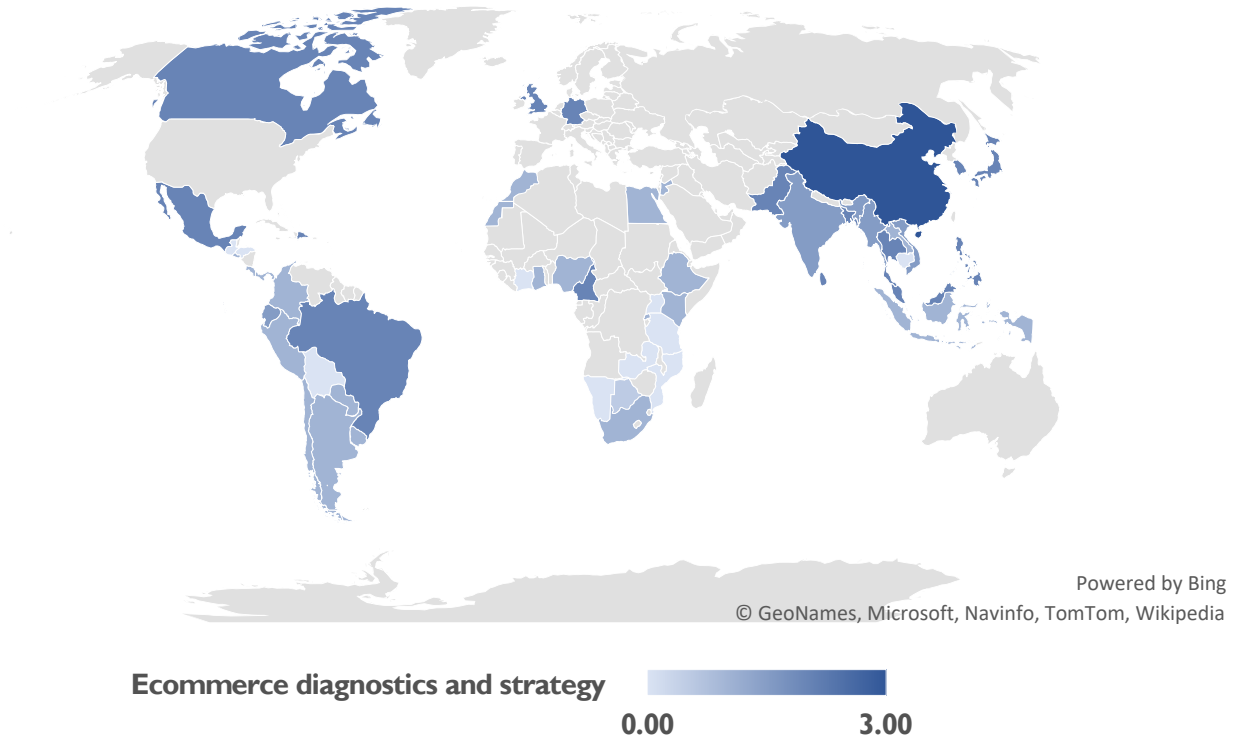
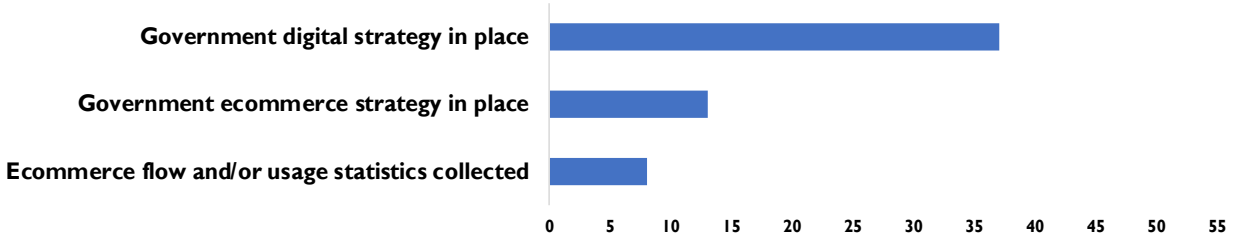


Figure 31 - Number of Countries (out of 52 Countries) that Have Adopted eCommerce Strategies and Statistics Policies Conducive to MSME eCommerce

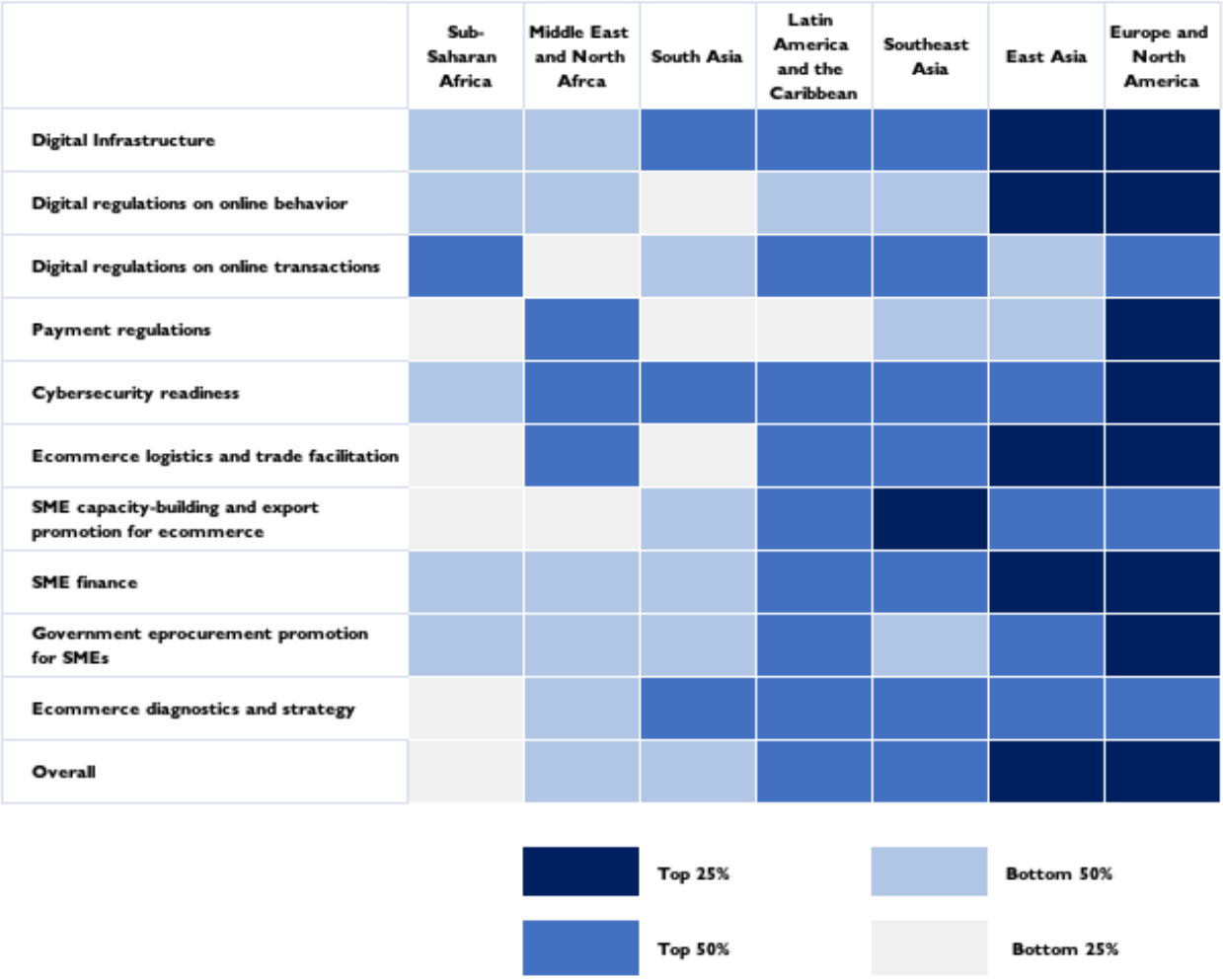


Good practices in national ecommerce plans and strategies:

- Develop national ecommerce plans to focus stakeholders' attention and actions behind supporting MSMEs' ecommerce.
- Include ecommerce-related questions in national censuses and business surveys.
- Leverage domestic and cross-border parcel shipment data from national postal offices to track ecommerce in goods.
- Track ecommerce in services through data on trade in services, separating out digitally deliverable services for all services.

After scoring each of the 52 countries across each of the 10 policy categories, we took the average score for each region in each category, and compared them with the spectrum of scores for each country. The Europe and North America regional scores came out on top, scoring consistently in the top 25% for most categories. Southeast Asia and Latin America and the Caribbean were in the top 50% of scores, while South Asia and Middle East and North Africa were in bottom 50%. Sub-Saharan Africa was in bottom 25% of scoring overall (figure 32).

Figure 32 – Summary of Governments' Adoption of Policies Conducive to MSME Ecommerce, by Subregions



C. PRELIMINARY LOOK AT REGULATORY FRAGMENTATION VS. INTEGRATION

Restrictive and complex national policies can discourage MSMEs' use of ecommerce. Certain digital regulations such as stringent data transfer regimes can also have protectionist implications and undermine foreign competitors. Another dimension in considering regulations that enable MSMEs' cross-border ecommerce is regulatory fragmentation – similarities and differences between national policies and regulations with those of foreign countries. Divergent regulations across markets would hamper MSMEs from taking advantage of ecommerce and scaling across markets – similarly as to how divergent national product standards might limit small businesses' export diversification.

How different are national policies pertinent to MSME ecommerce from each other? Is there *de facto* policy harmonization – or splintering of the global digital economy by national regulations?

We pioneer in answering these questions by constructing an indicator of regulatory differences across countries in key digital regulations that shape MSMEs' compliance costs in ecommerce: (1) use and transfer of customer data; (2) consumer protection rules including rules around unfair or deceptive acts; (3) structure of online contracts; (4) use of trust marks for online sellers; (5) copyright such as use of fair use standard; (6) liability for online copyright infringements; (7) e-payments; and (8) taxes pertinent to online sales (especially digital services taxes and VAT/GST).

The methodology is a simple average of regulatory similarities in these 11 areas; pairs of countries that share the same regulations or regulations with similar intent across these areas would have a perfect score of 1, whereas pairs that did not have any similarities in their regulations would receive a score of 0.

This mapping echoes the Organization for Economic Cooperation and Development's (OECD) Digital Services Trade Restrictiveness Heterogeneity Index that measures differences in national regulations impacting market access of digital services among selected country pairs. However, our measure focuses on similarities among countries and on regulations that impact MSMEs' daily operations and transactions, including online marketing, fulfillment, and taxation. Cross-country differences in these types of regulations add to MSMEs' compliance costs and have been found to significantly undermine cross-border ecommerce, for example in Europe, where the impacts of heterogeneity of national digital regulations on ecommerce has been studied.[11]

Our analysis suggests that particularly advanced economies have rather similar regulatory regimes with each other, as do countries in certain subregions such as the Southern Cone of Latin America. Southeast Asian countries have the highest degree of regulatory divergence. Sub-Saharan African countries fall in between, featuring similarly less complete regulatory regimes across countries and similar regulatory approaches. The results reflect cross-country differences in countries' development levels and the importance of ecommerce in their economies – which are great among the mapped Southeast Asian countries and more moderate among the mapped sub-Saharan African countries.

Figure 33 – Similarities in National Digital regulations within regions (1 = all countries within a region share the same regulations; 0 = all countries have different regulations)

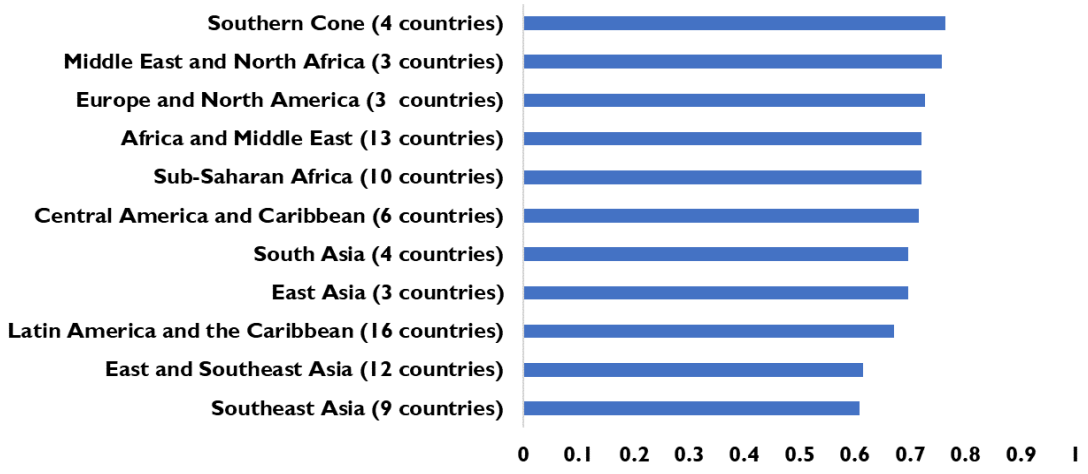
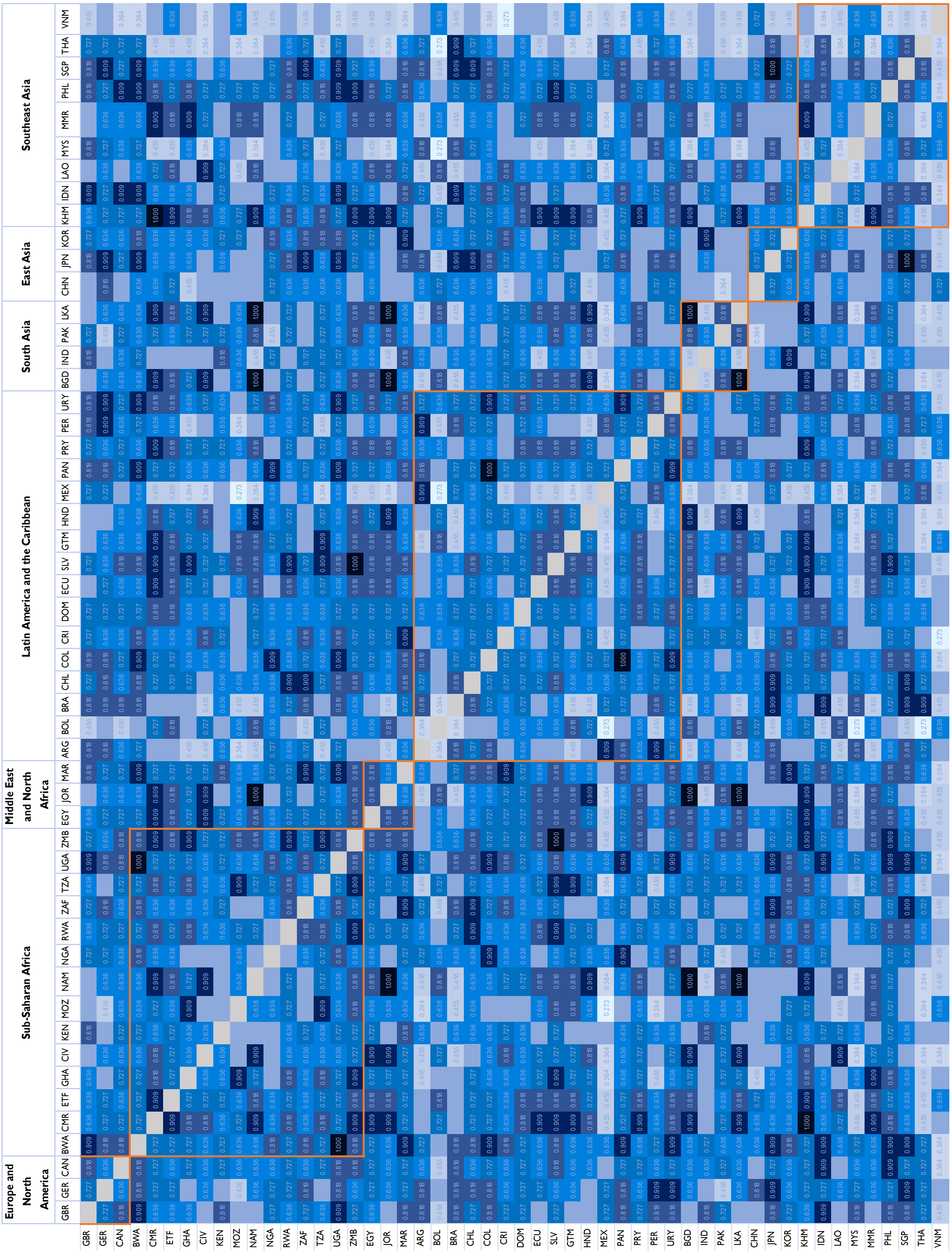


Table 2 - Similarities in National Digital regulations (darker blue = more similar)



D. LOCAL ECOMMERCE POLICIES: HOW ARE CITIES ADVANCING MSME ECOMMERCE?

This policy mapping has covered national polices in 52 countries. However, many policies pertinent to ecommerce are being developed by local governments. These are beyond the scope of the mapping done for this report and will be subject to another analysis we are carrying out in late 2021. However, some examples of local policies that are pertinent to ecommerce development in countries are included below:

- **Attracting investment in ecommerce sector.** Local governments are competing for domestic and foreign investment, including by ecommerce giants. There was particularly fierce competition for the second Amazon headquarters among cities such as New York, Arlington, and Los Angeles. The new location promised a $5 billion construction project and 50,000 new jobs.[12] In total, 238 cities in the U.S. submitted proposals, of which 26 are publicly available.[13] Cities often use financial incentives in order to attract ecommerce giants, such as tax breaks, cash grants, and promises to fund infrastructure and workforce development. In China, the city government of Hangzhou, home of Alibaba, works to attract and retain technology and support the city's ecommerce ecosystem through targeted workforce policies, tax breaks, and financing.[14]

- **Promoting MSMEs' ecommerce capacities and digital transformation**. City governments have also started to promote MSME digitization and ecommerce. For example, the city of Quito in Ecuador has run workshops for local MSMEs to digitize their businesses. Similarly, the city of Buenos Aires has launched a five-part course in response to Covid-19, which helps businesses transform and begin selling through ecommerce by providing information on the most common platforms to create an online shop as well as how a company can maintain its own online shop, logistics, payments, returns, and social media marketing.[15] Madrid has long operated diverse and extensive programs to support MSME ecommerce development as well as fund firms' digital transformation projects (see Case 13 in Section V).

- **Promoting ecommerce warehousing and logistics**. Several large, congested cities such as São Paulo and New York have developed plans and incentives for streamlining ecommerce delivery. For example, New York has incentivized night-time deliveries when roads in Manhattan are clearer. Cities have also worked with warehouse operators to enable investment in urban warehouse space. For example, in 2020, the city of Houston launched the Empire West Business Park, a 300-acre industrial development with over 1 million square feet of warehouse space mostly aimed for ecommerce retailers.[16] São Paulo and Bangalore have also worked with the World Bank to develop a new tool that helps evaluate how different transport policies and interventions can impact ecommerce logistics in urban areas.[17]

- **Promoting rural ecommerce**. Rural buyers and sellers are often penalized simply for being rural: they face high logistics costs, poor internet connectivity, and limited access to financial and IT services. They also often sell and buy through expensive intermediaries. Bangladesh has launched a project called Ek-Shop to expand ecommerce into the country's rural areas. Ek-Shop provides a one stop marketplace, called a union digital center (UDC), in rural regions around the country. A buyer can go to their nearest UDC and place orders through the representative of the UDC, while a seller can provide and upload their product information onto the Ek-Shop webpage, which will show in all Ek-Shop linked websites around the country.

Further examples are discussed in Table 3. Further data and knowledge about policies local governments around the world are pursuing to enable MSME ecommerce will be essential for guiding local governments and stakeholders to enable ecommerce in their regions. Local action can often be much more targeted, relevant, and faster to enable firms in a specific city or region to digitize and engage in ecommerce. China provides an especially interesting example of efforts to develop local ecommerce ecosystems, in the form of so-called Taobao Villages, which is further detailed in Case 18 in section V.

Table 3 – Illustrative City-Level Initiatives to Promote Ecommerce

	City	Activities
Attracting of investment in ecommerce sector	Arlington, USA	Won the bid for the 2nd Amazon HQ after Virginia extended $573 million in incentives, primarily through $550 million in cash grants, as well as a helipad.[18] Virginia's winning bid offered fewer tax incentives than competing proposals and instead focused on investments in workforce development and infrastructure, such as $250 million to fund a new Virginia Tech campus in Alexandria near the proposed HQ2 site in Arlington that provides degrees in software engineering and computer science.[19]
	Hangzhou, China	Hangzhou, home of Alibaba, works to attract and retain technology and support the city's ecommerce ecosystem through targeted workforce policies and tax breaks and financing.[20]
	Buenos Aires, Argentina	Secured an $800 million investment for an Amazon Web Services facility with the help of a new law that reduced income tax on knowledge industry players from 35% to 15%, and also due to Argentina's vibrant tech sector and talent.[21]
	Hyderabad, India	Amazon Web Services invested $1.5 billion in 2020 into new data centers thanks to Telangana State's policy for data centers which offers easy facilitation and incentives to the firms that set them up in the state.[22]
Promoting MSMEs' ecommerce capacities or digital transformation	Madrid, Spain	Extensive ecommerce development and funding for technology purchases, digital transformation and digital marketing.[23]
	Barcelona	Annual "Digital transformation of commerce" subsidy that covers up to 50% of the project cost to a maximum of 7,500 euros.[24] The subsidy covers expenses related to developing an internet presence, digitizing products, implementing online sales, and digitizing business operations.
	Mexico City, Mexico	Workshop for MSMEs interested in ecommerce; companies delivering ecommerce platforms, logistics and payment solutions, and marketing and social networking platforms.[25]
	Newport News, USA	Program to help local businesses use ecommerce via grants, especially for small, women and minority-owned businesses.[26]

Managing ecommerce warehousing and logistics	New York City, USA	Incentivized night-time deliveries for ecommerce packages when roads in Manhattan are clearer, and established an off-hours delivery program.[27]
	Houston, USA	Launched in 2020 the Empire West Business Park, a 300-acre industrial development with over 1 million square feet of warehouse space mostly aimed for ecommerce retailers.[28]
	Seattle, USA	Plans to install sensors at the curb spaces in its central business district to assist in understanding how much time it takes to accomplish a delivery in the downtown area in order to establish more realistic fee schedules and dynamic pricing for use of curb space.[29]
	Singapore and several European cities	Establishment of Delivery Micro-hubs, which are consolidation centers with a smaller carbon footprint where goods are delivered from warehouses and distribution centers via truck and picked up by the customer or delivered by cargo bike or bicycle.[30]
	London, UK	The Last Mile Logistics Hub consolidates deliveries across central London, reduces traffic and cuts harmful emissions. The initiative which will transform 39 car parking spaces within the underutilized London Wall Car Park into a hub for Amazon Logistics. The final leg of parcel deliveries will be undertaken by e-cargo bikes and people on foot.[31]
Promoting rural ecommerce	Bangladesh	The Ek-Shop project expands ecommerce into the country's rural areas, providing a one-stop marketplace in rural regions around the country. Sellers can upload product information onto the Ek-Shop webpage, and it will be shown on all Ek-Shop websites around the country.[32]
	Derry City, Ireland	Supports up to £10,000 in grants for non-agricultural MSMEs in rural areas; applicants must attend a pre-funding workshop.[33]
	Lincolnshire, UK	Provides grants to SMEs in the Greater Lincolnshire area to implement internal ICT solutions, including cloud data storage, ecommerce platforms, digital systems, etc., via a fixed grant of £1,000.[34]

IV. DETAILED DISCUSSION ON POLICY ADOPTION

The following sections analyze in greater detail the impact of various policies in the ten policy areas covered in this report on MSME ecommerce, discuss governments' adoption of policies conducive to MSME ecommerce, and provide case studies of innovative practices pursued by both advanced and developing countries.

Digital Infrastructures and Technologies

High-quality Internet connections are essential for ecommerce and associated with the growth of international trade.[35] Streamlining processes and documents, digital applications and connectivity also help lower trade costs; for example, U.S. digitally intensive goods and services traded online have 26 percent lower trade cost than do goods traded offline.[36] Other research indicates that firms with high-speed broadband and mobile connections are much likelier to engage in ecommerce.[37] High-speed connectivity provided by fixed and mobile broadband is critical for online services and applications, streaming, browsing, and instantaneous transactions.

While the cost of internet connections has dropped in many countries, enabling more firms and consumers to get online, the quality of connections is often still wanting. Firm-level surveys suggest that MSMEs, particularly those in less developed countries, highlight the lack of good Internet connectivity as a leading impediment for them to engage in ecommerce.[38] The challenge is particularly acute in remote and rural areas.[39] In addition, significant gender disparities persist in the use of the Internet and broadband; globally, 48 percent of women have access to the Internet, compared to 58 percent of men.[40]

The combination of supply-side policies (such as long-term broadband development plans and PPPs) and demand-side policies (such as provision of financial incentives for businesses to adopt broadband) help accelerate the diffusion of broadband when broadband penetration is low.[41] In the 52 countries mapped, 49 countries have adopted supply side policies such as a broadband plan and/or strategies and initiatives to promote broadband use. Some governments have also launched demand-side programs to encourage broadband use among MSMEs, including women-led firms. For example, in the UK, the Minister for Women created a £1m challenge fund to help women grow their business online by accessing fast broadband.

Research shows that competition among mobile and wireless broadband providers also helps diffuse the Internet in the developing world by raising broadband penetration rates.[42] In the early stages, competition can accelerate coverage; in advanced stages, competition drives providers to seek customers in the more remote and rural areas after the urban broadband connections market is saturated. In our mapping, 38 countries have full competition in fixed wireless broadband and 39 in mobile broadband. Countries that limit competition are mostly in sub-Saharan Africa.

In addition to basic broadband, 5G connectivity is becoming a differentiator in ecommerce, enabling sellers to offer buyers virtual and augmented reality tools buyers can use to browse and test products. For example, the Swedish household product and furniture retailer IKEA created an augmented reality catalogue app that works especially well on 5G to help customers visualize IKEA furniture in their own homes, and clothing maker Adidas has used augmented reality to enable customers find the right fit.[43] Able to transmit much greater volumes of data much faster than 4G, 5G enables immersive experiences.

It certainly also has great value propositions for machine-to-machine data transfer in key sectors such as transportation, energy, healthcare, mining, and manufacturing. Granted, 5G is capital-intensive – it requires a change in transport, radio, and core network components as well as much more spectrum with high frequency bands than required by mobile networks or 4G. In addition to infrastructure needs, 5G opens new cybersecurity issues. The 5G network is decentralized and software-based and thus can be "sliced" into different services, each with their own vulnerabilities; in contrast, 4G's centralized and hardware-based network has fewer weak links.[44]

Most countries in our mapping have already launched the so-called 4.5G or LTE-A connection, and some have adopted a national 5G strategy. Korea is a particular leader in working toward 5G use cases and strategies across industries (Case 1). Malaysia, Pakistan, Indonesia, and Thailand have been developing 5G taskforces and committees. Many countries such as South Africa, Uganda, Ecuador, Honduras, Indonesia, and Cambodia have also already held 5G trials, whereby a large telecom equipment provider assists local telecom companies with some initial testing of the 5G technology. Broader-based deployment of 5G networks, however, requires telecommunications companies to access spectrum, the radio frequencies that enable wireless communications and is often regulated and auctioned by national governments. A growing number of countries including Brazil, Chile, Ecuador, Peru, Bangladesh, and Malaysia have announced plans to auction spectrum in 2020. In our mapping, 10 countries, including various advanced economies and China, Sri Lanka, Thailand, and Uruguay, have already held 5G auctions; UK, Germany, Canada, South Korea, Japan, Uruguay, and China are on their way to rolling out 5G networks.

Of course, developing country MSMEs also need devices on which to access Internet and conduct digital business. Smartphone use has skyrocketed globally and is the primary way in which most developing country consumers and firms access the Internet. However, many countries still lag behand in smartphone adoption; as late as 2019, fewer than one-half of Mexicans, only a third of Indians, and fewer than a fifth of Pakistanis had a smartphone.[45] High costs of ICT devices is found to be the leading reason for low adoption of devices in these countries, which can be mitigated with lower taxes and tariffs on ICT products.[46] Of the countries mapped here, 23 have joined Information Technology Agreement (ITA) that removes tariffs on 97 percent of ICT products, and 27 and 29 have zero duties on mobile phones and laptops, respectively. However, 12 countries still charge tariffs of at least five percent on cell phones, and 8 countries such as Ghana, Lao, and Bolivia charge a duty of at least five percent on laptops.

Case 1: 5G Era – Korea Paving the Way[47]

Many developing countries are still working to roll out 3G and 4G networks. However, the 5G era is fast approaching, though, and this technology will be a key differentiator in the global digital economy. In a survey of over 3,000 industry leaders from around the world, 83 percent expect 5G to catalyze small business growth and tighten global competition, and nearly 70 percent worry their country will become less competitive in the online economy without 5G.[48]

South Korea has had a strong national focus on high-quality and high-coverage internet since the 1980s. It has the world's fastest internet (41 Mbps in 2016) and was one of the first countries to formally announce the adoption of a 5G mobile network, with a target of 90 percent 5G penetration by 2026.[49] In 2015, Korea launched the so-called 5G Strategy Promotion Committee, comprised of members from both public and private sectors such as telecom and industry leaders from automotive, healthcare, and education, drafted the "5G+ Strategy" and is studying 5G converged services.[50]

According to the Korean telecom operator SK Telecom, 5G yielded demos speeds of up to 19.1 gigabits per second, nearly 1,000 times faster than 4G LTE. This speed allows a movie to download in fractions of a second and makes a critical difference in sectors where lags in data transmission can be life-threatening, such GPS navigation for self-driving cars, or remote surgery from a virtual reality headset.

In addition to low latency, 5G offers high capacity to transmit information. As such, it is poised to fuel the digitization of Korean industries and power machine-to-machine dialogue and transfer of large-scale data essential in Internet of Things. It is also expected to benefit consumers and companies in such sectors as media and entertainment, public transport, healthcare, energy, and utilities. It will also enable ecommerce; Korean telecoms SK Telecom and LG U+ are expected to use 5G networks to amplify their current cellular-based service offerings tailored to small retailer, trader and vendor transactions.[51]

The Korean Ministry of Science, ICT and Future Planning has invested heavily in 5G. By February 2020, after more than half a year of 5G deployment, some 5 million people in Korea had adopted 5G, and Korean 5G networks were carrying almost a quarter of Korea's wireless network traffic. Korean users with 5G purchase unlimited data plans with much greater frequency than when using 4G or 3G, suggesting they would be likely to use 5G.[52] Two million people subscribed to 5G in 4 months, a faster adoption rate than with 4G.

Price points have helped. The price points for 5G in Korea vary from about US$69 per month to US$112 per month depending on desired speeds. In general, Korean as well as U.S. price points are considered moderate, designed by operators to drive adoption.[53] China, which is poised to become the world's largest 5G market by 2025, has gone even further by offering limited data 5G connections at very low price points (as low as $18 per month).[54] European operators pursued the opposite approach, applying premium pricing to maximize early 5G revenue per user.[55]

Digital regulations to enable digital transactions: digital signatures, invoices, ID

Four key regulations enable online transactions – online firm registration and licensing, digital signatures, electronic invoicing, and digital identity.

Online business registration and incentives to formalize: The process of registering and formalizing a new business with the relevant government agencies has historically been a challenging process in many countries around the world due to limited access to information about the requirements, excessive paperwork and requirements to submit documents with handwritten signatures, and long processing times. These complex requirements deter firms from formalizing and contribute to developing countries' sprawling informal sectors. According to an International Labor Organization study, in 2018, 54 percent of employment in developing and emerging countries in Latin America was informal; in Africa and Asia, these figures are 86 percent and 71 percent, respectively.[56] Yet formalizing is critical for firms to be able to access bank accounts, accept and make cross-border payments, onboard online marketplaces, secure cross-border logistics services, and overall scale their businesses.

Positively, many countries are now using digital technologies to simplify and facilitate business registration. One popular method has been to create "one-stop shops" that offer business owners all processes required for business registration in one place. Mozambique, Egypt, and the Philippines have all implemented such platforms. Other countries such as Morocco, Honduras, and Malaysia have moved part of the registration process online and maintained some required in-person interaction. Some countries such as Botswana, Kenya, Tanzania, Chile, Guatemala, Peru, India, Indonesia, and Pakistan have transitioned the entire registration process online.

A number of countries have also sought to help firms formalize by providing tax holidays in exchange for registration. In Singapore, the government provides a tax holiday for the first three years for start-ups; Panama exempts microenterprises that formalize from income tax for the first two years; and Nigeria has exempted small businesses with turnover of less than US$65,000 from taxes beginning 2020. Vietnam launched a program in 2020 that encourages MSMEs to convert from household businesses in exchange for a three-year business license fee exemption. India provides a three-year tax holiday to qualifying companies within their first ten years of business – typically companies that are less than 7 years old, have not made more than US$3.3M in any preceding year, and seek to innovate new products or services enabled by technology.

Digital signatures. Making digital signatures legally equivalent to hand-written signatures is critical for remote online transactions. Digital signatures can dramatically accelerate online transactions, make them more secure, and improve e-government services. For example, in Estonia, digital signatures have been the foundation for such e-services as registering a company online, e-banking, and e-voting, and are some of the enablers of Estonians' fast tax filing process, completed in minutes.[57] All countries analyzed here have accepted digital signatures as enforceable in courts.

Electronic invoicing. Electronic invoicing, the practice of submitting and formalizing every business invoice with the government, also enables ecommerce. E-invoicing is typically associated with tax collection initiatives – but in Latin America, wide adoption of e-invoicing has pre-empted fraud, improved business accounting practices, and helped businesses establish reliable cash flow. For example, e-invoices serve as accounts receivable that businesses can use as collateral to secure working capital and factoring services.

Chile pioneered electronic invoicing in 2003. Today, a range of documents – non-taxable or exempt invoices, purchase invoices, settlement invoices, credit notes, and debit notes – must be electronic. In addition, starting in 2020, Chilean taxpayers must issue bills of lading electronically. Argentina, Brazil, and Mexico have also made digital invoices mandatory. By the end of 2016, 70-80 percent of businesses in Chile, Brazil, and Argentina as well as 94 percent of businesses in Mexico used electronic invoicing, and 77-89 percent of all invoices issued were electronic.[58] In our mapping, Colombia and Peru are also using digital invoicing; however, most countries have yet to use digital invoicing and many, including advanced nations, are now keenly studying Latin America's experience.

Case 2: Electronic invoicing – Chile, Mexico, Brazil

Latin American countries have been global frontrunners in adopting electronic invoices – the practice of submitting and formalizing business invoices with the government online. Almost one-half of the 36 billion electronic invoices issued in 2017 were issued in Latin America. Chile introduced voluntary electronic invoicing in 2003; Argentina, Brazil, and Mexico made invoice digitization mandatory in 2007, 2008, and 2011, respectively. By the end of 2016, 70-80 percent of businesses in Chile, Brazil, and Argentina as well as 94 percent of businesses in Mexico used electronic invoicing, and 77-89 percent of all invoices, depending on the country, issued were electronic.[59]

Most of Latin America is moving to electronic invoices: Guatemala launched its e-invoicing system in 2019 and is gradually including companies into it; Colombia mandated e-invoicing in 2019; Peru required SMEs to start using e-invoices in 2020; and Ecuador plans to require e-invoices by 2023. Uruguay, Paraguay, Bolivia, Panama, Honduras, and Costa Rica are also in the process of rolling out e-invoicing systems.

In Chile, e-invoice reporting was made mandatory in phases, depending on firms' capabilities. For example, e-invoicing became mandatory for large companies in 2014, for urban SMEs in 2016, for urban microenterprises and rural SMES in 2017, and for rural microenterprises in 2018. Companies must first register with the Chilean tax authorities, Servicio de Impuestos (SII), to issue e-invoices, receiving their own digital signature stamp upon approval. Companies then can proceed to e-invoice using a standardized template. After every transaction, companies will submit their electronic invoices in XML format for pre-approval via an official e-invoicing provider, which then sends the document to SII. Once approved and validated, the e-invoice is returned to the provider, who then sends it to the customer using a digital signature. The shipment cannot be made until SII confirms the invoice.[60] To facilitate ease of use, Chile has also launched a mobile app to help firms issue and validate e-invoices. Chile's SII has also increased awareness and onboarding of the system through hosting workshops throughout the country with industry associations and accountants, among others.

A range of documents – non-taxable or exempt invoices, purchase invoices, settlement invoices, credit notes, and debit notes – must be electronic in Chile. In addition, starting in 2020, Chilean taxpayers must issue bills of lading electronically with SII. Companies can choose to use SII's free invoicing systems or private software; 85 percent of companies have chosen the former.[61]

Chilean businesses readily adopted the e-invoicing system with more than 90 percent of businesses migrating to the system before 2019. Research suggests that e-invoicing has significantly improved governments' tax collection rates, reduced tax evasion, and pre-empted fraud.[62] Electronic invoices can also be a useful first step in a company's digital transformation and provide benefits and efficiencies to businesses. For example, e-invoices have helped small businesses fuel their cash flow as well as access working capital and factoring services by using their accounts receivable as collateral. The factor can use the invoice as collateral, which helps small businesses improve their cash flow and cost of credit. While a traditional unsecured line of credit in Chile might have incurred a 40 percent interest per year in the past, factoring might only cost 12-24 percent.[63] Introduction of e-invoices has helped fuel the 50 percent annual growth of factoring in Chile, now equivalent to 8 percent of GDP.

Digital invoicing also helps MSMEs save time and the numerous direct and indirect costs involved in invoice processing for both accounts payable and receivable. Paper-based or PDF invoices can in total cost as much as some $12-15 to prepare, process, email, and edit; studies suggest e-invoicing can lower these costs by 70-80 percent.[64] Even a simple accounts receivable processing can be 40-50 percent cheaper using fully electronic and automated invoices.[65] On the accounts payable side, entering and processing e-invoices can be 90 percent cheaper than processing paper-based invoices.[66]

In the United States, it is estimated that businesses reduce costs by $4-$8 per invoice when migrating from paper to e-invoicing.[67] E-invoicing also helps obtain timely payments from clients; reduce errors, duplication and fraud in invoice processing; and reduce times to chase unpaid invoices, which can cost businesses as much as $25 per hour in staff time per invoice.

E-invoicing helps MSMEs reduce their compliance costs with governments, as well as the costs of handling and storing physical documents. In the United States, paper--based invoiced cost $3.90 and paper-based accounts receivable invoices $1.90 each to store, while storing e-invoices in the cloud is a small fraction.[68]

E-invoicing also helps MSMEs track their finances online and thus can also serve as an accounting tool. Brazil has gone a step further, developing a mandatory public digital accounting system called SPED (Sistema Público de Escrituração Digital) that includes modules for businesses to manage digital signatures, electronic invoicing, bookkeeping, and tax records as well as labor and social security paperwork.[69] SPED essentially collects all financial, accounting, tax, and labor information from Brazilian companies in one place.

E-invoicing systems require resources to build and operate. Tax administrations need certain infrastructure, storage, communications, and data security capabilities to manage billions of documents as well as changes in

businesses' statuses; IT systems and business intelligence tools to analyze patterns and detect errors or fraud such as double invoicing; and efficient auditing practices. In addition, governments need to carry out training and awareness-building campaigns for MSMEs to implement e-invoicing systems.

However, once in place, e-invoicing systems can help create new e-government services. For example, Brazil has leveraged electronic invoices to track highway cargo and reduce vehicle and cargo theft.[70] The Brazilian tax administration uses RFID tags that are integrated with the e-invoices for transported goods. Antennas scan transport vehicles as they pass highway goods-transport control units, which can enable shippers to track their cargo and estimate delivery times.

Other countries are taking note of the gains in Latin America. For example, South Korea adopted mandatory electronic invoicing in 2011, Italy and Finland started requiring e-invoices for every B2B transaction in 2019, and the European Union began requiring e-invoicing on transactions between public administrations and providers in 2019.[71]

Digital identity. Most countries have established a national ID for citizens to vote and access services. This ID is often based on biometric data like a fingerprint. However, physical IDs cards are susceptible to fraud, and an estimated 3.4 billion people have only limited ability to use their legally recognized IDs to access e-government services.[72] In response, a growing number of governments are adopting a digital ID that assigns citizens and residents unique IDs that provide them efficient access to a range of public and private services. Twenty-three (23) countries in our mapping have adopted some form of digital ID and 20 are piloting or building one. The most famous digital ID system is India's Aadhar, which provides Indian residents and passport holders a 12-digit random number after verifying biometric and demographic information. While Indians can opt out if they have data security concerns, the tool is widely used; Aadhar had 1.26 billion users as of June 2020.[73] Digital IDs have also been adopted by Estonia, the United Kingdom (UK Verify), Australia (myGov) Belgium (itsme), Denmark (NemID), Norway (BankID), Sweden (BankID), Finland (TUPAS), and United Arab Emirates (UAEPASS), among others. [74]

Some countries are also experimenting with blockchain-based ID solutions. For example, the Financial Services Agency of Japan is developing a new digital ID powered by blockchain technology to make banking more efficient for Japanese consumers.[75] A consumer with an account at one of the participating banks can use the blockchain-powered digital ID to access banking services at other banks involved in the program.

Digital IDs bolster the security of users' data by reducing unnecessary disclosures of personal information and enabling users to control and keep their identity information private. They can also enable citizens to access a range of services – for example, Malaysia envisions a digital ID that helps citizens access government services, use e-Wallets, file taxes, and verify the identities of drivers and passengers using ride sharing apps.[76] McKinsey has identified dozens of use cases for digital IDs, estimating that digital IDs are poised to increase GDP growth by 6 percent in developing nations and 3 percent in advanced nations by 2030.[77]

Some governments – most notably Singapore, Estonia, Azerbaijan, and Netherlands – have built on individual digital IDs to offer digital IDs for businesses. Using these corporate digital IDs, businesses' representatives can authenticate and authorize themselves to access a range of e-government services. Corporate digital IDs provide great value when they make the company's data associated with the ID portable – allow service providers such as banks to access company data via APIs at company's permission, and accelerate customer authentication and service provisions (such as loan underwriting). Singapore's

CorpPass, for example, enables a business to access data associated with its ID that it has submitted to various government agencies and use these data to access financial services (Case 3).

Case 3: Toward Corporate Digital ID – Singapore's CorpPass

A corporate digital ID can enable MSMEs to efficiently access a range of trade-related services with a single ID. It could help online sellers forego time-consuming, costly, complex, and often paper-based due diligence processes such as "know your customer" (KYC) and "know your supplier" (KYS) processes with service providers. Corporate IDs also help businesses leverage government services and more easily access bank accounts and financing as well as secure insurance and logistics services.

Singapore launched Corporate Access (CorpPass), a corporate digital ID, in 2016. CorpPass forms part of Singapore's Smart Nation goals to create secure and reliable digital services for citizens and businesses. It was developed by the Singaporean government's technology unit, GovTech, to enable businesses and non-profit organizations to log into and access 140 government services across dozens of government agencies, such as customs, land authority, and health ministry.

CorpPass also differentiates people from businesses by allowing employees to use CorpPass instead of SingPass, Singapore's digital ID for individuals, when transacting on their company's behalf. Companies and organizations can request ten sub-administration accounts for specific tasks and finance-related issues. For large organizations such as hospitals, the cap increases to 25. "CorpPass 2FA" enables foreigners who do not have a SingPass to log into CorpPass.

CorpPass was developed in response to the limited ability of SingPass to serve corporate users.[78] Before CorpPass, company employees used SingPass to log into government digital services and make transactions for employers. Government agencies often did not know which company was represented by those logging in with SingPass or whether they were authorized to transact on behalf of the company in question. Individuals could also risk their personal information and credentials when acting on their companies' behalf. To address this concern, CorpPass separates individual accounts from business user accounts. For example, SingPass identifies users by their username or national registration identity card number, whereas CorpPass identifies users by the company's Unique Entity Number (UEN).

One challenge during the development of CorpPass was prioritizing CorpPass functions and standardizing requirements across government agencies. After conceptualizing CorpPass, the GovTech team consulted with participating agencies to assess their needs and concerns. The team also met with businesses and developed material to educate businesses about CorpPass functionalities. The team then guided agencies' transition to the CorpPass interface. Agencies that onboarded CorpPass early were asked to share issues they encountered in the transition; the GovTech team applied these lessons to smooth the transition for the next government agencies incorporating CorpPass.[79]

On the corporate side, the GovTech team uses a data-driven approach to segment businesses into different sizes and types to facilitate their onboarding process and transition to CorpPass.

CorpPass simplifies B2G activities and transactions, saving business users time and reducing duplication of efforts when dealing with government agencies. But perhaps the main value proposition of CorpPass is that it enables a business to access data associated with its ID that it has submitted to various government agencies and increasingly use these data to access financial and other services. For example, a company can provide bank access to the data via an API.

CorpPass became the only method for businesses to login to transact with the government in September 2018. More than 90 percent of Singaporean businesses are now using CorpPass to transact with government agencies.[80]

There are a handful of other corporate digital ID systems around the world, such as:

- In the Netherlands, eHerkenning enables firms to securely login to over 400 government organizations and makes government services accessible online for entrepreneurs. This provides agencies certainty about customer identities and helps businesses ensure they are doing business with the correct people.

- e-Resident in Azerbaijan enables user from anywhere in the world to open and run a business remotely and then also use that business to operate with EU businesses and EU customs.[81] E-Residents can also act as legal representative across government services and banks.[82]

- British Columbia's OrgBook BC is a blockchain-based an online directory that accelerate authentication of businesses. Unlike federated systems like CorpPass that imply one registration with a trust anchor trusted by many (such as by many government agencies), OrgBook is a centralized identity that is created once and trusted globally: legal entities manage their own digital identities and multiple entities contribute to an identity's credentials. This helps reduce due diligence time on a new supplier or client from hours down to a few seconds.

- Most European countries have strong national digital ID systems, but their usage by businesses is often uneven.[83]

Going forward, as countries create digital ID systems for individuals and enterprises, the challenge is to ensure the national systems interoperate, so that users can easily operate across borders. Today, such interoperability is limited, partly due to differing national regulations and customer due diligence requirements, for example.[84]

The European Union has sought to further the interoperability of digital IDs among EU Member States through eIDAS, an EU-wide digital identity based on national digital ID systems. IDAS is to enable Europeans carry out such functions as submit tax declarations, enroll in university, open a bank account, establish a business, authenticate internet payments, and bid for tenders in other member states. However, the concept has yet to be operationalized EU-wide, and the ID systems that are its foundation covers only a share of firms and citizens in any one country.

Digital Regulations to Govern Online Behaviors: Internet Intermediary Liability, Data Privacy and Transfer, Consumer Protection, Taxation

Safe harbors for internet intermediaries. As consumers grow concerned about online fraud, unsavory content, and copyright theft, governments seek to respond by defining liability for such practices. The key question for policymakers is determining liability for malicious or misleading content: for example, is the user, the platform, or someone else liable for information on houses listed on Airbnb, Facebook posts, profiles on dating sites, or copyright infringing content on YouTube?

Many governments in countries with sophisticated digital economies established years ago that internet intermediaries like social media platforms and online marketplaces ought to enjoy a degree of immunity, or "safe harbor," from the content their users post, including content that infringes on copyrights.

Safe harbor was originally introduced in the United States under the Digital Millennium Copyright Act in 1998 and Section 230 of the American Communications Decency Act of 1996. It is widely credited with enabling the expansion of the American Internet economy. Platforms' immunity from liability is limited in cases where platforms fail to remove infringing material or damaging content in a timely manner after a judicial order or, in cases of sexual content, after the injured party makes a request.[85] Platforms of course also have their own community policies allowing them to block or remove content they deem unsuitable.

A growing number of developing countries including Botswana, Brazil, Chile, Ghana, Morocco, Rwanda, South Africa, Indonesia, Malaysia, and Pakistan have adopted safe harbor regimes for internet intermediaries. Some countries such as Mexico and Central American nations have also adopted safe harbors via free trade agreements signed with the United States. Brazil's safe harbor regime is widely viewed to set appropriate limits on the responsibility of providers for hosting or transferring third-party content (Case 4).[86] Its success owes in part to the way it was developed, which encompassed a multi-stakeholder drafting procedure drawing on different interest groups, such as Internet companies and civil society.[87]

Case 4: Safe Harbor for internet intermediaries – Brazil[88]

Internet intermediaries such as ecommerce, payment, and social media platforms help individuals and companies find, share, and access content as well as interact and transact with one another. This improves growth and productivity of other firms in the economy. Copenhagen Economics found internet intermediaries increased EU GDP by €430 billion in 2012, or about 3.3 percent of EU's GDP. This increase in GDP is made up of €220 billion in investment, private consumption, and export gains, as well as €210 billion indirect productivity increases in firms serviced by intermediaries.[89] The EU also gained €640 in consumer benefits from free services, increases in online advertising, and B2B platform revenues.

When liability and copyright regulations governing internet intermediaries are unclear and restrictive, investors are less likely to invest in these intermediaries. In one estimate, regulations holding internet services liable for user-generated content are found to reduce the pool of investors for such services by 81 percent. [90] In contrast, clarifying copyright regulations allows websites to resolve legal disputes quickly and expands the pool of interested investors by 111 percent. Similarly limiting penalties for websites acting in good faith doubles the pool of interested investors.[91]

As such, several countries have sought to clarify the liabilities of platforms and their users by establishing liability laws, known as "safe harbors", that provide internet intermediaries partial immunity from the conduct and copyrights infringements by of their users.

The Brazilian safe harbor established in the 2014 Marco Civil Internet "Bill of Rights" is widely viewed as a global best practice. The regime is analogous to Section 230 of the Communications Decency Act in the United States, which is considered critical to the growth of American online platforms.[92] It protects Internet service providers (ISPs) and Internet application providers (IAPs), such as social media websites and search engines for third-party content, from civil liability arising from damages related to hosted content.[93]

Internet intermediaries are seen under the Brazilian law as conduits of information, not its generators. The law establishes that ISPs are not liable for content generated by a third party unless they fail to act upon specific judicial notice to remove infringing or other content.[94] Sexual content and nudity are exceptions – internet providers are liable if they fail to remove this type of content at the request of the injured party.

Marco Civil is a hard-won compromise between various interest groups, such as Internet companies and civil society. The two groups engaged in a participatory, multi-year drafting procedure that was partially carried

out online.[95] The process is considered the key to the law's success and implementation: every interest group gave something and got something in return. The law also provided a clear template to courts which had previously issued conflicting rulings on online copyright infringements.

The law has also been applauded for striking a balance between copyright enforcement and freedom of expression, and for protecting citizens' rights by preventing the government from pressuring platforms or regulating content without judicial due process.[96]

Many countries in the Americas such as Canada, Mexico, the United States and Chile have similar laws. For example, Chile's copyright law of 2010 also specifies that internet intermediaries are not liable for user content on their sites if they take appropriate actions in response to judicial orders.[97]

In recent years there have emerged some more controversial approaches to online liability. Under the EU's copyright directive of 2018, platforms can be held liable for making available infringing content uploaded by users. The directive requires content platforms such as Facebook, Google, YouTube and Twitter to sign licensing agreements with musicians, authors and news publishers before posting their content. Without these licensing agreements, platforms are held legally responsible for users' copyright infringements.[98] The law also demands platforms use "upload filters" to prevent users from uploading copyrighted content and requires compensation for copyright holders (such as journalists or musicians) in return for use of their content. Small and micro platforms and startups, however, are exempted from this law.

India has a draft law that requires platforms to proactively monitor and filter their users' content as well as maintain the ability to trace content to users in order to avoid full liability. Critics argue the law would undermine online security. In China, which is estimated to produce half the counterfeits sold online globally, updated regulations in January 2019 that require online sellers to register their businesses, acquire all necessary licenses, and hold liable both counterfeiters and ecommerce platforms that fail to "take necessary measures" to stop infringing sellers. Platforms can be fined up to US$292,000 in serious cases of intellectual property infringement. [99] Critics argue the Chinese law privileges large ecommerce platforms such as Alibaba and JD.com that already adhere to these types of rigorous practices, and hurts small businesses that sell online as well as small platforms that have fewer resources to implement such challenging regulations.[100]

Overall, economic research sides with safe harbor laws. For example, safe harbors are found to be of essential to venture capitalists that look to invest in startup platforms – as they would unlikely invest out of worry that their investee could be held liable for user-generated content. Safe harbors can be especially useful for small platforms that, unlike large marketplaces or social media companies, lack capacities and resources to remove content from their sites. Proponents of safe harbors also argue that requiring platforms to police their users could limit innovation and freedom of expression in the absence of safe harbor, as platforms would likely err on the side of caution and remove all content that could be deemed remotely illegal or infringing. Content removal technologies are not advanced enough to make judgements about acceptable and unacceptable content: there are still enormous challenges, for example, in training computers to distinguish "hate speech" from benign, non-hateful speech.[101] Content removal technologies are also too costly for most small platforms: YouTube's Content ID, for example, cost $60 million to develop.[102]

There are also significant concerns that the erosion of safe harbors will limit innovation and competition. For example, some worry that removing safe harbors would make copyright holders overreach to suppress potential competitors and request platforms take down content that is not necessarily infringing. There are also concerns that without safe harbors, platforms will refuse content from small and less-

known content creators and instead accept content from large, well-known companies that are less likely to post infringing content. These types of concerns incited protests in Europe against mandatory upload filters.[103]

Granted, all countries mapped have also certain flexibilities for copyright use: they have established copyright regulations that include limitations and exceptions (such as principles of "fair use" or "fair dealing") that balance the public policy objectives of protection of intellectual property rights with the development of new Internet services. Specifically, the principle of fair use allows the use of content for certain purposes such as research without the need for permission from or payment to the copyright holder.

Data privacy and transfer. MSMEs that use ecommerce need access to data on their operations, customers, and markets. Online sellers, marketplaces, and other ecosystem services also benefit from data storage and analytics with hyperscale cloud providers that may have their centers and processing capabilities in a third country. Many developing country startups and MSMEs that sell online have dramatically improved their operations and sales after systematizing their collection of data from domestic and foreign customers. For example, the ride hailing platform Grab realized up to 40 percent savings in operations, improved customer service, and lowered the cost to customers by using real-time data on its 1.5 million bookings across Southeast Asia to predict future demand and fix operational problems.[104] Access to data on customers and operations across countries is also critical for foreign investors that need to move their data between their headquarters and foreign offices and subsidiaries.[105]

Access to data and cross-border transfer of personal data are also among the most contentious and complex policy issues governments face today. Recently, countries such as China, Indonesia, India, Vietnam, Nigeria, and Turkey have introduced laws to localize all data or data in specific sectors such as payments, financial services, or healthcare. In April 2019, the Reserve Bank of India issued some of the most restrictive data localization measures yet, requiring foreign payment companies to store all transaction data involving Indian customers on servers located within India and remove Indian citizens' data from their global servers. Some other countries have required sector-specific localization of data, as in Australia with health data, South Korea with mapping data, and Tanzania with financial data. In some countries such as Canada and the United States, provincial and state governments have their own privacy and data transfer regulations. Other laws also regulate cross-border transfer: for example, health sector privacy legislation in Newfoundland, Labrador, and Nova Scotia in Canada limits transfer of individual's health data outside the province.[106]

All countries in our mapping allow cross-border data transfer, though almost all qualify or restrict data transfer in some fashion. In roughly half of the mapped countries, companies must adhere to a combination of requirements: (1) ensure the country receiving the data has an "adequate" data protection regime; (2) obtain user consent for the transfer of the data and/or qualify for an exception, as is the case when the data transfer is necessary for contract execution. Europe's General Data Protection Regime (GDPR) that took effect in May 2018 employs this approach.. Some countries such as Kenya and South Africa require the receiving country have an adequate data protection regime; others such as Lao require user consent at all times. Nineteen (19) of the countries in our mapping allow cross-border data transfer in principle as they do not yet have general data protection and transfer regulations in place – although several of them, including Namibia, Rwanda, Jordan, and Pakistan, are working on data privacy laws.

Governments that limit cross-border transfer of data argue that localizing data can help law enforcement access data on criminal activities, create new jobs in digital industries, and broaden the domestic

tax base.[107] Research does not support these notions. Rather, studies show that data localization mandates have similar impacts on local firms as local production mandates such raising costs for local firms that use cross-border digital payments, and cloud computing services. Data localization mandates increase the cost of world-class digital services for local companies; limit the competitiveness of firms' exports; and dampen foreign direct investment and economic growth.[108] In a simulation of five African countries, data localization would increase costs especially in the financial services sector and undermine productivity growth in the manufacturing sector.[109] Surveys with small online businesses in advanced and developing countries repeatedly tend to suggest that stringent data privacy policies are among firms' leading concerns.[110]

Localization can also reduce the benefits from 5G connections, AI, IoT, and blockchain in sectors like manufacturing, mining, and farming because the utility of these technologies relies largely on access to data and ability to use sophisticated global cloud computing services to distill information. For example, in smart farming, data collected through smart devices, IoT-enabled sensors, and satellites are transmitted instantaneously and analyzed through sophisticated cloud computing services to provide farmers real-time unprecedented capabilities that improve their productivity.

Localization can also undermine data security. Data security has little to do with where data is stored and has everything to do with how it is stored and governed. The negative impacts on data security are especially grave if a country lacks the foundations to manage and secure data built on low political risk, excellent IT networks and facilities, strong cybersecurity protections, and so on.

Localization mandates can also result of lobbying by companies with existing in-country data processing facilities that hope to leverage localization to raise costs for foreign rivals that process their data elsewhere.[111] A recent simulation finds that data localization rules act as trade barriers with negative welfare effects on the global economy and on economies that trade with the EU, including Asian nations like Korea.[112]

These findings are echoed in recent statements by National Association of Software and Services Companies (NASSCOM), the leading trade association for the Indian information technology and business process outsourcing industry, that data regulations in other countries can discriminate against Indian companies that are expanding to new markets.[113] And yet in 2019, India, South Africa and Indonesia rejected the G20 sought to establish the "Osaka Track", a broad-based international agreement to fuel cross-border transfer of data.[114] In the face of criticism by local businesses and trading partners, though, India, Indonesia and Vietnam recently relaxed some provisions of their data laws, but businesses' concerns persist about the extent and impacts of data localization on cross-border trade and ecommerce.[115]

Some countries, notably several members of the Asia-Pacific Economic Cooperation (APEC), pursue a different model than for example GDPR's for cross-border transfers under APEC's Cross-Border Privacy Rules (CBPR). The 2019 U.S.-Mexico-Canada Agreement (USMCA) recognizes the CBPR as a valid baseline for regulating data transfers in North America. Japan also refers to the CBPR in its data privacy legislation (Case 5).

There are useful bi- and plurilateral policy innovations that balance businesses' needs to transfer data with law enforcement claims to data in criminal cases. The United States and UK, for example, passed the U.S. Clarifying Lawful Overseas Use of Data (CLOUD) Act executive agreement in 2018 that empowers law enforcement agencies of each country to approach cloud service providers in the other country and access data associated with criminal cases. The requesting government must demonstrate probable cause, proof of a serious crime, and evidence the information sought relates directly to that crime in order to access the data.[116] Under the Act, digital service providers may refuse to disclose data if doing so conflicts with their country's laws.

These types of arrangements can offer a useful means to regulate governments' access to data in another country in an organized and legal fashion. To be sure, these arrangements have generated questions from civil society and human rights organizations that fear that data requests undermine the U.S. Constitution's Fourth Amendment rights against unreasonable searches and seizures and entice some foreign governments to act in bad faith to seize their own citizens' data on U.S. servers.[117]

Case 5: Balancing privacy and data transfer in cross-border business – Mexico, Canada, and the United States in USCMA and APEC CBPR

In addition to reforming their data privacy laws to address Internet users' privacy concerns, many countries are joining free trade agreement with increasingly robust digital trade and ecommerce chapters that discuss data privacy and data transfer across borders. What are the implications of these agreements on national data privacy laws?

The relationship between the 2019 U.S.-Mexico-Canada Agreement (USMCA) and Mexican privacy law is one example. Mexico's 2010 Data Privacy Law is one of the most advanced and frequently enforced privacy laws in Latin America. This law obligates data owners to provide detailed information in the privacy notice regarding data transfers the data subject, or "owner," is willing to make, including personal information about the data subject, name of the data processor, purpose of transfer and type and category of activity sector of the processor. The same terms that apply to the data owner also apply to the third party receiving the transferred data.

The law stipulates that international data transfers can be performed without the consent of the data subject when the transfer is allowed by a law or treaty signed by the Mexican government.[118] USMCA is such a treaty. Its digital trade chapter states, "No Party shall prohibit or restrict the cross-border transfer of information, including personal information, by electronic means if this activity is for the conduct of the business of a covered person."[119] Parties to USMCA can adopt or maintain a measure "inconsistent" with that principle, though, if "necessary to achieve a legitimate public policy objective", provided such a measure does not present" unjustifiable discrimination or a disguised restriction on trade." The USMCA also explicitly bars data localization, "No Party shall require a covered person to use or locate computing facilities in that Party's territory as a condition for conducting business in that territory."

Legal experts interpret USMCA to be liberalizing and permit cross-border data transfer. USMCA is also viewed as a helpful step to clarifying the scope of exceptions that countries are allowed to make to cross-border data transfer rules under the 11-country, 2018 Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) agreement that both Mexico and Canada are member to.[120]

However, USMCA also cements the principle of data privacy. It requires member countries "adopt or maintain a legal framework that provides for the protection of the personal information of the users of digital trade." In other words, while USMCA calls on countries to allow data transfers in North America, it allows each member to maintain and adopt new privacy laws. The agreement furthermore calls on members to develop interoperability and compatibility between their different privacy regimes.

Notably, the USMCA formally recognizes the validity of the Asia-Pacific Economic Cooperation (APEC) Cross-Border Privacy Rules (CBPR) system as the baseline data transfer mechanism. CBPR is a govern-

ment-backed data privacy certification that private companies voluntarily join to demonstrate compliance with international data privacy protections.[121] Businesses and organizations that opt into the CBPR system must submit their privacy practices and policies for evaluation by an APEC-recognized "Accountability Agent" such as TRUSTe in the United States. Upon certification, the practices and policies become binding for that organization and enforceable by a privacy enforcement authority (such as U.S. Federal Trade Commission).

Unlike EU's GDPR that applies across EU countries, CBPR does not displace or change a country's domestic laws and regulations, nor does it determine whether a country's privacy protections are "adequate." CBPR is recognized by Canada, Mexico, the U.S., as well as Australia, Japan, the Philippines, Singapore, and South Korea.[122] Japan recognized CBPR as a valid data transfer regime in its 2017 data privacy law. Thus, CBPR-compliant U.S companies transferring data from Japan do not need an adequacy decision from the Japanese government they would otherwise need under the Japanese law.

There are still some question marks. Some legal experts argue the USMCA provision citing CBPR means that America's eventual federal privacy law would recognize the CBPR to be consistent with the USMCA.[123] Others argue that CBPR participation does not and cannot displace local law when local law is more demanding.[124]

However, in general to many observers, USMCA successfully created a flexible data privacy and transfer approach that accommodates local needs and national laws within a global framework, as in Mexico's case.[125] USMCA also provides a clear signal to the private sector that the U.S., Mexico and Canada, are committed to creating a unified cross-border data transfer regime.

Consumer protection. Consumer trust in online transactions and sellers is essential for MSME ecommerce to grow. In a 2019 Centre for International Governance Innovation (CIGI)-Ipsos survey of over 25,000 Internet users worldwide, 92 percent, including majorities in Kenya, Pakistan, Nigeria, India, Egypt, Mexico, Indonesia, China and South Africa, found it easy (41 percent) to buy goods and services online or easier (51 percent) to buy goods and services online than in 2018. That said, 31 percent were very concerned and 47 percent somewhat concerned about their online security and privacy. The majority felt that ecommerce platforms contributed to this uneasiness.[126]

In light of these concerns, consumer protection in online transactions has become a key consideration for governments around the world. While most countries have long-standing consumer protection laws that apply to ecommerce simply because "consumer" refers to anyone purchasing a good or service, 22 mapped countries implemented laws that mention or are explicit to ecommerce transactions.

Many governments are working on laws and practices to protect consumers online throughout the purchase journey, including pre-sale in online advertisement, during purchase through contract language, and after the sale in return policies. The OECD 2016 Recommendations on Consumer Protection Regulations for Ecommerce Transactions provide one useful model for countries building consumer protections regimes.[127]

Granted, ecommerce sellers are inherently incentivized to protect consumers in order to retain them as repeat customers and secure good reviews. Sellers cultivate consumers' trust by accepting returns and promptly refunding the consumer, quickly replacing defective items, and ensuring timely, low-cost delivery. Selling online also disciplines merchants to offer competitive prices, as consumers can easily com-

pare prices across providers and products. Online shoppers after all have much better access to information about sellers and their products and services than they do in the offline economy. The Internet and ecommerce enable feedback loops such as product ratings and thousands of seller reviews that help buyers amass and independently evaluate information about products and sellers.[128] Surveys find that consumers are savvy about fake reviews and promotions and quick to lose trust in brands that post fake reviews online.[129]

Also global marketplaces and online retailers such as Amazon have promoted good customer service and championed laws that incriminate counterfeiters and spent millions to weed out fraudulent goods on their websites.[130] Ridesharing companies Uber and Lyft enable users to review the routes of their rides so that they can verify the driver took the shortest route.[131]

Business associations have worked to help buyers learn about sellers by producing trust marks that certify sellers as trustworthy, thus providing information shortcuts to buyers. For example, the Ecommerce Forum South Africa offers a trust mark for qualifying sellers. There is an annual verification system that invites online sellers to confirm they are in line with relevant consumer protection laws, have a system for returns of goods (if relevant), and keep the data they collect on customers secure. The seller pays a fee (about US$310 a year) and commits to an alternative dispute system in the case of an unresolved complaint. In Chile, the "Confianza Ecommerce CCS" seal is made available to companies that are members of the Santiago Chamber of Commerce's Ecommerce Committee, and pass a Chamber of Commerce audit to validate compliance with the Code of Good Practices for Ecommerce.

These efforts are valuable for governments to learn about and leverage. After all, governments need to find a balance between consumer protection and limiting firms' compliance costs with burdensome consumer protection laws. Some new laws seek to find this balance by exempting MSMEs. For example, California's sweeping consumer protection and data privacy regime mostly exempts MSMEs with less than $25 million in revenue, unless they handle data on 50,000 or more Californians.

National Consumer protection rules and approaches can usefully be assessed by different phases of the purchasing process.

In the marketing phase, advanced countries such as the United States and Europe tend to expect consumers to play an active role in assessing online sellers and blocking problematic actors. For example, in the United States, the FBI educates consumers to spot, monitor, and report fraudulent behavior. The FBI website encourages consumers to install anti-spyware and antivirus software, turn on firewalls, and avoid downloading suspicious websites.[132] In Europe, consumer protection commissions or agencies post extensive guidelines online explaining how to identify scams, fraud, phishing, and other unscrupulous practices.

The European Commission has also issued a range of directives to guide offline and online sellers' behaviors across the EU. The directive on unfair commercial practices, for example, defines and prohibits misleading or aggressive commercial practices.[133] This is quite common: almost all countries we mapped prohibit companies from using deceptive or misleading acts, and roughly two-thirds have anti-spam regulations in place to protect consumers from unsolicited marketing and advertising emails, often by mandating an option to opt-out of receiving emails from particular senders. Canada's recent extra-territorial anti-spam law goes further than laws in many other countries by mandating opt-in consent to send unsolicited emails.[134] U.S. trade agreements like USMCA and other trade agreements like the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Also bar unscrupulous practices such as spam and overall promote consumer protections.

In the purchase stage, about two-thirds of the mapped countries require contracts use clear and simple language. Countries also uphold various standards and laws regarding payment authentication. In the United States, the private sector-driven Payment Card Industry Data Security Standard determines authentication requirements based on company size.[135]
In the post-sale phase, return policies and channels to dispute transactions can further cement consumer trust. Most governments, 42 in our mapping, provide consumers some form of redress, typically allowing returns of purchased items in the same condition within a certain period of time, such as 3-7 days. Under EU rules, the seller must repair, replace, reduce the price or give a refund if the purchased goods are faulty or do not look or work as advertised. In addition, the consumer has a right to cancel and return the order within 14 days for any reason and without a justification. In Uruguay, the consumer has a right to cancel the contract within five days without justification.

Most countries in our mapping also provide consumers helplines and online complaint capabilities with a consumer protection agency. In the U.S., the FBI has an Internet Crime Complaint Center (IC3) to receive complaints of fraudulent and misleading behaviors. In Europe, this practice is regionalized: EU members established so-called "European Consumer Centers" that receive complaints about online sellers based in other countries. The U.S. Federal Trade Commission econsumer.gov site allows consumers to report international scams and learn about other steps to combat fraud and brings together 36 member countries, including several EU Members, Australia, New Zealand, Japan, Turkey, South Korea, Chile, Peru, Egypt, Nigeria, Kenya, and Zambia, while the IdentityTheft.gov receives reports of identity theft.[136]

Governments can also prevent fraud by becoming more informed about it. For example, the U.S. FTC runs a period survey to understand the prevalence of mass-market consumer fraud, how it is perpetrated (including on- or offline), who the targets are, and what factors are associated with it. These factors inform how the FTC best targets its resources in combatting online fraud.

Technology is also helpful in consumer protection. For example, online dispute resolution (ODR) is a very promising and scalable means to promptly address consumer complaints and promote trust in online transactions. Online marketplaces and platforms typically have internal redress channels and often use ODR. eBay was the global pioneer in developing ODR to manage disputes since the company's earliest days in the mid-1990s.[137] A growing number of advanced country governments and court systems now use ODR to manage burgeoning caseloads, often related to digital transactions. In the U.S. state of Utah, a recent ODR initiative reduced case filing times from ten minutes to four minutes; judges' caseload from 50 cases per day to five; clerks' preparation time from nine minutes to five minutes; and case resolution time from 144 days to 84 days.[138] ODR has also been highly successful in Mexico, where Concilianet, an online dispute resolution system run by the Federal Consumer Attorney's Office (PROFECO), has enabled prompt online, courts-managed dispute resolution for over a decade (Case 6). ODR has also seen some success in China, where the Supreme People's Court's cyber-court and AI-driven "robo-judges" handle IP and ecommerce-related cases. However, ODR is still nascent in developing countries' judicial systems. While 36 of our mapped countries have some method for consumers to file complaints online to a government agency, most do not have ODR.

Case 6: Cyber-courts for consumer protection – ODR in Mexico, China and British Colombia[139]

Consumer trust in products and services sold online, delivery services, and online payments is essential for ecommerce markets to develop and online companies and digital economies to grow. Consumers in many countries still do not trust the online economy and are willing to act on their rights to redress. In a global survey, 86 percent of customers take some kind of remedial action as a result of trust concerns, and typically

stop using the service.[140] Alternatively, they sue: in China, as ecommerce started to mushroom, complaints overwhelmed courts.

Online dispute resolution (ODR) offers consumers a method to air grievances and seek remedies in digital transactions. ODR is purported to resolve the voluminous number of disputes over rather small sums and minor complaints, and many online companies maintain their own dispute settlement systems. eBay, for example, resolves 60 million minor disputes between small merchants and buyers each year through a semi-automated online system.[141] Their Dispute Resolution Center is one of the world's larger ODR systems and is considered highly successful. The semi-automated system asks buyers several questions and devises a solution, and claimants can escalate disputes if the other party does not address the dispute in a timely manner. Refunds are enforced via chargebacks. PayPal also provides an ODR system, holding transactions when buyers begin a dispute and providing parties 20 days to settle. If the dispute is not resolved within 20 days, PayPal investigates and determines the outcome.

Government-supported ODR helps accelerate dispute resolution, cement consumer trust in ecommerce, and reduce personnel costs in court systems. Mexico's ODR, Concilianet, is one such system. Operated by the Federal Consumer Attorney's Office (PROFECO), Conacilianet was created as a pilot in 2008 to enable consumers who had purchased goods or services to initiate and resolve complaints or claims against major companies on an online platform. At the time, two companies agreed to pilot it; by 2017, there were more than 90 participating companies, including major airlines and retailers such as American Airlines, Walmart, MercadoLibre, Amazon, Movistar, and Latin America's unicorn delivery service Rappi.[142]

Typically, these complaints are related to sellers' failing to meet contractual obligation; for example, a typical dispute is over a seller's charging for "mandatory" services it has branded "optional" on its website. There are no minimums for claims that can be brought.[143] In disputes related to defective items, consumers can call Concilianet and send pictures of the item in question via WhatsApp.[144] The consumer can also visit one of 147 Concilianet centers in shopping malls around Mexico. Most Concilianet procedures are however fully online, with the consumer submitting evidence such as videos, screenshots, images, contracts, or receipts via email.[145] The system helps consumers avoid travel and allows them to monitor the status of their complaints online, including on their mobiles phones. Consumers receive a response in five business days. When PROFECO accepts jurisdiction over the dispute, it schedules an online hearing in a virtual courtroom with all parties present. There are two potential outcomes to a ruling: an agreement between consumer and the merchant; or a referral of the case to the relevant judicial authority.

Concilianet has a strong track record. In its first ten years, 2008-17, Concilianet attended to 28,000 cases and resolved 94 percent of them.[146] In 2018, 97 percent of disputes were resolved.[147] In 2012, it was reported that consumers recovered on average over 100 percent – 101 to be exact – of their monetary claims.[148] In its early days, the system was found to reduce the time for resolving disputes by nearly 50 percent, from 60 to 30 days. Recently, these numbers have improved, with dispute resolution taking on average 21 days.[149] About 93 percent of consumers that have used the system say they trust it; this is attributed to Concilianet's use of court personnel in the dispute settlement process.

China has a reported ODR success story in Hangzhou, capital of the Zhejiang Province. In recent years, ecommerce-related cases in the Hangzhou court rose from 600 in 2013 to 10,000 in 2016, creating an enormous backlog in court. To manage them, China's Supreme People's Court piloted a cyber space court in 2018 to handle IP and ecommerce-related cases.[150]

China's Central Government granted approval for the Hangzhou court to tackle all cyberspace cases in the country, including ones related to online shopping, product liability in ecommerce, Internet service contract disputes, and online loan and copyright issues. The court is armed with high-tech devices that allow plaintiffs to file cases and upload evidence online. Complaints can be filed in five minutes; plaintiffs can verify their identity online through Alipay or by showing their ID to a court clerk in Hangzhou.[151] Court hearings are conducted via online video sessions. Proceedings are managed by an AI judge sporting an on-screen avatar that

prompts parties to present their cases and handles the simpler, standard functions; human justices monitor the proceedings and make rulings in each case. Ultimately a judge delivers the verdict online. In its first case – a copyright infringement dispute between an online writer and a web company – the online video trial reportedly lasted 20 minutes.[152]

Recently, China set up similar courts in Beijing and Guangzhou; together the three courts had accepted 118,764 cases, and concluded 88,401 by the end of 2019.[153] WeChat, China's main social media platforms, also has a "mobile court" that allows users to complete case filings, attend hearings, and exchange evidence all online.[154] The mobile court operates in 12 provinces and regions.

The Canadian province of British Colombia has also opened a cyber-court.[155] The ODR system was introduced in small claims court in 2017 to attend to cases less than $5,000. This so-called Civil Resolution Tribunal (CRT) resolved an average of 2,000 cases per month during its first seven months. Eighty-five (85) percent were resolved; 12 went a tribunal.[156] Larger claims of $5,001-$35,000 are directed to the Small Claims Court.

The early steps in the CRT's ODR system are automated, with the subsequent steps involve human mediators. Some 45 percent of claimants use the system outside working hours, suggesting the platform is convenient to consumers that cannot attend court during the workday.[157] There is a filing fee of $75-$125. The process involves three steps – first, guidance to settle the dispute; second, mediation if parties do not settle; third, adjudication in the absence of a mediated outcome where lawyers make a ruling that has the same authority as a court decision.[158] Most cases are settled in the first stage.

The case is closed and the claimant can file a notice of claim with the court registry when the defendant does not respond to a case in two weeks.[159] If the parties do not resolve their dispute during negotiation or facilitation, they can ask the Tribunal for a decision. Both sides must present all evidence such as contracts and invoices, even when the evidence may go against their own case.[160]

CRT provides excellent data on its work and customer satisfaction. In a small sample of 56 respondents in March 2020, 94 percent agreed that CRT staff were professional in each interaction, 85 percent felt the CRT treated them fairly throughout the process, 79 percent felt the CRT's online services were easy to use, 78 percent felt their CRT dispute was handled in a timely manner.[161]

Taxation of Digital Transactions. Taxation of online transactions is another area of policy change and controversy that is shaping platforms' cost structures and developing country businesses' ability to sell goods and services online at home and abroad. Taxes can be levied on digital goods such as software programs, music, videos or other electronic files that users download exclusively from the Internet, or on digital services such as ridesharing or streaming services provided by local or foreign internet services. There are different types of digital taxes: [162]

- Consumption taxes: value-added taxes (VAT) and other taxes on the sale of final goods or services. Many countries have introduced consumption tax policies to capture revenue from the growth of products and services delivered through digital means, often by businesses that do not have a presence in the country where the products are consumed. There has been a flurry of these taxes in recent years. In our mapping, 32 governments have introduced a VAT on digital sales, typically around 10 percent.[163]

- Digital services taxes (DST): gross revenue taxes with a tax base that includes revenues derived from a specific set of digital goods or services or based on the number of digital users within a country. In the offline economy, taxation occurs at the location of production, whereas in the

online economy, many governments, especially in Europe, have begun imposing DST, insisting on taxing the locality where consumers and users of reside.[164] DSTs take various forms; for example, while Austria taxes revenues from online advertising, France intends to tax revenues from the provision of a digital interface, targeted advertising, and the transmission of data collected about users for advertising purposes.[165] Six (6) countries in our mapping have introduced or are considering a DST.

- Gross-based withholding taxes (WHT): some countries use withholding taxes instead of corporate or consumption taxes to tax revenue from digital firms' transactions within a jurisdiction. Seven (7) countries in our mapping have introduced or are considering this tax.

One argument for imposing these taxes is that users create new value even when using free digital services like social media, for example as they may generate useful data. However, there is no clear empirical basis for measuring this value creation.. Digital services taxes have provoked digital leader countries whose companies are disproportionately impacted, like the United States, to threaten imposing countries, especially European ones, with tariff retaliation. In addition, while governments benefit from taxing local consumption of foreign products, they do not want domestic firms to be subject to heavy taxes in overseas markets or at risk of double taxation. These complexities drive digital tax negotiations among 130 countries under the auspices of the Organization for Economic Co-operation and Development (OECD).[166] The progress is slow and negotiations are fraught, with multilateral action undermined by countries' unilateral imposition of new taxes.

However, the trade-offs of these taxes merit careful consideration. First, they impose additional burdens on digital sales because the consumer ultimately pays the tax. Taxing a product or activity disincentivizes its use and runs counter to the public policy objective or expanding the availability of digital services in developing countries. Second, taxes can stunt the network effects that make a technology useful and valuable by penalizing network users. For example, 3G penetration rates are found to decline in response to tax burdens on 3G services.[167] Third, the poor tend to be most negatively impacted by taxes and fees as they are typically particularly price-sensitive.[168] Fourth, digital services by now are as ubiquitous as electricity or transport, impacting just about all sectors and firms in economies; taxes on them will have repercussions on firms' productivity and investments. Finally, the proliferation of these taxes poses a significant challenges and costs for small businesses who must manage a multitude of local and foreign tax regimes.

In light of these complexities, many jurisdictions have decided to make digital platforms responsible for the collection and payment of VAT/GST. Not all platforms are able to carry out this complex task; tax authorities can also struggle to verify the location of underlying suppliers and determining whether domestic suppliers have remitted local VAT/GST.[169]

Online payments

Electronic payment systems are popular around the world and enable individuals and businesses to transact at lower cost, especially across borders.[170] Developing country governments are now fully aware of the many benefits of digital payments, such as financial inclusion, operating efficiencies for businesses, and prevention of theft. Nearly all countries mapped here have introduced some level of demonetization and digital cash programs in their economies. In response to Covid-19, governments in a wide range of countries such as Bangladesh, Cambodia, Chile, Colombia, India, Peru, and Thailand have been using mobile-based payment and financial services to distribute emergency funds.[171]

Mobile payments that are not connected to bank accounts offer new opportunities for digital payments in developing countries with high rates of unbanked individuals and businesses as well as large informal sectors. The use of digital, cardless, and contactless payment methods at the point of sale, such as facial recognition, Quick Response (QR) codes or near-field communications (NFC), has also grown dramatically around the world during Covid-19.

As the payment landscape diversifies and providers grow larger, governments face new questions about prevention of fraud in online payments as well as ensuring payments systems are interoperable and accessible to more people. Merchants now face growing regulatory obligations for customer authentication.

Payment laws to regulate e-payment providers. The proliferation of electronic payments has been facilitated by regulatory reforms. In our mapping, all countries have established electronic payment laws that define regulatory requirements for payment providers and establish a clear set of procedures for payment providers to seek payment licenses. Most e-payment laws impose capital, auditing, reporting, and privacy requirements for payment providers. As e-payment services have diversified, governments have been seeking to make regulations proportionate to the risk profile of the payment providers – many of which are niche businesses that pose lower risks than deposit-holding banks, for example. One method governments have used is creating special "bank-lite" licensing windows for e-money issuers that have a lower risk profile than banks. These licenses are issued under different windows, such as banking laws, Fintech laws, and payment laws, depending on the country.[172]

As payment providers have grown and diversified, governments have worked to balance the aspirations of financial innovation and inclusion with consumer protection, anti-money laundering, and potential systemic risks posed by large, relatively unregulated payment providers. 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 (Case 7).[173]

Case 7: Balancing Payments Innovation and Risk Management: Singapore's Payment Services Act of 2020

Singapore's new Payment Services Act took effect in January 2020.[174] According to industry observers, the Act succeeds at balancing Singapore's interest in continued technological innovation in payments with regulatory certainty and consumer protection.

The Act also brings new coherence to the country's regulatory requirements for various payment services, regulating seven types of licensable payment services: account issuance services, domestic money transfer services, cross-border money transfer services, merchant acquisition services, e-money issuance services, digital payment token services, and money-changing services. It prescribes three types of licenses that service providers are to choose from and obtain: money-changing license, a standard payment institution license, and a major payment institution license. The requirements are commensurate to the risks posed by the scope and scale of services provided by the licensee. However, all payment service providers holding a license under the Payment Services Act must meet anti-money laundering and countering the financing of terrorism (AML/CFT) requirements. Singapore-licensed banks, merchant banks, finance companies, and credit card or charge card issuers are exempt from licensing but still must adhere to their pre-existing obligations.

The Act is considered a forward-looking and flexible regulatory framework that mitigates the risks emerging from activities that fall beyond the scope of previous regulatory regimes. These risks consist mostly of loss of

customers' money, money laundering or terrorist financing risks, fragmentation and lack of interoperability across payment solutions, and technology risks, including cybersecurity risks.

Many developing countries have also promoted interoperability of payment providers: 45 of the mapped countries have made such efforts. In Costa Rica, the Central Bank created a national mobile wallet called Sinpe Móvil that enables interoperable payments among users of 18 leading domestic financial institutions (Case 8). In Peru, Tanzania, and Brazil, interoperability was led by the private sector.

Cross-border payments interoperability is also advancing. For example, Southeast Asian countries are at the time of writing working to enable mobile-based cross-border payments through the adoption of (1) QR code standards; (2) ISO 20022 standards that enable streamlined, standardizes communications among payment systems; and (3) regionally compatible standardized interfaces and open APIs that help all players – sellers, billers, Fintechs and intermediaries – to access and leverage any platform even as technology advances.[175] Financial services leaders across many world regions have endorsed ISO 20022 for cross-border payments. Such pan-regional payment systems can have great economics, to the extent that they are based on the principles of full competition among providers.

Case 8: Two pathways to interoperable mobile payments – Peru and Costa Rica

Creating interoperability between different digital payment products and systems is critical in developing domestic and cross-border ecommerce as well as ensuring buyers and sellers can transact seamlessly, when using different payment methods. Interoperability also promotes competition among providers, reduces fixed costs on users, and enables economies of scale.

There are exciting examples of interoperable P2P and P2B payments systems around the world driven by public and private sectors. For example Peru created a fully interoperable payments system through voluntary participation by the private sector.[176] Peru's interoperable platform Billetera Movil (BIM), launched in 2016, is the result of a four-year collaborative effort coordinated by the Peru's Bankers Association. BIM is interoperable among three telecoms and over 30 financial institutions, and about 30,000 bank branches. BIM follows rules set by the 2013 National Law for Electronic Money. Banks, service providers, and telecommunications companies agreed to sign onto the system after it received the support of key government officials, the banking superintendent, and the Central Bank. Ericsson won the bid to develop the technical capabilities of the BIM platform and telecom operators Entel, Claro, and Movistar partnered to diffuse the platform nationwide.[177]

BIM initially enabled peer-to-peer payments, cash-in/cash-out and mobile top-ups and merchant payments. The low fees ($0.18 per transaction) were designed to help Peru's poor participate. The services were intended to support users and sectors that lack access to financial services: for example, farmers in the northern part of Peru could only use ATMs and cash in shops, and had to spend valuable time traveling to and collecting pay from ATMs. BIM enables them to use their mobile phones to receive weekly payment by text and transfer money to cell phones in stores to make purchases.[178] Pagos Digitales Peruanos, the company established to oversee BIM, collects the transaction fees.[179] Participating banks will monetize only cross-selling opportunities.

BIM secured 120,000 users in its first four months of operation, 400,000 users by the second half of 2017, and is expected to scale to 5 million users in 2021.[180] The platform is expected to provide the unbanked population banking products such as microcredit, micro-insurance and micro-savings. BIM has encouraged the

Association of Banks of Paraguay to explore similar initiatives with the country's incumbent service provider Tigo Money.

BIM has had its challenges. Limited uptake in rural regions posed a significant challenge to BIM in its first two years, attributed to banks' focus on urban clientele and limited engagement in rural areas. Integrating with state-owned Banco de la Nación as well as government-to-person and person-to-government payments helped BIM increase interoperability with bank deposit accounts.[181] BIM transactions doubled in 2018-2019 and the user base grew to 681,000 by December of 2019.[182] It was poised to grow to 1 million Peruvians in 2020 due to Covid-19, perhaps due to it being used to distribute emergency payments to self-employed workers.[183]

Costa Rica employed a somewhat different approach, driven by the Central Bank, to promote payments interoperability. In 2014, the Central Bank created a national mobile wallet called Sinpe Móvil that enables interoperable payments among users of 18 leading domestic financial institutions. Sinpe Móvi was designed to improve financial inclusion by offering Costa Ricans a secure, low-cost payment option with easy access and wide coverage. Sinpe supports accounts for individuals and businesses and caps transfer volumes – users can send up to $175 a day and receive about $3,500 a month without any commissions. Transfers exceeding this cap are charged 0.25 percent commission.[184] To use the service, users must create a Sinpe Móvil account that links their bank account and mobile number.

Sinpe Móvil's uptake has been faster than that of Peru's BIM. By 2020, it registered more than 1.75 million subscribed mobile phones, of which around 1.34 million (over a quarter of Costa Rican population of 5 million) are active. Transaction volumes grew to US$208.4 million in 2019, up 187 percent from 2018. The application attained a million monthly transactions in December 2019 and had a record month in March 2020 during the Covid-19 crisis as contactless payments become more important with social distancing: 70,000 new users joined in March 2020 alone, and monthly volumes more than tripled from March 2019 levels.[185]

The popularity of Sinpe Móvil is due in part to efforts by the government of Costa Rica to increase financial inclusion. The so-called "simplified account" in allows Costa Ricans to open a bank account with their national IDs; as a result between 2016 and 2019, more than 12 million accounts were opened using this method. These accounts can be connected to Sinpe Móvil using a simple cellular phone. This registration can be done completely online. The app is very simple to use once downloaded: the user responds via text message to the code supplied by a financial institution, then texts" Pass" followed by transfer amount and the cell phone number of the intended recipient.

There are also increasingly widely adopted regulatory improvements that facilitate payment providers' compliance with anti-money laundering (AML) and know your customer (KYC) rules. KYC laws can be prescriptive and result in box-checking exercises for financial institutions vetting potential customers. This provides little room for adjusting controls to high-risk and low-risk customers; thus low-risk customers with bank accounts experience delays, and due diligence resources are not optimally targeted at high-risk customers. The aim of a risk-based approach (RBA) in KYC is to make controls more pragmatic and commensurate with risk. RBA was first proposed by the inter-governmental Financial Action Task Force on Money Laundering (FATF), and a number of countries have revised their AML laws to be in line with FATF recommendations.[186] Forty-one (41) countries have in place some type of risk-based approach.

Regulations on authentication of customers by merchants. There are also regulations to authenticate and authorize users in digital transactions. These regulations are largely designed to prevent fraud and have grown more important as Covid-19 amplifies e-payment volumes in various markets and growing numbers of merchants accept e-payments. The card industry has developed authentication

methods and standards such as 3D Secure that pool address verification systems, geolocations, and behavioral analytics (or "pattern-based intelligence") to help payment providers spot anomalous patterns and block payments that look suspicious.[187]

Under EU's "Strong Customer Authentication (SCA)" rules that went into effect in Europe in 2019 under the EU's Revised Directive on Payment Services (PSD2), 3D has another layer, 3D Secure, which requires buyers be authenticated with at least two distinct identifying factors from among three categories: (1) something they know, such as a password or PIN; (2) something they possess, such as a smartphone; or (3) something they are, such as a fingerprint.[188] The challenge posed by SCA is that the authentication process pauses payment processing, which often drives cart abandonment and poor user experience. SCA has also been criticized as excessively rigid for low-risk, low-price transactions, the hallmark of ecommerce. In response, the EU modified these rules to exempt most payments under €30 and payments at unattended payment terminals such as parking meters.

Ecommerce logistics and trade facilitation

Efficient ecommerce logistics and customs procedures are critical for MSMEs 'participation in cross-border ecommerce, but they need to be improved significantly in many developing countries. MSMEs in the developing world typically cite the total cost of delivery, arcane customs procedures, and costly last-mile delivery as their top constraints to doing ecommerce.[189]

Border regulations and policies. Governments around the world have made a great deal of progress in recent years on trade facilitation, such as implementing the Global Trade Facilitation Agreement (TFA) that streamlines customs procedures and border clearance. Some TFA commitments are especially relevant for ecommerce sellers, such as expedited clearance, online payment of duties, and availability of customs information online. About one-half of the mapped countries have adopted these measures in full and another quarter have applied them partially; 24 countries also report adopting electronic submissions for key trade documents such as customs declarations; 24 accept electronic air cargo documents; and 12 accept electronic application and issuance of preferential certificates of origin. Such paperless trade measures and digitization of processes can significantly shorten customs clearance times and mitigate corruption in customs.[190] Another measure to accelerate release, e-payment of customs duties and fees, is also growing in adoption; 29 mapped countries have adopted it in full and 10 in part.

Another mechanism shown to accelerate MSMEs' border clearance is the digital single window, which enables MSMEs to file all documents related to border clearance electronically in one single place. OECD has found that single windows can lower firms' trade costs by 15 percent in low-income countries.[191] The payoffs in markets where single windows have been implemented well are significant: in Costa Rica, $1 invested in a digital single window generated $16 in economic gains; trade also grew 1.4% faster in the country's paperless trade compared to the paper-based trade lane.[192] Out of 52 countries mapped, 10 have adopted electronic single windows.

Ecommerce poses a significant challenge to customs in terms of increasing the volume and diversity of discrete items arriving in countries' borders. In addition, eh face of the trader is changing unlike multinational companies, small firms and individuals that sell and buy goods online and ship them across borders are not used to filing customs declarations and can inadvertently make errors, for example in determining HS codes and valuing the items shipped. Customs agencies are also concerned about the lack of visibility and traceability of the contents of small parcels.

The optimal solution is not, however, to saddle small businesses with onerous paperwork or open every parcel, but rather to use technologies such as AI or blockchain to accelerate and scale state of the art

risk targeting and border clearance techniques. A number of customs agencies have identified AI use cases to manage inbound ecommerce volumes. For example, the Japanese customs agency has taught AI to read X-ray images of parcels and identify parcels with narcotics and contraband. The agency estimates that AI can determine in a fraction of a second whether a package might contain illicit products while a human officer takes approximately 10 seconds to make the same determination.[193] The Dutch and Jamaican customs agencies have leveraged AI to match information in customs declarations with product and price data from ecommerce marketplaces, in order to identify and pre-empt erroneous or fraudulent declarations (Case 9).

Case 9: AI to assess inbound ecommerce: leveraging marketplace data for trade compliance – Netherlands and Jamaica

A number of customs agencies around the world are currently testing AI and its various applications to administer ecommerce. The Dutch Customs Agency (DCA) adopted AI after it found approximately one in three customs declarations is flawed or fraudulent. DCA had also found that descriptions of products for the same item to vary widely, such as a "smartphone" being called "mobile phone", "phone", or "cell phone".[194]

In response, DCA piloted a web-crawling system that matches the declared value and weight of the inbound items with the prices and weight of the same item sold on online marketplaces.[195] This helped DCA automate work to uncover under-valuation of items and determine the correct tariff and VAT rates for items.

AI can also be used to help buyers and sellers to fill out customs declarations and thereby also better gauge the total cost of the item, including its total tariffs, taxes, and other fees charged by the government. In January 2020, Jamaica introduced an AI-based self-service tool for Jamaicans who buy products online from overseas. Users can access the Jamaican Customs Agency's website at https://customs.semantics3.com/jamaica/courier.html, insert the desired item's URL from the online marketplace, and obtain the item's 10-digit HS code, import duty, and other applicable taxes and fees within seconds, helping them accurately classify a product and determine its total cost before purchase.[196]

Twenty-one countries (21) in the mapping are piloting blockchain in border clearance. Blockchain is specifically being employed to enhance traceability of goods and enable interoperability among border agencies by providing all agencies access to the same data in real-time. For example, the Korean Customs Service (KCS) has conducted various blockchain pilots to facilitate ecommerce, and found that blockchain minimized manual work in trade process and greatly improved the reliability and transparency of data shared with the private sector.[197]

Blockchain is particularly valuable for interoperability among border agencies that belong to the same single window. Blockchain can also improve interoperability *among* national customs agencies. For example, customs agencies of Chile, Colombia, Costa Rica, Mexico, and Peru are using blockchain through the Inter-American Development Bank's pioneering CADENA platform, which allows members to share data on their respective Authorized Economic Operator (AEO) certificates securely with each other. Brazil, Argentina, Uruguay, and Paraguay are piloting their own platform, bCONNECT, to test blockchain in customs security, verification of traders, and cost management.[198]

Some countries have gone further in their blockchain pilots by involving key private sector players. For example, Singapore, Japan, and Thailand are connecting their single windows to key ecosystem players like logistics and trade finance providers. Such "national trade platforms" provide public and private

stakeholders access to the same data on a shipment and also enable a range of B2G, B2B and G2B services traders need (such as logistics services or cargo insurance). In Singapore, developers can even use the platform's APIs to build new services, including trade finance services for MSMEs (Case 10). The next step envisioned by these countries is to make these national trade platforms interoperate with each other.

Case 10: "Single Windows+" as platforms of MSME trade services – Singapore and Thailand

Small online sellers that engage in cross-border trade often lack in-house capabilities for managing trade logistics and compliance. To help facilitate trade compliance for these sellers, governments have been creating single windows that enable sellers to submit all trade documents electronically in one place. The single window then allows all pertinent government agencies to access necessary transaction documents without requiring the trader to submit multiple documents to multiple outlets. The single window ends up saving time and costs for both traders and agency officials tracking trade compliance paperwork.

Payoffs from single windows are significant. For example, in Kenya, the average time spent on processing applications dropped by 50 percent, the number of documents required for processing halved and traders saved time previously spent on visiting various agencies.[199] Costa Rica reaped $16 in economic gains from every $1 invested in the single window; without the system, exports would have on average been 2 percent lower.[200]

However, single windows can be improved, for example in terms of the interoperability and sharing of data among the border various agencies (such as agricultural, food, and health-related agencies) as well as private entities involved in a trade transaction, such as freight forwarders, shipping lines, ports, banks and logistics and insurance companies. The need for such interoperability is great: for example, in Thailand, the Thai National Shipping Council (TNSC) has found that traders moving goods in and out of Thailand deal with 21 processes that require altogether 30-40 documents and multiple data re-entries that are made manually 50-60 percent of the time.[201] Such duplication is particularly challenging for MSMEs strapped for time.

Singapore, Thailand, and Japan have worked to solve the lack of interoperability in the trade ecosystem by adopting what could be seen as "single windows plus": blockchain-based national trade platforms that enable interoperability across the trade ecosystem and trade-related B2B, B2G, and G2B transactions and services.

In Singapore, the Networked Trade Platform (NTP) was developed by Singapore Customs in collaboration with the Government Technology Agency of Singapore (GovTech), and is intended to serve as a trade and logistics ecosystem connecting businesses, government agencies, and community systems and platforms in a common platform that enables business-to-government (B2G) and business-to-business (B2B) services.[202] For example, shippers can use the e-Freight Management platform to share data with their supply chain partners; access marine cargo insurance services to quickly secure cargo insurance; and find trade permit preparation services that transmit and populate shipping information seamlessly from shippers' internal systems to NTP, reducing the time for trade declarations. The NTP also helps shippers with price scanning and route calculation services based on a user's input regarding cost, cargo and efficiency, and banks and non-bank lenders to accelerate credit analysis[203]

Further apps are being developed on the platform. For example, some apps in development will help banks screen MSMEs seeking trade finance. Others can enable shippers to crowdsource products and services they need throughout the trade cycle by accessing consolidated data on freight rates, warehouse locations, trade finance and insurance rates, free trade agreements, tariffs, rules of origin, and so on.

With these capabilities, the NTP brings the entire trade ecosystem into a common open innovation platform that businesses and service providers can use to develop new applications to support needs of individual businesses. For example, NTP users access a cloud-based enterprise resource planning (ERP) system that includes financial, purchasing, sales and inventory management functionalities and generates structured datasets that are being stored within NTP and shared with downstream trade partners, to reduce the time and cost of systems integration and maintenance.

The NTP was developed through close collaboration with the private sector. The project team met with over 250 individuals from more than 130 companies across the trade and logistics community to understand businesses' pain-points in the trade process.[204] The team also ran five ideation workshops with industry players, developers, and MSMEs. According to estimates, NTP, which cost some $100 million to develop, could generate up to $400 million in labor time savings annually for businesses using it. Singapore is also exploring how blockchain can be used to connect NTP to trade platforms in other countries, such as Hong Kong, for all sides to exchange digital trade documents quickly and secure trade in key trade corridors.

In Thailand, the private sector is working closely with the government to create Thailand National Digital Trade Platform (NDTP) to streamline export and import processes, reduce document handling costs and erroneous entries, and eliminate redundant procedures on a blockchain-based platform.[205] The NDTP also serves as a one-stop information exchange platform to enable exporters and importers to interact more efficiently with private and public sector players in the trade ecosystem. The platform enables digital sharing of all trade documents such as purchase orders, invoices, shipping instructions, sea waybills, certificates of origin, export permits, and insurance policies.

The Thai National Shipping Council (TNSC), which forms part of the private sector umbrella organization Joint Standing Committee on Commerce, Industry and Banking (JSCCIB), is leading the NDTP effort. TNSC ran a proof of concept for the NTDP in 2019, and is also working toward an interoperability pilot with the Japanese national trade platform. The TNSC is also discussing furthering interoperability with Singapore's national trade platform. TNSC aspires to connect the NDTP and Thai government's national single window, leveraging the Thai Electronic Transactions Development Agency's (ETDA) digital ID that exporters and importers can use when interacting with the various public and private sector players in the trade ecosystem.

The Thai government launched several other initiatives to facilitate ecommerce that essentially serve as the digital backbone for the NDTP. One relates to the creation of a national digital identity that will be interoperable between the public sector and private sector and enable eKYC for companies to quickly open bank accounts and access ecommerce-related documents, such as e-tax invoices and e-receipts, and secure e-timestamps. ETDA has created the "ETDA Connect" as an open ID connect protocol and the so-called National Root CA, the underlying structure that handles e-signatures and encryption. Thailand also established an e-authentication framework designed to facilitate cross-border ecommerce transactions in the ASEAN and create common standards for authentication, building on the work of the U.S. National Institute for Standards and Technology (NIST) on authentication standards. Digital standards would also help national trade platforms, such as those of Japan, Singapore, and Thailand, to interoperate.

Many studies indicate that reforms to facilitate trade in low-value items by increasing *de minimis* levels, or the value over which duties and taxes are charged, expand trade and economic growth.[206] Higher *de minimis* rates most immediately improve customs agencies' overall budget because the labor and administrative costs of collecting duties on low-value items often exceed the value of the revenue collected. Studies on Canada, the United States, APEC, and the ASEAN all show that higher *de minimis* levels would promote consumer welfare, MSME importers' competitiveness, and efficiency of customs procedures—and typically increase government revenue.[207] Raising de minimis will also of course support trading partner MSMEs. In one study, Colombia's average destination-specific exports would increase

around 30 percent if its export markets doubled their *de minimis*.[208] Higher *de minimis* levels also ease ecommerce returns from foreign buyers of domestic goods.

Both the United States and the Philippines significantly increased their *de minimis* levels in 2016 to tap into these gains. The U.S. increased *de minimis* from $200 to $800, greatly benefiting small traders that export to the United States as well as American importers. However, only three countries in our dataset have *de minimis* levels above $200, the minimum recommended by the International Chamber of Commerce. One reason for countries' reluctance to raise *de minimis* is that it may encourage exporters to undervalue their shipments to just qualify for *de minimis.* However, as discussed, above, technologies such as AI are an effective response by helping to detect undervaluation in a scalable fashion.

Behind-the-border logistics regulations and policies. Ecommerce logistics challenges do not of course stop at the border; hinterland logistics and last- and first-mile delivery systems are critical. Reforms that encourage better last-mile delivery systems include (1) liberalizing maritime and hinterland logistics markets to foreign competition; (2) encouraging better coordination between airports and seaports on the one hand, and hinterland logistics, on the other; (3) building high-quality ecommerce warehouses and fulfilment centers; and (4) helping digitize logistics players to consolidate cargo, optimize routes, streamline booking, payment and billing systems, and so on.

In addition, national postal services are increasingly seeking to enable ecommerce delivery. In our mapping, 40 postal services have adopted innovative practices for ecommerce delivery including lockers, drone delivery, or digital addressing systems. Some posts such as SingPost in Singapore have been exceptionally innovative in facilitating cross-border ecommerce fulfilment and end-to-end delivery, becoming the go-to partner for global brands seeking ecommerce fulfilment capabilities in Southeast Asia (Case 11).

Use cases for technology in postal services have proliferated around the world over the past two years. For example, in Ghana, the postal service dedicates motor bikes and delivery vans for ecommerce delivery and plans to integrate their systems with those of ecommerce service providers.[209] Some postal services have also developed ecommerce marketplaces; for example, in El Salvador, the post has launched a marketplace for MSMEs to ship parcels for goods sold online, and for customers to pay for them online; In Costa Rica, the postal services operates the Yalo marketplace to enable MSME ecommerce across the country. La Poste de Côte d'Ivoire also launched its own marketplace Sanlishop for crafts, clothing, beauty products, chocolate, and other products made in Ivory Coast and Africa by marketing them online.

Accurate addresses are key to efficient last-mile delivery, but approximately 60 percent of people lack reliable addresses and 75 percent of countries do not have reliable addressing systems.[210] This complicates ecommerce delivery in developing nations, raises costs, and can significantly extend delivery times and their variability even in cities with existing world-class addressing systems. A number of postal systems have used private providers such as Google's open source Plus Codes or What3Words to establish a reliable addressing scheme. In Ghana, the postal service has launched a digital addressing system through its GhanaPostGPS Application as an official digital addressing system to ensure all properties in the country have addresses.

Rural ecommerce delivery is costly and challenging partly due to lower "drop density" – shippers 'scale economies are much less if they deliver, say, ten parcels in an hour to one urban neighborhood than when they deliver two parcels over a trip of five hours to a remote rural area. Autonomous vehicle systems like drones can help alleviate these challenges; Covid-19 has accelerated the search for appropriate regulatory frameworks for them. African governments such as Rwanda, Kenya, Malawi and South Africa

have been promoting drone delivery as a means to (quite literally) overcome the problem of limited road infrastructure especially in the delivery of time-sensitive items such as medicine to rural areas. Drones in pilot projects have cut delivery times, though they have also raised new concerns about privacy.[211]

Case 11: Driving the SmartPost Revolution – Singapore[212]

In a survey of 24,333 consumers in 24 countries, the postal service accounts for 72 percent of most recent cross-border deliveries, while 16 percent of deliveries were with other carriers and 13 percent of consumers did not know who delivered their parcel.[213] The efficiency and quality of postal services, which is essential for ecommerce markets to grow, are still limited in developing countries. In a UPU study, developing country postal services in Africa are 25 percent of the efficiency levels of the best-performing advanced country postal services.

Singapore Post Limited ("SingPost"), a company started by the government that is now listed in the stock exchange, has been a frontrunner in reimagining postal services for the ecommerce era, and building itself into a hub for ecommerce shipments across Asia.

In 2003, SingPost began implementing a series of corporate restructuring measures and customer offerings with the aim to generate more revenue for financing future development.[214] Facing flattening revenues in 2008-09 as well as ecommerce popularity, lifestyle changes, and new technology adoption.[215] SingPost decided to upgrade its technology systems and ecommerce logistics capabilities. It acquired a logistics company, Quantium Solutions, which enabled it to grow its regional footprint and to concentrate greater regional growth in vPOST, an online shopping and shipping service.

SingPost has since become a technology-driven one-stop, end-to-end ecommerce logistics solution for firms that want to ship from or transship via Singapore to other markets in the Asia-Pacific.[216] The centerpiece of SingPost's ecommerce business is the Regional eCommerce Logistics Hub, which is a $180 million, three-story, 553,000 square feet (equal to ten soccer fields) facility housing a fully automated parcel sorting facility able to handle up to 100,000 parcels a day, and end-to-end sorting, shipping and returns management capabilities that enable quicker order fulfilment.[217] SingPost built the facility in collaboration with brand owners and last-mile fulfilment players. The facility's two value propositions are automation of the sorting system and warehouse, and efficient fulfillment of cross-border shipments to destinations worldwide.

SingPost has rolled out several innovative programs to enable ecommerce. In 2018, it introduced the so-called SmartPost solution that uses mobile and digital technologies through the postal operation – from collection to sorting, last-mile delivery and quality assurance – to improve operational efficiencies.[218] The country's 1,000 postal carriers are equipped with a proprietary mobile app that they can tap to a Near Field Communication (NFC) tag at 15,000 delivery points when they deliver a letter or a parcel. This helps SingPost track delivery and also measure productivity across its operations, and provide individualized incentives for staff.[219]

SingPost's "SP eCommerce" business, a partnership with Google, Magento, and Quantium, is a full-service eCommerce enabler that provides global brands various services such as online store design and implementation, marketplace management, cross-border commerce, omnichannel order management, global delivery and fulfillment, digital marketing, and customer care. The company also offers clients over four dozen distribution centers in 22 markets across Asia-Pacific.[220] SingPost also has its own technology to platform called EDGE to simplify supply chain processes end-to-end.

SingPost has also worked to bridge the last-mile in the diverse and fragmented Southeast Asian ecommerce market, rolling out a Last Mile Platform (LaMP), a networked, distributed delivery system that brings together couriers, parcel lockers, and some 660 brick-and-mortar collection points across Southeast Asia onto a single platform, helping retailers offer their customers delivery services practically anywhere in the region.[221] LaMP also uses AI to optimize and predict parcel delivery times and improve traceability. SingPost has piloted various drone initiatives, for example working with Airbus's Skyways initiative to ship items autonomously within cities.

To accommodate ecommerce shoppers requiring speed and convenience, SingPost built a network of Self-service Automated Machines (SAMs) that enable people to drop off their registered parcels or mail rather than waiting in lines.[222] In unmanned smart post offices, users can contact postal staff via video conferencing.[223] SingPost has also created POPStations where customers can pick up their parcels using their mobile or fingerprint as identification.[224] These types of parcel lockers are also present across Europe; the growth of parcel lockers is seen as the key behind Eastern Europe's cross-border ecommerce. Deutsche Post DHL has used them since 2002 and there are now more than 5 million registered users.[225] SingPost's Smart Post Offices are smaller, automated facilities that cater to the younger segments of the population.

The company's share of the domestic ecommerce market in Singapore, where overall 200,00 parcels are delivered daily, soared from 20 to 46 percent in 2017-19.[226] SingPost has also brought together retailers, brands, and logistics companies to develop new retail and logistics solutions.[227] For example, consumer goods company Unilever worked with SingPost to create a virtual kitchen for consumers to try out different products through an augmented reality headset.[228] Another experiment is the FairPrice@SingPost mobile app, a future supermarket where smart lighting in the store connects to a shopper's mobile app that then guides the shopper to the items he or she needs.[229]

With the support from the Singaporean government's Economic Development Board, SingPost has launched a Center of Innovation to research new logistics and postal services and products, and is working to position SingPost to lead in technological innovations like driverless cars and sharing economy.[230] SingPost has also tested drones, integrating an app authentication system for recipients to select their preferred delivery date and time and verify item receipt.

SingPost has reported strong revenue growth in its ecommerce operations compared to traditional mail services.[231] SingPost's ecommerce capabilities have also enticed leading marketplaces to invest in Singapore. For example, Lazada Singapore, owned by Alibaba, moved its warehouse operations to SingPost Regional eCommerce Logistics Hub to better service its Southeast Asia client base. SingPost and Lazada are working on a "click and collect" service whereby shoppers can collect or return their online purchases.[232] SingPost has also enabled customers expand their online footprint through a marketplace program that helps propel sales on channels such as Amazon, Sears, and Walmart.[233]

Ecommerce export promotion and capacity-building

Small non-exporter firms in developing countries point to their lack in capabilities to export as an impediment to starting to sell online and selling across borders.[234] Most countries mapped in our study have an export promotion agency that offer some type of guidance or training programs for companies to use ecommerce to export. For example, UK Department for International Trade's (DTI) E-Exporting Program has a tool for UK MSMEs to identify their ideal platform and gain preferential rates to use a platform to export. In 2017, the Brazilian Export Promotion Agency (Apex-Brasil) launched the E-xport Brasil Program modeled after DTI's platform that involves a broad portfolio of services, including training, mentoring, intelligence and trade promotion for Brazilian companies to export using ecommerce.

Peru has important initiatives to enable MSMEs across the country to use ecommerce for exports. In 2019, Peru relaunched its MIPYMES al Mundo ("MSMEs to the World") which promotes B2B ecommerce on platforms such as Alibaba, Amazon, and eBay. The program includes capacity-building training administered through a virtual classroom as well as programs aimed at lowering MSMEs' logistics costs and helping them access financing. Specifically, MIPYMES created a fund that aims to finance 400 firms' internationalization.[235] PromPerú also has an ecommerce program for existing MSME exporters. The participating firms receive specialized assistance so they can optimize a website for ecommerce and generate traffic on social networks, develop a digital strategy, access preferential shipping rates, and use ecommerce distribution centers through Peru's commercial offices abroad. During Covid-19, PromPerú has sponsored additional efforts to help MSMEs export through helping them establish their online sales capabilities, set up payment gateways, and develop product catalogues. [236]

Several other countries have partnered with the ecommerce giants like eBay, Alibaba, and Rakuten to train MSMEs on using selling platforms. Costa Rica's export promotion agency, Procomer, has partnerships with Alibaba and Amazon that offer Costa Rican MSMEs discounts for using their services. In 2019 alone, Procomer helped 49 companies use Amazon in the U.S., Australia, and Japan through providing in-depth support on online digital advertisement campaigns, pricing strategies, sales monitoring, and logistics management.[237]

Pro Ecuador has implemented an innovative Ecuador Exquisito campaign whereby Ecuadorian food products and cooking has been showcased at both in-person and virtual events around the world.[238] In 2020, Ecuador launched a 2.0 version of the program with more involved digital marketing capabilities. Pro Ecuador also hosts an online Ecuador B2B platform that promotes Ecuadorian goods and services firms with foreign buyers.[239]

In Asia, Rakuten Belanja Online, the local affiliate of Japanese ecommerce giant Rakuten, started offering ecommerce courses in 2018 to Indonesia's MSMEs. Alibaba has also been active in forming public-private partnerships; in Africa, Rwanda and Ethiopia have joined Alibaba's Electronic World Trade Platform (eWTP) that seek to help MSME engage in ecommerce.[240]

Some export promotion agencies have launched their own ecommerce platforms. For example, Korea's agency, KOTRA, has website buyKOREA.org, a B2B e-market place which connects international buyers and Korean suppliers. It enables product search, online transactions, EMS shipping, real-time shipping status, online video meetings, and purchase offers. Buyers can see new Korean products which are registered daily as well as pay by credit cards easily. The Korean government also provides further support to sellers by operating overseas logistics centers in some dozen countries, as well as helping MSMEs with customs clearance, inventory management and cargo collection via the Korea Trade Investment Promotion Agency. Other Asian countries are following suite; Thailand, Laos, Sri Lanka, and Japan have also launched their own ecommerce platforms. However, considering the immense resources needed to promote and maintain an online marketplace and bring buyers on it, a more viable strategy may be partnering with existing leading global marketplaces that already have hundreds of millions of buyers.

Some governments are directly financing sellers' ecommerce capabilities as a strategy to encourage ecommerce exports. For example, the Malaysia External Trade Development Corporation (MATRADE) has an eTrade program which includes financing capabilities to cover listing and marketing fees, as well as costs of translation and Amazon fulfilment fees (Case 12). Singapore is implementing a similar program: in April 2020, Enterprise Singapore (ESG) launched the E-Commerce Booster Package to support inexperienced SME ecommerce retailers in transforming their business to increase online sales. The Package supports 90% of the cost for retailers to on-board ecommerce platforms for domestic and/or

overseas markets. In addition, ESG provides support for manpower to kick-start their ecommerce journey. Germany is doing something similar in their "Go-Digital" funding program. Under this program, Germany's Ministry for Economic Affairs and Energy (BMWi) supports SMEs in implementation of digital projects by pairing authorized consultants with companies.

Case 12: eTRADE program for ecommerce export promotion and funding – Malaysia

The Malaysia External Trade Development Corporation's (MATRADE) eTRADE program promotes exporter MSMEs' use of 20 different international and national online marketplaces.[241] Successful applicants can receive advisory services, training, online assistance, and financing, including RM5,000 (about $1,300) to cover listing and marketing fees, photography fees, translation fees, fulfillment fees, and costs to ship products to Amazon or other overseas warehouses.

eTRADE participants can also receive inquiries from international buyers by leveraging MATRADE's MyExport system trade leads. In 2019, MyExport published 4,157 trade leads from importers in 112 countries seeking to source products and services from Malaysia.

Eligible firms need to be MSMEs with at least 60 percent Malaysian equity, incorporated under the Companies Act of 1965, and currently exporting products and services made in Malaysia. The firms also have to have a minimum rating of three stars under Malaysia's SME Competitiveness Rating for Enhancement (SCORE), and be either export ready as qualified by MATRADE's Readiness Assessment, or be currently exporting.[242] Applicants have to submit various documents such as a certificate of Incorporation, audited financials, and product catalogues.

Since October 2014, some 3,500 firms from the food and beverage, cosmetics and pharmaceuticals, building materials, furniture, and machinery and equipment sectors have joined the eTRADE Program, exceeding MATRADE' goal.[243] MSMEs that form part of eTRADE have reportedly increased their export revenue and penetrated 36 new markets including China, Cambodia, Japan, Australia, Qatar, the United Arab Emirates, the United Kingdom and the United States. Some have started to export for the first time. MATRADE has awarded five eTRADE participants annually for succeeding at online exporting.

The Malaysian Government has also established a Digital Free Trade Zone (DFTZ) to provide more opportunities for Malaysian MSMEs to export using leading service providers for cross-border trade, including for fulfillment, financing, last-mile fulfillment, cargo clearance, insurance, and other necessary processes.[244]

MATRADE has also set out to groom 15,000 firms to export sustainable products and services, and to better incorporate digital tools such as the Internet of Things (IoT) and Artificial Intelligence (AI) better in their businesses to raise their international competitiveness.[245]

Developing countries have also made efforts to enable women in digital trade and economy. Malaysia stands out with a program specific to training women-led firms to engage in ecommerce. The Malaysia Digital Economy Corporation has partnered with the private sector to create a Women Netpreneur program focused on helping women start and grow their online businesses, handling logistics and payments, and using online marketplaces.[246] Several countries, especially in Latin America, also have special programs for women exporters. Chile, El Salvador, Uruguay and Brazil offer programs through their export promotion agencies ranging from workshops, seminars, and mentoring for women-led firms to export. In Canada, the Trade Commissioner Service supports the Business Women in International Trade program that organizes annual women-focused trade missions and events.

Many of the mapped countries also have some type of program to support women-led tech businesses and women's study and engagement in STEM fields. In the Dominican Republic, the Telecommunications Development Fund (FDT) has a "Women in ICT" program that offers scholarships for women to study information networks, software development, multimedia, and automated manufacturing. [247] The Indonesian Agency for Creative Economy (BEKRAF) has run a two-month-long coding course "Coding Mum" for home makers; many graduates are now IT entrepreneurs in various industries such as culinary, crafts and tourism, and have been employed in many Indonesian and international companies as website front-end programmers and beta testers.[248] BEKRAF has also operated a similar program for Indonesian domestic workers who are working abroad. [249] These programs have further been expanded to persons with disabilities.[250]

MSME finance

In surveys, MSMEs identify lack of access to capital – from working capital to early-stage financing and trade finance – as a leading constraint for them to engage in trade and use marketplaces to export.[251] Practically all governments have sought to expand MSMEs' access to finance in recent years, both by launching new programs to finance MSMEs directly, or through regulations that are conducive to MSME finance, often through financial innovation.

MSME finance programs. The staple program often seen across countries mapped is a government guarantee on a bank loan to an MSME, aimed to reduce banks' risk of lending to MSMEs. Of the mapped countries, 46 have conventional government credit guarantee programs, and 33 offer some type of direct loan to MSMEs.

Banks tend to regard guarantee schemes as the most effective government program to support MSME finance. Some schemes such as Chile's Fondo de Garantía para Pequeños Empresarios (FOGAPE) and France's Oséo have been found to be effective in expanding MSME credit and MSME growth.[252]Government guarantees and loans have also helped expand MSME lending during cyclical economic shocks that tend to hit MSMEs harder than large firms.[253] In addition, guarantees have been found to have additionality: they have helped companies obtain additional loans and loans on better terms than these firms would otherwise get, rather than crowding out private lenders and substituting for loans that would anyway have been made. It is however not clear whether guarantee schemes expand funding on the "extensive margin" to *firms* that might otherwise not get a loan at all.[254]

Some countries have also created ecommerce-specific funding mechanism for firms. For example, Korea has an ecommerce-specific credit guarantees that help ecommerce buyers access loans from a financial institution. Buyers on online marketplaces can approach a bank for a loan; the bank then transmits information to the Korean Credit Guarantee Fund (KODIT), which conducts credit investigation and issues the e-guarantee.[255]

Governments have more recently rolled out early-stage financing in order to nurture tech start-ups, such as Fintechs, marketplaces, digital services firms, and online sellers that are early in their life cycles. Two dozen of the mapped countries have a government equity fund that invests directly in start-ups. For example, in 2016, the Thai Government launched a $570 million venture fund for Thai start-ups.[256] The Ministry of ICT also stated it would establish a $285 million Digital Economy Fund targeting technology ventures.

Granted, the idea that government should "pick winners" among private companies is controversial, and studies suggest that government-backed funds do not have particularly good results. However, partnerships and syndicates involving governments and private investors do outperform purely privately managed funds. [257] Evidence also suggests that governments may best support early-stage funding by acting as limited partners (that is, as funds of funds) that invest in privately managed funds with professional venture capitalists that in turn invest in companies – nine countries in the sample have adopted this strategy.[258]

Some countries have also funded MSMEs' digital transformation to bolster MSME competitiveness online; Spain, for example, has pursued comprehensive funding projects at national and local levels (Case 13).

Notably, 34 countries have specific financing programs for women entrepreneurs. For example, in Canada, Business Development Canada's Women in Technology Fund promotes the next generation of Canadian women technology entrepreneurs. In 2018, the Fund tripled its capital to $200 million, and often invests alongside accelerator partners, investors, and other corporate venture partners.[259] Specifically, the Fund invests in women-led tech firms with $500,000 to $30 million in revenue who are in seed stage, Series A stage, and sometimes in the Series B stage. It is the world's largest venture capital fund dedicated solely to investing in women-led technology companies across sectors. Business Development Canada has also earmarked $1.4 billion in loans to women-led businesses, and acts as part of a syndicate or as a lead investor.[260] The efforts are part of the Canadian government's 2018 Women Entrepreneurship Strategy that committed $2 billion over 3 years in program investment and financing targeted at women entrepreneurs.[261]

Such programs are growing in number around the world and are typically formed to overcome gender biases among lenders and investors, and incentivizing economic development in areas where private lenders are not even that prevalent. [262] For example, in 2017, Pakistan's State Bank launched a refinance and credit guarantee initiative for women entrepreneurs looking to start or expand their business in underserved areas of the country. The initiative included a 0 percent refinance rate and 60 percent risk coverage with a maximum financing amount of Rs 1.5 million (about US$9,300) over five years.[263]

Research on the role of the government in expanding lending to and investing in women-run businesses is limited; however, it appears that government funding can help incentivize lenders and investors to back women, or possibly finance women-led firms directly. Some research finds that new, "greenfield" efforts exclusively focused on investing in women have been more successful in accomplishing their gender goals than existing programs that include financing to women as an add-on component.[264]

Case 13: Funding MSMEs' digital transformation at all levels of government – Spain

MSMEs make up 99 percent of Spanish firms and are the backbone of the Spanish economy, but their growth traditionally has been slow. To accelerate SMEs' productivity growth and creation of well-paying jobs, the government of Spain has a number of activities to enable MSMEs' digital transformation and ecommerce development. The work is carried out in layers, with national, regional and municipal governments:

At the national level, MSME digitization work is carried out by Red.es, a public entity within the Ministry of Economic Affairs and Digital Transformation that enables freelancers and MSMEs to digitize, use ecommerce, innovate, and develop their skills. Red.es has two programs, "Digital Advisors", whereby MSMEs can access

specialized advisors for the development of digitization plans, and "Digital Transformation Offices" that facilitate firms' digitization and digital entrepreneurship. These programs are jointly funded by Spain and the European Union's European Regional Development Fund (ERDF) and the European Social Fund (ESF).

At the regional level, the Region of Castilla la Mancha has a multifaceted "Adelante Empresas" (Forward Businesses) assistance program for businesses of all sizes that helps participants form their businesses, secure financing, innovate, commercialize, and internationalize. Part of this program specifically seeks to enable SMEs to use ecommerce, specifically to help them start an online store and improve their positioning online. "Adelante Empresas" also includes opportunities for businesses to receive €10,000 grants to fund certain activities including establishment of new sales channels; improvement of ecommerce software; customized marketing plan with digital advertising and marketing strategies; promotion of online sales channels; and establishment of presence on marketplaces. The funding covers 70 percent of the eligible investment, and can be increased up to 20 percent when the project is located in underserved regions. The grants are co-financed 80 percent by the ERDF and the Region of Castilla-La Mancha.

Castilla la Mancha also manages a digital transformation program to promote the modernization and promotion of MSMEs' online retail – specifically to support MSMEs in acquiring new technologies, building ecommerce capabilities, managing their brands; and online marketing and advertisement.[265] This program's funding can be used for digitizing company operations or sales channels, such as for the acquisition and installation of management equipment or software or the development and launch of an ecommerce landing page. The program also helps beneficiaries install a free Wi-Fi zone in their physical locations. Similar to the "Adelante Empresas" program, projects in underserved areas of Castilla-La Mancha are eligible for 20 percent higher support than available elsewhere. These and many other programs have bene part of Castilla-La Mancha's cross-cutting "Soy Digital" (I am Digital) strategy for 2018-20 aimed to support MSMEs' digitization, data analytics, digital marketing; skills development for using digital technologies; and development of the regional digital infrastructures.[266]

At the municipal level, the Community of Madrid has had grants and financing products for regional MSMEs, including for their digital transformation and ecommerce development. In 2018, Madrid issued grants of €20,000 for MSME retailers to purchase hardware for ecommerce capabilities; €30,000 for SMEs to engage a technology provider for new custom developments and for R&D development; and €300,000 for digital transformation and digital marketing industries.[267] There has also been technical assistance and courses for digitizing firms on doing ecommerce in B2C, B2B, and C2C sectors; managing cybersecurity and consumers' data privacy; and, for MSMEs in the tourism sector, to learn about promoting their services to Chinese tourists.[268]

Madrid is also coordinating with the ERDF and the Spanish Ministry of Economy, Employment, and Competitiveness on an "SME Industry 4.0" program to fund MSMES' digital transformation.[269] The assistance covers 20-50 percent of investments made by MSMEs, and can be used for various initiatives such as data analytics, cloud computing, supply chain management, cybersecurity, utilization of social networks, and new production techniques using robotics and additive manufacturing. In addition to financing, Madrid offers SMEs a comprehensive set of tools and initiatives to digitize their operations and apply new technologies including:

- "Hada" digital self-diagnostic tool that helps firms to assess their Industry 4.0 maturity, in terms of adoption of technologies and practices. The tool is designed to assess companies at different stages of their lifecycles, resources, and activities.

- Personalized "Activate Industry 4.0" counseling program carried out by accredited consultants with experience in implementing Industry 4.0 projects. Co-financed by the Government of Spain, Community of Madrid, and the beneficiary companies, the program support companies' development of a digital transformation plan that identifies the necessary digital enablers and establishes a road map for their implementation. Companies also participate in demonstration workshops.

- The "Activate Cybersecurity" pilot program to improve MSMEs' cybersecurity defenses through free consultant resources.
- "Boosting Talent 4.0" program connects top talent from Spanish universities and vocational training centers to science and technology business networks in the Madrid region.
- "Advice on Digital Platforms" program helps firms use online marketplaces to access global consumers and reduce costs compared to traditional commerce.
- "Single Window for Internationalization" program offers customized advisory services for MSMEs to identify and onboard best-fit online platforms and internationalize their products and services.

Regulatory frameworks to encourage MSME finance. There are also several initiatives around the world to establish the appropriate regulatory frameworks to promote MSMEs' access to finance. Open banking practices – data-sharing between banks and other financial service providers through APIs or shared data platforms – is expected to expand MSMEs' access to fast-disbursing loans. Open banking is hoped to be conducive to loan underwriting and risk analysis of "thin file", small, and nascent borrowers.[270] The European Union has been particularly proactive in driving open banking through the updated version of the Payment Services Directive 2 (PSD2). The UK has taken these efforts a step further – for example by carrying out consultations to develop and establish open banking and finance principles that would enable consumers and businesses to better control their financial data.[271]

There are different regulatory approaches emerging on open banking. In some countries like India, Thailand and Australia, the government and Central Bank play an active role in defining and mandating open banking.[272] In Latin America, engaging their vibrant leading Fintech ecosystem has resulted in regulation that is more conducive to competitiveness. For example, Brazil developed open banking legislation that is expected to increase competition in the financial system.[273] In Japan and Korea, the government offers API standards and technical specifications but does not mandate open banking. Rather, it relies on an industry standard-setter or an agency's recommendations.[274] Still in another set of countries, the private sector voluntarily applies open banking practices without government intervention, as a means to scale the MSME finance ecosystem and increase business opportunities for all.

Of the 52 mapped countries, 28 mandate or actively encourage open banking, and a number of others such as Singapore and Malaysia have promoted and recommended it to the country's financial services community. In developing nations, adoption or consideration of open banking is more nascent.

Data on the impact of open banking is quite nascent. However, open banking is expected to empower users of banks like consumers and MSMEs: they can now review data from multiple institutions by way of APIs. Open banking is also expected to incentivize banks to improve their competitiveness and customer service, as consumers can search and switch to new providers with lower costs than would have previously been the case. Visionary Fintechs and banks are incorporating "open finance" methods into their service functionalities to better match customer demand and interest.

Southeast Asian nations stand out for encouraging competition in the MSME and consumer financing and banking sectors by issuing digital bank licenses to the so-called challenges banks that with strong value propositions and innovative digital business models to compete with the established banks and encourage them to innovate as well.

Other important approaches to catalyze MSME finance include regulatory sandboxes, crowdfunding, and Fintech laws that help formalize the market for innovative providers. The UK has been especially active in creating innovations to amplify funding for MSMEs (Case 14). For example, the UK has pioneered the regulatory sandbox approach, whereby companies can bring to market a new financial product or service without needing to meet all applicable regulations. The approach is found to help energize financial services and innovation; some countries also see the sandbox approach as improving financial inclusion.[275] The sandbox approach has been spreading quickly – 30 countries, especially in Asia-Pacific, have adopted it or are considering it, and Mexico adopted it as part of its 2018 Fintech law. Some countries for example in Central America that are still fashioning their Fintech laws have established innovation hubs that, like sandboxes, enable regulators to learn about solutions in the market and contemplate regulatory frameworks. The sandbox concept is also going global – in January 2019, the UK helped catalyze a "global sandbox" called the Global Financial Innovation Network (GFIN). At the time of writing, GFIN has 29 members, and serves as a means for innovative firms to interact with regulators and scale across markets.

Case 14: UK's pioneering programs to boost financing for MSMEs in the digital era[276]

Developing country MSMEs often report that the main roadblock for integrating ecommerce into their business models is lack of access to finance. MSMEs that want to set up online sales and marketing capabilities need growth capital, MSMEs that receive orders online need working capital to fulfill them, and MSMEs that ship or purchase larger volumes to and from other countries need access to trade finance.

Governments around the world have sought to offer MSMEs financing, guarantee bank loans to MSMEs, and even have started their own venture funds to invest in promising technology companies. In recent years, a growing share of governments have also worked on policies and programs to enable the growth of alternative finance ecosystems as well as take advantage of digitization and the rise of online lending and crowdfunding platforms.

The UK has been a global pioneer and model for many of these initiatives. UK has also been successful in its work to unlock alternative finance, with UK-based Fintechs having invested and facilitated billions in SME loans. In 2017, SMEs captured £4.2 billion or two-thirds of the total market volume for alternative finance in UK. [277] Over 90 percent of the total was debt, the remainder equity and non-investment models. In total, online lending accounted for about 10 percent of the volume of new loans to SMEs issues by UK banks. Most of the SMEs that sought funding were small firms with less than £2 million in revenue. In equity, crowdfunding investment volumes were 13 percent of all seed and venture deals in the UK. [278] The UK has also become the hub for investments in Fintechs, with $3.3 billion invested from venture capital and private equity funds in 2018.[279]

These successes stem in part from the range of regulatory reforms and policy innovations in the country. For example, the UK has fueled financial innovation by pioneering the regulatory sandbox whereby Fintechs can bring to market a new financial product or service for a period without securing all regulatory approvals that would ordinarily be required. In 2018, UK's Financial Conduct Authority (FCA) reported that the sandbox had become a very useful means to identify gaps in policy as well as barriers to entry and innovation.[280] Reportedly Fintechs have also benefited. In a study of 89 firms in the sandbox, Deloitte and Innovate Finance found that some could test their innovative technology, pilot entirely new technologies and business models, and experimented in ways to finetune their approaches.[281]

Equity crowdfunding has also prospered in the UK. The investor in an equity crowdfunding scheme needs to be a high net worth individual or meet some other criteria proving they have a financial cushion in case the investment does not work out. There have also been incentives for investors to engage in crowdfunding, such

as the Enterprise Investment Scheme tax shelter that provides tax incentives for individual taxpayers residing in the UK to invest in young tech companies.[282] In 2015, over £1.5bn was subscribed to EIS-qualified investment, many of them sources via crowdfunding platforms.[283] SMEs have gained from EIS: econometric studies on crowdfunding in the UK in general show positive impacts on SMEs, especially for their growth and performance. [284] The FCA released further regulations in 2020 to tackle incidences of fraud and other challenges specific to the crowdfunding market. Specifically, the regulations will address capital requirements that shield investors in the event of crowdfunding platform failure.[285]

The UK was also early to recognize the importance of open data to enable the alternative finance ecosystem to develop. Banks in the UK and EU are required to share client data securely and with client permission under the UK's Open Banking Standard and Europe's Payment Services Directive 2 (PSD2). To further accelerate Open Banking, the UK mandated that banks or other players holding MSME financial and business data share information, if requested by the MSME, with non-bank lenders analyzing the MSME's creditworthiness. For example, a borrower can ask that an ecommerce platform pass data on the borrower's sales on the platform to a lender to use in its credit analysis. By virtue of these new mandates, MSMEs become controllers and carriers of their enterprise and transactional data, which should encourage new lenders, faster credit decisions, and fewer defaults.

The UK laid the foundation to open banking in 2014 when it enacted a law that required large lenders to refer MSMEs to alternative, smaller lenders when their credit applications were rejected. Mandated to perform more extensive due diligence on borrowers, banks saw their fixed costs of loan approvals rise, which incentivized them to work on larger loans and with well-known borrowers. Still, most UK MSMEs only approached their main bank for finance, and over a third gave up completely if their application was turned down rather than shopping their loan application around with other providers. The law intended to push banks to encourage MSMEs to look elsewhere for funding. The information-sharing process – which, in addition to loans, covers factoring, asset-based lending and trade finance – occurs via online referral portals that help match the rejected MSMEs to alternative lenders.

The government has also sought to facilitate access to finance in the UK by bringing Fintech lending outside London and large cities, so as to bridge regional disparities in access to finance. The FCA's Fintech Sector Strategy involves appointing six Fintech "regional envoys" to be sent across the UK. In 2019, the largest number of Fintech investment deals globally was made in London, but activity is growing elsewhere in the UK.[286] The UK also convened a financial services Skills Taskforce to address Fintech's challenge of attracting talent and began issuing recommendations in late-2019. As a member of the European Union, UK was also part of EU's "passporting," whereby a financial services firm authorized by a regulator in one EU country can apply for a "passport" that allows it to conduct the same business throughout the EU without the need for further authorization.

The UK has also worked to solve another critical problem: the fact that each country has its own financial services regulations that do not interoperate well across countries, which forces Fintechs that are scaling across markets to adopt rules and apply for licenses specific to each new market. For example, in February 2017, UK's Financial Conduct Authority (FCA) and the Ontario Securities Commission of Canada signed an agreement to assist each other's innovative businesses seeking to enter the other's market and help them navigate regulations and lower time to market.[287] The deal is hailed as a template for cross-border regulatory collaboration in the Fintech market. UK has since built similar "Fintech bridges" with Australia, China, Hong Kong, Singapore and South Korea.[288]

In January 2019, FCA catalyzed the Global Financial Innovation Network (GFIN) as a "global sandbox", serving as a means for innovative firms to interact with several national regulators at once and thus more easily scale across markets. By September 2020, the GFIN had 44 members. The group's global sandbox pilot showed areas of improvement – for example to lengthen the application deadline to encourage firms to participate and to help them understand the various regulatory bodies' respective scope of work. The group also

learned that firms also needed help with legal and financial issues, not just simpler regulations. These lessons prompted the group to simplify the application process and launch post-pilot testing in 2020.

While most countries have yet to adopt formal Fintech laws, many are analyzing such laws and not rushing to regulate before seeing how their Fintech ecosystem develops. For example, the Banking Superintendency (SIB) of Guatemala both studies international experiences regulating Fintechs and hosts a Fintech Innovation Center that enables regulators to work closely with local Fintech associations to learn more about the Fintech ecosystem, exchange information, and support Fintechs 'development.

Sixteen governments (16) in our dataset have legalized equity crowdfunding, the concept whereby companies seek financing through online platforms from accredited investors. Equity crowdfunding has opened financing to companies that may not have extensive investor networks or that are run by women or minorities. Legislation and regulatory oversight are viewed as important for promoting the crowdfunding market, such as by keeping the costs of securities issuance reasonable and by lowering the incidence of fraudulent practices.[289] Most advanced countries, Argentina, Brazil, Colombia, Mexico, Indonesia, Malaysia, and the Philippines have adopted equity crowdfunding laws. Nigeria's Securities and Exchange Commission banned equity crowdfunding in 2016, but then issued proposed crowdfunding regulations in 2020.[290]

Cybersecurity policies pertinent to MSMEs

An open and interoperable Internet works only if it is secure and safe to use. Many countries are concerned about cybersecurity risks, especially risks facing MSMEs that often have low defenses against cybercriminals and are often the most vulnerable to attacks. Firms that are in technology-intensive sectors and have extensive data on customers, such as MSMEs that engage in ecommerce, are perhaps particularly attractive to cyber criminals. Cybercrime is also an inherently transnational challenge where one attack or attacker can quickly inflict serious damage on firms and supply chains across multiple countries.

Cybersecurity risks take many forms. Attacks include phishing, malware, data breach, eavesdropping attacks, malicious code, denial-of-service attacks, and others.[291] The perpetrators can be nation-states, hackers, or disgruntled employees; they take advantage of technical and organizational vulnerabilities, including simple human mistakes.

Cyber challenges also grow as countries become more connected to the internet. One study found that 10-15 percent Internet penetration rate suffices for the onset of hacking activities in a country.[292] For example, digitizing African countries have become significant targets of cyberattacks in the past few years, incurring some $3.5 billion in losses related to cybercrime in 2017.[293] Firms and governments in Latin America have also been targets; in a 2019 survey of 3,000 IT security experts mostly from small and mid-size firms in 13 Latin American countries, 61 percent of respondents reported having suffered at least one security incident, with malware being the most common source.[294] In a 2018 report by Microsoft and the Organization of American States (OAS), 69 percent of Latin American business respondents reported having noticed an increase in the number of attacks to their computer systems and/or networks over the preceding 12 months, and 57 percent said they did not have a dedicated budget for cybersecurity measures.[295] The study estimated cybercrime to cost US$8 billion in Brazil and US$3 billion in Mexico.[296] The ultimate impact of attacks is devastating. In one calculation, some 60 percent of cyberattacks in Europe in 2016 were aimed at MSMEs, and 60 percent of MSMEs who experienced cyberattacks never recovered.[297] Cyberattacks can also go unreported because the targeted MSME may feel it would lose clients as a result.

Cybersecurity risks are bound to permeate more industries and activities with the proliferation of 5G networks, the Internet of Things, and artificial intelligence – there are harrowing risks in sectors such as utilities, transport networks, autonomous vehicles, asset management, banking, and so on. Many countries have adopted sectoral regulations to mitigate cyberattacks as technologies evolve and sectors and firms digitize. For example, in October 2018, the Bank of Ghana issued a Cyber Security Directive for Financial Institutions that requires every bank in the country to appoint a Cyber and Information Security Officer (CISO) to advise boards and senior management on cybersecurity challenges and develop a plan to manage cyber security risks.[298] Singapore has a US$30 million Cybersecurity Capabilities Grant to help the financial sector improve cybersecurity resilience through technology and workforce training.[299]

Governments have also sought to respond to cybercrime both through international instruments and unilaterally, through laws and awareness-building with firms. The 2004 Budapest Convention on Cybercrime is the leading and first international legally binding agreement on cybercrime, aimed to harmonize national laws, improve investigations, and increase cooperation among nations. It has 67 members, including Council of Europe members and Australia, Canada, Dominican Republic, Israel, Japan, Mauritius, Panama, Philippines, South Africa, Sri Lanka and the United States. Widely viewed as the global benchmark for national cyber laws, the Budapest Convention is complemented by a range of global, regional and national cybercrime measures and guidelines.[300] For example, the U.S. NIST Cybersecurity Framework and the Cyber Resilience Review (CRR) and the International Organization for Standardization (ISO) standards for cybersecurity have been quite widely adopted by countries and companies.

Many developing countries in our mapping are actively working, discussing, and passing cyber strategies and laws, of which many are aligned with the Budapest Convention. In our mapping, 40 countries have a national cybersecurity strategy in place, and 8 have a draft strategy. Only 4 countries were not found to have a draft yet in place (Bolivia, Ethiopia, Tanzania, and Vietnam). Oftentimes, having legislation governing cyber related crimes precedes the development of an official strategy; in our mapping, 47 countries currently have legislation to address cyber related crimes, while the remainder have at least a draft. No countries in the mapping were found to be without at least a draft cybercrime law.

In addition, most countries address cybercrimes specifically through a standalone law relating to cybercrime. Governments have also put in place Computer Emergency Readiness Teams (CERTs) to analyze and pre-empt cyber threats and vulnerabilities, and coordinate incident responses.[301] Most countries in our mapping have a CERT or equivalent entities, with the only exceptions being Namibia and Honduras. However, these countries have in recent years begun working on developing a cybersecurity strategy, legislation, and CERT type entity.

Several governments in our mapping have also sought to build small firms' awareness about cyber risks, using websites, informational campaigns, and workshops. Mexico and Malaysia have created extensive guidelines and manuals specifically for MSMEs. Other countries including the UK, Germany, and Nigeria have worked with the private sector to develop educational campaigns, programs, and workshops to help small businesses understand cybersecurity threats. Many governments have also put in place mandatory breach notification standards. EU's GDPR, for example, requires that companies that experience breaches of personal information report the breach within 72 hours to a relevant authority.

These steps are not sufficient for MSMEs to put in place sturdy cyber-defenses and practices, and some governments have taken sturdier approaches by providing MSMEs with training and incentives to bolster their cyber-defenses. For example, in Singapore, the Cyber Security Agency of Singapore (CSA), Infocomm Media Development Agency (IMDA) and Enterprise Singapore (ESG) offer MSMEs funding of up

to 70 percent of the cost of pre-approved cybersecurity products and services including subscription, license, and installation fees.[302] The Australian government implemented a "Cyber Security Small Business Program" through cybersecurity non-profit CREST in which they reimburse 50 percent of the cost for a small business to complete a certified cybersecurity health check. Australia is also investing in strengthening cybersecurity globally; in March 2020, CREST received a $1.4 million grant to help mature the security industry in target countries of Bangladesh, Ethiopia, Indonesia, Kenya, Nigeria, Pakistan, Tanzania and Uganda.[303] The grant will go towards supporting and establishing accredited member companies and provide funding for certification exams. Some major cities have also launched MSME cybersecurity programs.

In addition, governments are incentivizing investment in cybersecurity firms and expertise to benefit MSMEs. European countries, Korea, Singapore, and Israel, among others, have developed university programs in collaboration with the private sector to advance cybersecurity research and develop a cadre of experts. Singapore's CSA and its partner TNB Ventures launched in 2019 a Cybersecurity Industry Call for Innovation, to help companies develop innovative solutions to address specific cybersecurity challenges. [304] In Chile, the government has collaborated with the University of Santiago to provide scholarships to MSMEs and workers who provide services to MSMEs for a Cybersecurity training program. In the United States, the state of Maryland seeks to incentivize investors to invest in local cybersecurity companies through a refundable income tax credit equal to 33 percent (up to a maximum of $250,000).[305] New York City launched a "moonshot" challenge to incentivize the cybersecurity community to develop scalable solutions for New York MSMEs against cyberattacks (Case 15).

Case 15: Cybersecurity Moonshot for New York's MSMEs

As the 240,000 New York City-based small and midsize businesses have migrated online and collected more data, they have also faced cyberattacks they are ill-prepared to handle. Traditionally, cybersecurity companies have targeted and priced cybersecurity tools to large businesses with strong budgets and in-house IT capabilities, though MSMEs are increasingly becoming targets. A New York City-run survey revealed that 85 percent of the city's MSMEs ranked cybersecurity as very important to their business and 76 percent wanted to learn about affordable cybersecurity solutions.

In response to the gap in cybersecurity services for MSMEs, the Mayor's Office of the Chief Technology Officer (MOCTO), NYC Cyber Command, and New York City Economic Development Corporation (NYCEDC) launched in 2018 the "Cybersecurity Moonshot Challenge" to encourage the private sector to develop and deliver affordable and scalable cybersecurity solutions tailored to MSMEs. The challenge formed part of the Cyber NYC initiative, a $100 million public-private investment vehicle mounted with Jerusalem Venture Partners aimed at transforming New York City into a global leader of cybersecurity innovation and talent. [306] The vehicle partners with global companies from Israel, Japan, South Korea, and city governments like Singapore, Berlin, Helsinki, London, and Paris.

The Moonshot Challenge offered finalists up to $20,000 to test their proposal in New York City, investing over $1 million investment to winning proposals. The City received 169 applications from 77 cities and 18 countries. The top 18 proposals were announced in October 2019, included proposals from firms SKOUT CYBERSECURITY, Inky, and Paladin.[307] The winning proposals focused efforts in advancing cloud security, penetration testing, user authentication, and the security of online devices.

At the end of the Moonshot Challenge, the organizers published recommended security standards and best practices for MSME cyber resiliency. The organizations then partnered with the Department of NYC Small Business Services to launch a Cybersecurity training for small and mid-size businesses in New York City.

The Moonshot Challenge is the latest that the city has offered up to innovative companies, following competitions focused on 5G wireless communications and electric vehicles.

Governments in some regions have pursued common approaches to cultivate cybersecurity ecosystems. ASEAN has created an initiative to train 1,200 staff from ASEAN countries' security-related agencies by 2021. The Thai ETDA is the main operational center for the ASEAN cybersecurity training thanks to its CERT (ThaiCert) that provides strong operational capabilities for the training. Singapore has also created a Senior Executive Cyber Fellowship to build interdisciplinary expertise among senior management on cybersecurity, with a 10-day course with trainers drawn from global subject-matter experts from government, industry and academia. [308]

Governments can also diffuse cybersecurity practices among MSMEs by requiring government contractors have certain cyber-defenses. In the UK, for example, companies that seek to apply for government contracts will need to contact an accreditation body to receive a Cyber Essentials certificate. A business completes a self-assessment of several technical requirements and a certification body can award the certificate. Another, even more scalable approach might be the adoption of corporate digital ID that enables MSMEs to securely authenticate and authorize themselves among service providers, such as governments, financial services firms, and online marketplaces.

Further, governments themselves are taking action to improve their own capabilities to implement cybersecurity laws and programs. In 2019, Uruguay received an US$8 million loan from the Inter-American Development Bank to strengthen Uruguay's capacity to improve prevention, detection, and responses to cyber-attacks.[309] In Sri Lanka, the Ministry of Telecommunication, Digital Infrastructure and Foreign Employment signed a Memorandum of Understanding (MoU) with Microsoft to drive the country's digital transformation, with one of the features of the MoU being a cyber security risk assessment across the government and security program.[310]

E-procurement policies pertinent to MSMEs

Government contracting for goods and services can be a potent source of business for MSMEs. Across OECD countries, public procurement makes up on average 12 percent of GDPs and 29 percent of total government expenditures.[311]

MSMEs have traditionally been outclassed by large firms in government procurement, securing fewer contracting opportunities than their importance in economies would suggest. According to some estimates, MSMEs' revenue as share of public sector contract revenues is less than a half of the share of their overall revenue in the economy.[312] Some of the reasons for this disparity include the complexity and lack of transparency in the public bidding process, MSMEs' limited capacities to monitor opportunities and prepare bidding documents, and required standards and technical requirements that large firms are likelier to have in place than small ones. Feedback from the public sector is generally limited for MSMEs to learn how to improve their bids.

The bidding process can also be stacked against small bidders: public sector entities tend to prefer larger procurements due to the fixed costs associated with each procurement. Thus, procurements will often be large in terms of quantity, scope, geographic area. MSMEs are likelier than large firms to have capacity constraints and limited geographic footprint to execute such projects, even if they could well do parts of such projects better than a large bidder. Empirically, large contract values are associated with low participation rates by micro and small firms in bidding processes.[313]

Some governments have long promoted MSMEs' access to some "fair proportion" of government contracts, including through practices such as quotas and set-asides for MSMEs that have been adopted in Australia, Canada, Malaysia, South Africa, the UK, and the United States. While set-asides have helped promote MSMEs' access to contracting opportunities and meet public policy objectives of supporting MSMEs, it is not clear that it is desirable for government buyers to discriminate against firms by size or any other characteristic. Quotas and set-asides, economic literature suggest, can be distortive and result in suboptimal outcomes for the public sector buyer.[314]

Literature does however support the notion that increasing the number of potential bidders (encouraging MSMEs to bid but not necessarily excluding larger firms) can propel competition and variety of offerings, arguably increasing the potential for innovation.[315] This outcome is desirable: public procurement programs have been criticized for choosing bidders based on their price rather than on the innovation they may provide. France has made an explicit assumption that MSMEs are more innovative in a law that enables public sector buyers to give preferential treatment to innovative MSMEs when purchasing high technology products, R&D, or studies.[316]

E-procurement has the potential of bringing more firms into the government procurement process and remedy some of these frictions and challenges facing small firms in public procurement. It is hoped that through digitizing procurement, procurement processes can be more efficient and offer greater transparency, such as by enabling MSMEs to better access bid documents, prepare bids online, and easily see the universe of available bids. In our mapping, roughly two-thirds of the countries have implemented e-procurement systems. For example, the Chilean government's ChileCompras has created free listings online of procurement opportunities, mandated online publication of the up-to-date annual public procurement plan, and promoted open access to public procurement market information for local business and civil society.[317] This bidding process is fully digitized.

Economic research tends to side with procurement processes that do not necessarily involve quotas or set-asides, but that are focused on transparency, easier and faster processes, and ensuring a level playing field among bidders. E-procurement, when well designed and executed, can be an effective means to help MSMEs compete for government contracts, and potentially pre-empt the need for arguably distortive policies such as quotas.

MSMEs themselves tend to view e-procurement favorably. For example, in Europe, MSMEs that have been interviewed see e-procurement as helping them save time as they do not have to enter the same information across multiple bids and prepare and deliver bidding documents in envelopes to government agencies. [318] E-procurement also helps MSMEs track their competitors' bids and behaviors, and overall have visibility into all potential opportunities online.[319]

Several governments have created innovative processes and policies to further improve MSME e-procurement. In Korea, the Public Procurement Service Authority (PPS) uses the Korea Online E-Procurement System (KONEPS) to increase MSME participation in government procurement. One feature is a product catalogue of government suppliers, contractors, and consultants that government buyers can peruse to understand best-in-class supply in the market regardless of the size of the firm. India has implemented such procurement catalogue composed of products of women-led firms (Case 16).

Case 16: Womaniya Government eMarketplace to Increase Procurement form Underserved Women-led Firms – India

Indian MSMEs contribute significantly to the country's economy – according to the SME Chamber of India, MSMEs account for 38 percent of the country's GDP, 45 percent of total industrial production, and 40 percent of total exports. However, SMEs have traditionally won just five percent of the $370 billion annual public procurement contracts in India. In response, the Government of India introduced the Public Procurement Bill that requires public sector procurers to source at least 20 percent of total procurement from MSMEs.[320] A fifth of the 20 percent set-aside is for MSMEs led by Scheduled Tribe or Scheduled Caste members. Three percent of government procurement is reserved for women entrepreneurs.

Since the law went to effect in 2015, India has implemented several changes to increase the participation of MSMEs and women-led MSMEs in government contracts, including launching a comprehensive and free e-procurement portal that provides MSMEs with convenient and free access to public contracting opportunities and allows them to download available tenders and submit bids online. In addition, India began managing MSME registration and organizes public procurement initiatives that privilege MSMEs through its centralized advocacy body, the National Small Industries Corporation (NSIC). India also enforced a purchase-preference system that reserves certain products for MSMEs and provides a margin of preference up to 15 percent for SMEs competing with large-scale industries on a tender-by-tender basis, at the discretion of procurement officials. MSMEs are also exempted from paying earnest money, security deposits, bid guarantees, and performance guarantees during the bidding process in order to reduce transaction costs.

The Indian government has supported these e-procurement reforms with a series of initiatives to help women-led MSMEs access public procurement opportunities online. In 2016, the Ministry of Women and Child Development launched Mahila-E-Haat, a bilingual online marketing platform to help aspiring women entrepreneurs, self-help groups, and NGOs advertise their products and services. In 2019, the Government e Marketplace (GeM) launched "Womaniya on GeM," which enables women entrepreneurs, including informal entrepreneurs, to sell products directly to Government ministries, departments, and institutions. The initiative helps women entrepreneurs and women self-help groups sell handicrafts, accessories, jute and coir products, home décor, and office furnishings directly to various government ministries, departments and institutions, especially at local levels. Further, the initiative specifically targets underserved segments as more than 60 percent of 8 million women-led firms in India are from challenged backgrounds.[321]

Womaniya on GeM rides on the growth of Internet penetration in India as women-led firms are increasingly leveraging the internet to market their goods and services online, including to the government. According to Indian government, one-half of the country's Internet users reside in small, typically underserved towns, and women constitute a third or 143 million of India's Internet users. Keenly focused on growing women-led firms as a means of improving families' welfare and alleviating poverty, GeM leadership has found that women in India invest up to 90 percent of their earnings back in their families to provide better nutrition, health care, and education to their children.

As an open platform, GeM removes entry barriers to suppliers that want to do business with the Government. Buyers and sellers use SMS and e-Mail notifications to communicate, and incorporates online payments through integration with the Public Financial Management System (PFMS) and State Bank Multi Option System (SBMOPS). The system also enables the buyers to compare sellers and products and rate vendors. On the supply side, sellers are encouraged to offer products across government agencies, assess and change their prices as market conditions change, and access new product suggestions.

The efficiencies offered by GeM have been estimated at 15-20 percent costs savings from public procurers. In 2019, three years after GeM launched, the platform featured 731,431 product categories, 180,862 registered sellers, and 32,114 government buyers.[322] Since inception, GeM has processed 1,171,761 orders worth some $2.2 billion in gross merchandise value.

Governments have also deployed technology to subdivide larger contracts and publicize them online, thereby encouraging MSME participation. For example, Danish online portal www.udbud.dk provides a low-value shopping system and feedback function where MSMEs can bid for small government contracts; Italy has a similar "e-Marketplace" for governments to seek small contractors.[323] These mechanisms have been found to open opportunities for MSMEs. Korea also has a Multiple Award Schedule (MAS) for MSMEs, as a simplified process for procurement of recurring, high volume purchases through indefinite delivery contracts.[324] ChileCompras has found that the probability to award public contracts to MSMEs increases if the value of the contract is kept low, and that in lowest price procurement, broader participation by MSMEs increases the probability of savings to the public sector.[325]

Given that MSMEs may need financing to execute contracts, governments are also working offering e-procurement-specific financing options. Korea has helped MSMEs secure the cash flow through advancing payments for up to 70 percent of purchase prices and launching a loan program with selected financial institutions to help MSMEs to access bank loans for up to 80 percent of the relevant contract price to cover the costs of contract execution.[326] Governments have also set out to use disruptive technologies such as blockchain to facilitate e-procurement; many of these reforms reduce time and cost in the bidding process for MSMEs in particular (Case 17).

The public sector certainly also needs to *implement* the laws and regulations aimed to help MSMEs compete for bids. At best, studies find mixed results on public sector entities' implementation of procurement mandates, especially ones that raise transaction costs to the public sector buyer (such as dividing contracts into lots and encouraging consortium bidding). The use of technologies and innovative processes can possibly help administer these small procurements.

In principle, MSMEs also benefit from participating in public procurement processes in foreign countries. WTO members have negotiated a plurilateral Agreement on Government Procurement (GPA) that ensures level playing field between domestic and international providers. The GPA has 19 parties (including EU as a block) comprising 47 WTO members; another 29 members are observers. However, public procurement policy standards of GPA do not apply to small value procurement below 130,000 Special Drawing Rights (SDRs, about US$175,000); governments are able to adopt their preferred procurement policies for these smaller contracts. Many preferential trade agreements also have government procurement chapters that typically mandate national treatment and non-discrimination among the parties in procurement. For example, European and U.S. free trade agreements call for parties to provide electronic government procurement process. In our mapping, 6 countries belong to the GPA, 19 are observers to the GPA, and 2 of these observing countries are in the process of acceding to the GPA.

Case 17: e-Procurement Efficiencies with Blockchain – Mexico and Canada

With e-procurement becoming the global standard for government procurement, governments are turning to disruptive technologies to secure and automate procurement processes. For example, a number of governments have experimented with blockchain in procurement in recent years: Japan to improve information security; the U.S. Health and Human Services to automate pricing analysis; Mexican state of Jalisco to increase transparency; and the municipal government of Seoul to accelerate bid evaluation.[327] Blockchain is especially useful in helping agencies track and validate bidders and purchases. By leaving in place a time-stamped record of each transaction, it hoped that blockchain can help combat corruption and human error in procurement processes.[328] SMEs also benefit from blockchain-based procurement, as it increases the transparency and legitimacy of the procurement process as well as empowers SMEs to track their bids in real time. Mexican and

Canadian governments in particular are generating interesting insights by experimenting with blockchain in public procurement processes.

In Mexico's case, the government first tested a blockchain-based public procurement process in August 2018. The Digital Government Unit of Mexico's Ministry of Public Administration manages a project HACKMX aimed to use blockchain to track and validate bids for public procurement contracts.[329] Today, Mexico is now looking to create a blockchain-based contracting system on the federal government's bidding portal using Ethereum. The government envisions using smart contracts to automate each step of the contracting process including registration of the buying unit or procuring agency; registration of the supplier; verification of the supplier's background based on data stored in the blockchain network from previous bids; and the contract award process.[330]

In Canada, the Public Services and Procurement Canada (PSPC) uses blockchain to help MSMEs and bidders enter data and re-use it for multiple bids. Other Canadian public organizations, such as the Province of British Columbia and Indigenous and Northern Affairs Canada, developed similar blockchain systems and linked them together so businesses can have even greater scale economies in bidding for government contracts.[331] In addition, the National Research Council (NC IRAP) is also experimenting with Ethereum blockchain to improve transparency in government contracts.[332] Specifically, NC IRAP uses blockchain to publish real-time contributions and grants data on the Open Government website.[333] As of 2019, the blockchain prototype project had published 7,669 disclosures with a total value of about US$811 million, at an average publishing cost of $0.46. Users from 203 countries accessed these disclosures.[334] This initiative and the PSPC project form a network of blockchain-based procurement strategies Canada is piloting to improve the transparency, accuracy, and efficiency of the procurement process.

Ecommerce plans and statistics

Governments around the world have been building national digital strategies in recent years to encourage the digitization of transactions and government services, and to ensure benefits of digital technologies reach the poor and traditionally underserved segments. Several mapped countries have also set out to develop national ecommerce strategies or plans specifically to promote MSME ecommerce. These typically involve extensive consensus-building among numerous stakeholders from different government agencies and associations, and aim to secure and assign resources to the identified priorities. China stands out for having systematically promoted ecommerce in many ways in its economy, including drawing up and implementing plans to boost rural ecommerce (Case 18).

Governments around the world are also seeking to measure ecommerce use among consumers and MSMEs, as well as to better track their countries' domestic and cross-border ecommerce volumes. Most countries in our mapping have yet to produce statistics on ecommerce use, although some have collected smaller samples of data, for example through export promotion agencies. Currently, there is no consistent and publicly available global data on ecommerce flows within or across countries. Rather, each marketplace and seller have its respective data, but these data are not publicly available or brought together into a comprehensive measurement. Further, while cross-border ecommerce does get captured as part of countries' cross-border trade data, customs declarations do not capture how the sale was made – there is as of now no simple means to separate out ecommerce shipments from overall trade. The best proxies for cross-border ecommerce might be data that are Universal Parcel Union parcel shipments, and shipment data from express shippers. These however do not necessarily capture B2B ecommerce flows. There is much better data on ecommerce in services; digitally deliverable services

volume has been used as a proxy for cross-border digital trade in services. Overall, however, data on sales made online within and across countries are limited, especially at high levels of disaggregation.

Especially some advanced countries have sought to overcome these challenges by measuring ecommerce flows and use in their economies through national censuses and business surveys. For example, the U.S. Census Bureau has quarterly data going back to 1999 on ecommerce retail sales, as well as multisector data on ecommerce.[335] Eurostat measures annually ecommerce flows and use among Europeans and European businesses.[336] Brazil also has ecommerce-related questions in selected surveys; however, the data is aggregated at the level of five main regions.

Mexico's National Institute of Statistics and Geography (INEGI) has some of the best data in the world on ecommerce use among Mexican consumers and firms. It covers ecommerce-related questions in a household survey, such as whether the household made purchases online, and to what extent they use ecommerce as opposed to other online services; and in the business census that covers firms' use of ecommerce and online sales and purchases by online channels, offering a rich view on how firms in different sectors and states use ecommerce – and data for researchers to detect the underlying drivers of variations in firms' ecommerce participation and intensity. The insight the data enables can in turn help policymakers to identify and address disparities in ecommerce use across firm segments and geographies. INEGI has also examined the macroeconomic impacts of ecommerce, by calculating the gross value-added of ecommerce in the economy and in the main economic sectors.

Case 18 – Taobao Villages of China:
What are their impacts, and how can they be replicated elsewhere?

Ecommerce sales from rural China have been booming in recent years, with online purchases are growing three times faster than in urban areas. The growth of ecommerce has in rigorous studies been found to raise consumer welfare in rural China, mostly due to rural netizens' increased access to the wider variety of products available to their urban peers.[337] But rural Chinese not only shop online; they increasingly sell online as well. One of China's innovations, Taobao Villages, has helped spur ecommerce in rural areas. Taobao Villages are small communities of MSME sellers that sell their products largely on Alibaba Group's Taobao platform.

A "Taobao Village" has 100 or more online shops operated by locals and generate $1.5 million or more in annual online sales. [338] According to Aliresearch, as of August 2019, there were 4,310 Taobao Villages across 25 Chinese provinces with altogether 660,000 Taobao shops, nearly a ten-fold growth from 2014 levels.[339] The shops have initially focused on the comparative advantages of their villages, such as agricultural products, traditional crafts, or manufactured goods obtained from nearby wholesale markets.

Most Taobao Village shops are very small: two-thirds are run by individuals without employees and a third have few than five employees.[340] While they compete against each other, they also work together and subcontract each other.[341] The employees of these MSMEs are the very same consumers that are driving ecommerce purchases in China's rural areas – they use their revenue to shop online. The shops have also spurred the rise of a vibrant ecosystem of ecommerce service providers such as IT services, graphic designers, photographers, express delivery services, warehousing, and so on.[342]

The total sales generated by Taobao Villages – and Taobao Towns, which are larger-scale rural townships that deploy the same Taobao Village model – amounted to $100 billion in during the year ending in June 2019. Taobao shops have created new jobs for people who might otherwise have left to urban areas and factories to work, and helped reduce income inequality, including among rural and urban areas. Taobao Villages have specifically created job opportunities for women – about a third of the Taobao shop owners and almost a third of the employees are women.[343] According to estimates, almost 7 million jobs were created in the 12 months prior to June 2019 in the Taobao Village ecommerce value chain.[344]

The opportunities to build and work in ecommerce have also stemmed outmigration from rural areas in the agricultural sector. Econometric work shows that individuals that are in agricultural Taobao villages are 26 percent less likely to migrate than individuals from non-agricultural Taobao Villages, controlling for various factors that are likely to influence the migration decision such as demographic characteristics, migration experience, educational background, and health status.[345]

Taobao Villages have quickly become an exciting model for governments in other developing nations. Visitors from Rwanda, Mexico, Malaysia and other countries join the annual Taobao Village Summit, where rural entrepreneurs and scholars in China share best practices for rural ecommerce businesses.

Economists have uncovered certain key ingredients that go into building a Taobao Village. One essential factor is infrastructure and capabilities furnished by the Chinese government – good Internet connectivity, logistics networks, and capital and talent. [346] For example, Dongfeng Village of Shajia County in Jiangsu Province and Junpu Village of Xiyang County in Guangdong Province reportedly became Taobao Villages thanks to the national government's support of basic infrastructure, ecommerce industrial parks and service centers, low-interest loans, tax concessions, connections to talent in universities, and urban planning that was geared to enabling ecommerce. The national government's support is part of its broader rural development strategy: China's 2018-22 rural development strategy pledges to improve rural incomes and living standards, as well as of other government initiatives such as subsidized rural manufacturing and rural drone development.[347] The Chinese Communist Party has actively promoted ecommerce as a means to end poverty, and pushed local governments to cultivate Taobao shops.[348]

Alibaba's role has been very important as well. The company is a leading provider of ecommerce training, IT hardware, and broader services to rural villages, which the company has made as an investment in capturing the bulk of the rural ecommerce market.[349] For example, in 2014, Taobao announced it would establish 1,000 county-level and 100,000 village-level service centers that provide connectivity, logistics, and business services to both buy and sell online, along with educational, medical, travel, ecommerce training, and social services.

At the same time, there are hundreds of thousands of villages in rural China – yet only a small set of them have become Taobao Villages. What has made this subset of villages succeed?

Econometric work by Jiaqi Qi across over 1,600 counties in two major provinces suggest that education levels – specifically the share of high school graduates in a county and availability of computer, communication and other skills in the county – are associated with the rise of Taobao Villages.[350] In addition, counties that have more firms and factories are likelier to have more Taobao shops, as are counties that have a certain ecosystem of services that online sellers need such as advertising, shipping, and website development.[351] Tax base also seems to play a role: in counties with a strong local tax base, the government is able to invest in transportation infrastructure. Meanwhile, government support for industries and businesses that are not engaged in ecommerce, such as state-owned enterprises, reduces the odds of Taobao shop formation.[352]

Taobao shops also share common features. For one, they tend to be led by relatively young entrepreneurs with above-average education levels.[353] Many are migrants returning from larger cities where they firsthand witnessed China's online shopping boom. Taobao shop owners are savvy about ecommerce and leverage the Taobao platform frequented by millions of consumers as a marketing and market research tool. For example, some Taobao shop owners have gained a great deal of traction livestreaming programs about fresh and high-quality local food products to urban audiences. One village excelling in apple production used celebrities to streamline their apples to 300,000 viewers and as a result sold 35,000 kilograms of apples produced by 700 poor households.[354] Taobao sellers are also using Taobao to access insights about shoppers' interests. For example, small firms in Chaoyang Nanshi Village that produce Tang dynasty-style tricolor pottery learned via Taobao that shoppers are looking for rear-mirror pottery charms for their cars.[355]

Granted, Taobao shops also face many challenges, much like many aspiring ecommerce sellers around the world. Their main constraints include high costs of online advertisement; stiff competition, including from shops in the same village; and lack of skills to use digital channels. They also do not have many funding sources: most shops were founded with funds borrowed from family, friends, and relatives.[356]

Household incomes in Taobao Villages are almost three times higher than incomes of average rural households in China, and approximate average incomes in urban areas. While Taobao Villages are probably wealthier to begin with, econometric evidence also shows that Taobao Villages have had similar impacts as fiscal expenditures by local governments: they raise rural incomes and help close the rural-urban income gap.[357]

There is still much more potential in the rural areas of the Western part of China, both in online consumption and sales. While the rural areas of the country make up over 40 percent of citizens, they make up fewer than 30 percent of internet users in China.[358] These areas tend to be populated by an older demographic than in the cities; Alibaba has recently introduced a Taobao shopping app specifically to those over 50. Another ecommerce giant, JD, has announced plans to build 10,000 drone hubs across the country to serve rural areas.[359]

V. SUMMARY OF FINDINGS

This report has analyzed the adoption and design of a range of regulations, policies, and practices conducive to MSMEs' use of ecommerce around the world, in order to provide actionable information and ideas for developing country governments to pursue regulatory reforms, programs and pilot initiatives to enable MSMEs to seize the historic boom in ecommerce, sell online, grow their sales, and create new jobs.

We reach the following main results:

- **The ecommerce policy index developed in this report is strongly correlated with countries' development levels, but there are also countries that notably outperform their peers at the same level of development.** Overall, advanced countries and selected East Asian and Latin American economies have adopted about 60-80 percent of the good policies and practices mapped here, while less developed countries in Africa, South Asia, Southeast Asia, and Central America have adopted only 25-45 percent. In the top quartile of countries with highest policy coverage are seven OECD nations (Canada, Chile, Germany, Japan, Korea, Singapore, and UK) as well as India, Brazil, Malaysia, Colombia, China, Thailand, Costa Rica, and Indonesia. India, Thailand, Malaysia, Brazil, Mexico, China, and Rwanda outperform their peers at the same level of development in the adoption of the mapped policies.

- **Most countries have adopted the basic policies that regulate online transactions, but lesser developed countries lag in the adoption of the more sophisticated digital regulations and even some basic trade facilitation policies key to MSMEs in ecommerce.** Most countries have adopted electronic transactions and signatures laws, national broadband plans, and online portals for customs compliance information as well as offered credit guarantees on bank loans to MSMEs. However, certain essential digital policies have yet to be adopted widely, such as safe harbors that provide internet intermediaries partial immunity from user-generated content, online dispute resolution systems that build consumers' trust in ecommerce, and export promotion practices that help MSMEs use global online marketplaces and secure financing for their digital transformation projects. Some governments are adopting policies that undermine MSME ecommerce, such as data localization mandates, new taxes on digital transactions, and low customs *de minimis* values.

- **There is significant positive innovation and experimentation with policies conducive to ecommerce around the world**. Both advanced and developing countries have pursued exciting policy innovations to promote MSME ecommerce. For example, many countries have followed the lead of Singapore, Switzerland, Germany, and Canada to revamp their postal services to facilitate ecommerce fulfillment; many Latin American economies such as Peru, Brazil, and Costa Rica have built creative online programs, public-private partnerships, and digital transformation initiatives to help MSMEs use marketplaces to export; and several countries' customs agencies are piloting artificial intelligence and blockchain to better manage inbound ecommerce. Countries are also increasingly adopting Fintech sandboxes to test new financial and payment products useful for MSMEs. Notably, many countries have launched programs to empower women-led firms with technology and financing.

- ***De facto* digital regulatory integration is strongest in Latin America, weakest in sub-Saharan Africa.** This study enables an early diagnostic of convergence (and divergence) of national digital regulatory frameworks pertinent to ecommerce. Countries are adopting key policies and regulations at different speeds, still with relatively little coordination with each other. The risk is that MSMEs would as a result have to comply with a diverse range of consumer protection, data privacy, copyright, and other national rules when engaging in ecommerce even with neighboring countries. We find "families" of countries with similar policy regimes; these are somewhat clustered regionally, such as in the Southern Cone of Latin America and in Central America. However, there are rather significant differences in rules and their adoption among Southeast Asian and African countries.

- **Local governments and stakeholders such as chambers of commerce play an increasingly important role in ecommerce development, especially in terms of building MSMEs' ecommerce capabilities; developing ecommerce logistics plans; and seeking to attract investment in ecommerce-related businesses.** This opens an opportunity for national governments and the international development community to work with local leaders to enable ecommerce in developing nations, and to bridge developing countries' in-country disparities in ecommerce use.

How can developing countries improve their enabling environments for ecommerce? The policy areas mapped here, along with the existing policies and practices in countries around the world, provide a starting point. The policy mapping suggests there are two primary categories of countries: countries with limited essential policies and practices that are beginning to take advantage of the opportunities platforms offer for their MSMEs; and countries with more comprehensive policies where ecommerce is booming.

The first set of countries tend to be low-income countries in Africa, South Asia, and parts of Southeast Asia. These economies are still developing basic digital infrastructures such as diffusion of 4G networks and ICT skills across the society; ease of doing business online, including digital business registration, online lending, and e-filing of customs paperwork; postal ecommerce logistics; and export promotion and MSME credit systems conducive to ecommerce.

These economies should accelerate 4G and 5G rollouts, support the interoperability of online payments, remove taxes and tariffs on ICT products, and digitize and further automate border clearance and trade compliance documents. These countries also need to provide more legal certainty for platforms and online seller MSMEs, through the establishment of safe harbors for internet intermediaries, rules that enable cross-border data flows, and enforcement of balanced and robust consumer protection laws.

Some excellent examples for these economies include Malaysia, which quickly transformed itself into a digital economy; Peru, Brazil, and Costa Rica, which have experimented with creative online export promotion programs; and Costa Rica and Brazil, which have accelerated the interoperability of payments systems in their economies.

The second set of countries include advanced economies, China, and many emerging markets in Latin America and Southeast Asia. In these economies, the priority is to roll out 5G networks; uphold and implement digital regulations conducive to ecommerce; enable firms' to transfer data across borders; promote firms' digital transformation; and bridge disparities among rural and urban regions in digitization and ecommerce use.

These economies can also significantly streamline their logistics and border clearance processes by using disruptive technologies such as AI and blockchain, and next generation instant, data-rich payments. The

next step for these economies is to further the digitization and interoperability of their trade and finance ecosystems, for example through open APIs, blockchain, and self-sovereign digital IDs.

All economies can still amplify support to women-led companies to engage in ecommerce, such as through robust financing programs to help women-led firms access and hire ecommerce talent and loans and equity finance. It is critical that government agencies further disaggregate trade, ecommerce, and firm performance data by gender of the leader and management team.

The approach and results can be leveraged in various ways, including to:

- Expand the set of countries analyzed to enable rigorous cross-country comparisons and identify a wider range of policy innovations;
- Create a real-time online database to continually track countries' progress in adopting and implementing policies essential to ecommerce;
- Develop a more succinct measure of digital fragmentation and, conversely, *de facto* digital integration among countries;
- Use the policy data collected here to rigorously assess the impacts of various policies on ecommerce; and
- Expand policy analytics on city-level ecommerce promotion activities, to better support developing country local leaders with their ecommerce development work.

APPENDIX I – POLICY ISSUES MAPPED AND SCORING METHOD

Digital Infrastructure	
Government national broadband plan or initiatives	1 = yes ; 0 = not found
Government initiatives to promote women entrepreneurs and women-led companies to innovate in tech	1 = yes ; 0 = not found
5G strategy published or initiatives announced	1 = yes ; 0 = not found
5G service has been rolled out	*1 = yes; 0 = not found*
5G spectrum auctioning has happened already	*0.5 = spectrum assigned ; 0.25 = auction planned ; 0 = not found*
5G piloted/trials have taken place	*0.25= yes; 0 = not found*
4.5G rolled out	*0.5 = yes; 0.25 = in planning ; 0 = not found*
Competition among fixed wireless broadband providers	0.2 = full ; 0.1 = partial ; 0 = monopoly, or N/A
Competition among fixed satellite services	0.2 = full ; 0.1 = partial ; 0 = monopoly, or N/A
Competition among mobile cellular	0.2 = full ; 0.1 = partial ; 0 = monopoly, or N/A
Competition among mobile satellite services	0.2 = full ; 0.1 = partial ; 0 = monopoly, or N/A
Competition among internet services	0.2 = full ; 0.1 = partial ; 0 = monopoly, or N/A
Competition in international gateways	0.2 = full ; 0.1 = partial ; 0 = monopoly, or N/A
Competition in wireless local loop	0.2 = full ; 0.1 = partial ; 0 = monopoly, or N/A
Universal access/service policy adopted	0.25 = yes; 0 = no
Caps on FDI in wireless and fixed telecommunications	-0.5 = some limits or caps on FDI found, such as in certain sectors
Information Technology Agreement member	1 = yes ; 0 = no
2018 applied tariffs on cellphones	distance from frontier: 1 = best, 0 = worst or N/A
2018 applied tariffs on laptop computers	distance from frontier: 1 = best, 0 = worst or N/A

Digital regulations on online behavior	
Net neutrality in place: ISP's barred from limiting Internet content that flows through their networks	1 = yes ; 0 = not found
Liability exemptions/safe harbors for internet intermediaries from copyright infringement	1 = yes ; 0.5 = in draft, or is party to treaty that requires safe harbor regulations though not found to have adopted in national legislation yet ; 0 = not found, law does not mention internet intermediary liability, or law implies high liability risk i.e. EU directive
Copyright limitations and exceptions - use of "fair use" standard	1 = yes ; 0.5 = not officially but abide by Berne Convention ; 0 = not found
OTT regulations affecting Internet services	-1 = yes ; 0 = not found
Caps on FDI by foreign marketplaces	-0.5 = some limits or caps on FDI found, such as in certain sectors
Data transfer allowed (or no law in place)	1 = yes, allows data transfer, whether by law or implicitly because there is no law
Data transfer limits to certain sectors	*-0.2 = yes ; 0 = not found*
Data transfer always requires jurisdictions to be branded "adequate"	*-0.2 = adequacy always required ; -0.1 = adequacy can be required but not always i.e. if there is user consent, or a special exception ; 0 = not found*
Data transfer always requires user consent	*-0.2 = user consent always required ; -0.1 = user consent can be required but not always i.e. if there is adequacy standard in place, or a special exception ; 0 = not found*
VAT/GST Tax	distance from frontier: 1 = best, 0 = worst
Digital tax/rate discussed or implemented	-1 = yes ; -0.5 = Proposed ; 0 = not found
Consumer protection regulation in place	1 = yes ; 0.5 = in draft
Consumer protection law explicitly applies to ecommerce	1 = yes ; 0 = not found
Legal/regulatory prohibitions on companies using unfair or deceptive acts	*0.25= yes ; 0 = not found*
Anti-spam law in place	*0.25= yes ; 0 = not found*
Online contracts are to be drafted in clear and simple language	*0.25= yes ; 0 = not found*
Forms of redress - consumer's right to return items purchased	*0.25= yes ; 0 = not found*
Companies have a Trust certificate or companies / governments certify trusted firms	1 = yes ; 0.5 = Planning ; 0 = not found
Consumer complaints can be filed online	1 = yes ; 0 = not found
Digital / video-based court procedings for consumer issues	1 = yes ; 0 = not found

Digital regulations on online transactions	
Fully digital business registration available	1 = yes; 0.5 = part of process can be done online, or only certain cities provide the service, or only certain kinds of companies can register online; 0 = not online at all, including even if there is a "one stop shop"
Electronic signatures admissible, legal, and enforceable	1 = yes ; 0 = not found
Digital or electronic invoice implemented	1 = yes ; 0 = not found
eID/digital ID in place (including for e-government services)	1 = yes ; 0.5 = in development/piloted ; 0 = not found
National digital corporate ID tested or in place	1 = yes ; 0 = not found
Tax exemptions for new businesses	1 = yes ; 0 = not found
Payment regulations	
E-payments law in place	1 = yes ; 0 = not found
Risk-based approach (RBA) KYC regime in place	1 = yes ; 0.5 = in process of implementing ; 0 = not found
Regulatory requirements differentiated by type of payment service and its respective risks	*1 = yes ; 0.5 = in process of implementing ; 0 = not found*
Demonetization programs to promote digital payments	1 = yes ; 0 = not found
Regulations or programs to fuel interoperability of online payments	1 = yes ; 0 = not found
Trade facilitation for ecommerce	
De minimis threshold for entry of goods	distance from frontier: 1 = best, 0 = worst or N/A
Publication of existing import-export regulations on the internet	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Stakeholders' consultation on new draft regulations (prior to their finalization)	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Advance publication/notification of new trade-related regulations before their implementation	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Advance ruling on tariff classification and origin of imported goods	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Risk management	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Pre-arrival processing	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Post-clearance audits	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Independent appeal mechanism	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Separation of Release from final determination of customs duties, taxes, fees and charges	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Establishment and publication of average release times	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Trade facilitation measures for authorized operators	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Expedited shipments	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Acceptance of copies of original supporting documents required for import, export or transit formalities	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Electronic Single Window System	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Alignment of working days and hours with neighboring countries at border crossings	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Alignment of formalities and procedures with neighboring countries at border crossings	1 = Yes ; 0.5 = Partially ; 0.25 = Planning ; 0= No
Provides B2B and/or G2B services as shared trade ecosystem platform	1 = yes ; 0 = not found
Use of blockchain and/or AI in customs	1 = yes ; 0 = not found
Innovative postal services, such as drones, collaboration with ecommerce platforms	1 = yes ; 0 = not found
SME capacity-building and export promotion for ecommerce	
Export promotion agency programs/guidelines for ecommerce available	1 = yes; 0.5 = planning to implement ; 0 = not found
Online ecommerce export services , such as government ecommerce platform or channel management platform	1 = yes; 0 = not found
Subsidized digital transformation services/financial incentives for exporters to use ecommerce	1 = yes; 0 = not found
Public-private collaboration (e.g. with ecommerce platforms) to build SMEs' capacity	1 = yes; 0 = not found
Programs for women-led firms to learn to export (ex: e-commerce)	1 = yes; 0 = not found
Programs for rural companies to engage in ecommerce	1 = yes; 0 = not found
Help with SME logistics for cross-border ecommerce	1 = yes; 0 = not found

SME finance	
Regulatory sandboxes for FinTech	1 = yes; 0.5 = in development ; 0 = not found
Regulated Open banking / Open APIs - portability of a business's data across digital ecosystem	1 = yes; 0.5 = in development ; 0 = not found
Regulatory framework for equity crowdfunding	1 = yes; 0.5 = in development ; 0 = not found
Government credit guarantees for micro and small working capital loans offered by banks	1 = yes; 0 = not found
Government credit guarantees for micro and small working capital loans offered by Fintechs or nonbank finance providers	1 = yes; 0 = not found
Direct loans from government to small or micro firms	1 = yes; 0 = not found
Equity for tech and digital businesses (gov't as GP, such as runs a venture capital fund, invests directly)	1 = yes; 0 = not found
Equity for tech and digital businesses (gov't as LP or fund of funds, investing in VCs that invest in SMEs)	1 = yes; 0 = not found
Specific equity programs for exporters (or VC investments expressly for exporting)	*1 = yes; 0 = not found*
Programs to finance/guarantee ecommerce transactions	1 = yes; 0 = not found
Financing programs or entities for women-led companies - grants, debt or equity	1 = yes; 0 = not found
Government eprocurement promotion for SMEs	1 = yes; 0.5 = only tenders or bid docs online; 0 = not found
Procurement tenders and bid documents available online	1 = yes; 0 = not found
Procurement bid submission online	1 = yes; 0 = not found
Procurement bid process and notices electronic	1 = yes; 0 = not found
Online, transparent and/or simple bidding search for low-value procurement contracts	1 = yes; 0 = not found
Initiatives to increase SME procurement bids and contracts	1 = yes; 0 = not found
Initiatives to increase women-led SME procurement bids and contracts	1 = yes; 0 = not found
Complaint mechanism in place, for example about unfair procurement bidding process	1 = yes; 0.5 = observer status; 0 = no
Member or observer of plurilateral Agreement on Government Procurement	
Ecommerce diagnostics and strategy	
Government digital strategy in place	1 = yes; 0.5 = in draft/development ; 0 = not found
Government ecommerce strategy in place	1 = yes; 0.5 = in draft/development ; 0 = not found
Ecommerce flow and/or usage statistics collected	1 = yes; 0 = not found
SME cybersecurity readiness	
National cybersecurity strategy in place	1 = yes, including if standalone or part of larger strategy; 0.5 = in draft; 0 = not found
Cybercrime legislation in place	1 = yes, including if standalone or part of larger law i.e. Criminal Code; 0.5 = in draft; 0 = not found
Computer Emergency Response Team (CERT) in place	1 = yes; 0 = not found
Educational campaigns to SMEs on cybersecurity/SME focused assistance	1 = yes; 0 = not found
Cybersecurity capacity building for governments	1 = yes; 0 = not found
Ratified Budapest Convention	1 = yes, 0 = no

APPENDIX II – LIMITATIONS TO POLICY SCORING

The policy scoring aims to capture the most essential elements that countries should have in place when they seek to help MSMEs use platforms to trade across borders and compete successfully in the 21st century digital economy. As in any effort to establish a composite policy index, there are a few caveats and limitations to this methodology:

- **Quality of implementation.** The quality of implementation is key for any policy to work. We primarily map policies "on paper" (*de jure*), but not the quality of implementation (*de facto*). However, the outcome variables give a sense that countries that have good policies in the books are also ones that attain better MSME ecommerce outcomes.

- **Weighting.** The index covers several different domains, such as regulations, trade facilitation, and MSME export promotion. It could be argued that one of these main categories matters more than another, or one matters more at a given point in time than another – for example, MSME ecommerce export promotion matters little in the absence of internet connectivity. However, there is also no specific reason to weight one domain more than another – rather, the assumption here is that at the end of the day, all the mapped areas matter for ecommerce to work.

- **Limited sample size**. The index here covers only 52 countries; thus the universe of possible policy innovations countries may be pursuing and that could become a sub-category in the index are inherently not covered.

- **Limits of data collection.** The policy data for this pilot index is harvested from government portals and other websites, rather than from surveys sent to governments. As such, the quality of the data is as good as the information available online. In future iterations, collection of data via questionnaires fielded to government agencies and perhaps local think-tanks could be a useful approach.

- **Policy may not be needed.** In some areas we score, such as the use of biometrics in payments or open banking mandates for MSME lending, the private sector is in many countries leading the way and no particular government mandate is required. This is the case, for example, with open banking practices – many banks are pursuing these practices without being forced to do so. The qualitative mapping produced in this project captures such promising private sector activity. When these areas are scored and quantified, it is assumed that the government mandate can accelerate and formalize a good practice (such as expand and accelerate open banking practices).

- **Timing of data.** The data are collected in early to mid-2020, and the scoring is at this point indifferent to the timing of any one policy's starting date. For example, some Asian economies such as Korea and Japan had broadband plans already in the 1990s, while some African economies adopted them much later. It can thus be expected that these Asian countries would be much farther along in harvesting the gains from broadband penetration on ecommerce. Time-series data that showed the year when a given policy was adopted would provide a more comprehensive picture of the impacts of regulations on economic outcomes and to ecommerce. However, the effort here is primarily focused on building a policy index benchmarked to 2020.

- **Countries' differing starting points.** The countries analyzed here are at very different levels of development – and thus it could be argued that least developing countries should not be compared to advanced economies that have had certain components in place for years. For example, Korea and Japan have had 3G and 4G networks for years and are now well on their way working toward 5G, while Bangladesh is still seeking to diffuse 3G and 4G networks. This could suggest that developing countries are compared "unfairly" and should be weighted differently. However, we have here opted not to weight countries to enable fast and straight-forward comparisons across economies – just like is done in most leading global indices. We have also chosen to highlight here the policies and practices of the countries that are frontrunners in ecommerce to inspire countries to leapfrog. For example, many countries considering digital single windows could learn from Singapore's National Trade Platform that is also a platform of B2B and G2B services for MSMEs in trade. Similarly, countries could learn from Singapore and UK's application of predictive analytics and blockchain in customs.

- **Interoperability of regulations with trading partners.** The analysis here focuses primarily on domestic policies, as governments have control over them. However, this choice also means that this analysis does not fully account for the factors that impact MSMEs' use of platforms for trade in *foreign* markets, such as tariffs and *de minimis* levels in other countries. This study also does not measure whether a country's domestic digital regulations interoperate well with those of its key trading partners, so that the country's MSMEs could apply the same consumer protection laws, data privacy laws, and copyright laws when serving foreign customers as they apply at home. This lack of interoperability in digital regulations in Europe has been found to significantly impede intra-EU ecommerce and is shown in Nextrade surveys to concern MSMEs – but our analysis does not at this juncture capture this friction.

- **No theoretical or econometric model.** One critical challenge in the process of developing the policy index for ecommerce is the lack of a theoretical framework on the success drivers for ecommerce or ecommerce. In other words, there is no model that would tell which exact components make for an optimal enabling policy environment for MSMEs to use platforms for trade. For example, while there are studies on the factors that are critical for ecommerce (such as fluid online payments, logistics, and hospitable regulations), it is not clear what the binding constrains to ecommerce in any one economy, or what the optimal sequence for addressing the various constraints is. Survey data do suggest that logistics, digital regulations, and finance are key impediments to ecommerce in most countries, but also that the relevance of these barriers and other issues, such as online payments quality or connectivity, varies widely across countries and across firm segments.[360] Similarly, ecommerce platforms have informed views on what tends to work to stimulate ecommerce. The main limitation to *modeling* the drivers of ecommerce to date has been the lack of consistent data on ecommerce and ecommerce. The statistical analyses performed in this study with actual data on ecommerce are a pioneering step in the right direction. However, still more work needs to be done, including with time series data and data with control variables, to establish more firmly which policies are particularly critical for ecommerce.

APPENDIX III – VARIABLES IN THE BEST PLACE FOR MSME ECOMMERCE-INDEX

Area	Variable	Source
Connectivity	Internet quality - speed	Opensignal
Connectivity	Broadband cost	Cable
Connectivity	Tariffs on ICT products	WITS
Connectivity	Taxes on digital services	Various
Payments	PayPal is available 1= to send; 2 = send and receive; 3 = send, receive, w ithdraw	PayPal
Labor	Hourly labour costs in US dollars (converted using 2011 PPPs)	ILO
Labor	Labor law flexibility	World Bank Doing Business
Labor	GDP per person employed (constant 2017 PPP $)	World Bank
Labor	Labor skills levels - % of technicians	ILO
Labor	English proficiency	EF EPI
Labor	Digital talent - proxy: Patent applications, residents	World Bank World Development Indicators
Labor	Digital talent - proxy: ICT service exports	World Bank World Development Indicators
Facilities	Office space cost	CBRE
Security	Crimes per population	United Nations Office on Drugs and Crime
Ease of doing business	Doing business - starting a business (score)	World Bank Doing Business
Ease of doing business	Total tax and contribution rate (% of profit)	World Bank Doing Business
Ease of doing business	Time spent on tax filings	World Bank Doing Business
Cybersecurity	Cybercrimes (malicious email per capita)	Symantec
Ease of trading across borders	Paperless trade score	United Nations paperless trade database
Ease of trading across borders	Crossborder paperless trade score	United Nations paperless trade database
Ease of trading across borders	Time to export - documents	World Bank Doing Business
Ease of trading across borders	Time to export - compliance	World Bank Doing Business
Market access	Regional trade agreements (number)	WTO
Logistics	First mile efficiency	UPU
Logistics	Logistics performance index: Ease of arranging competitively priced shipments (1=low to 5=high)	World Bank Logistics Performance Index
Logistics	Logistics performance index: Ability to track and trace consignments (1=low to 5=high)	World Bank Logistics Performance Index
Logistics	Lead time to export, median case (days)	World Bank Logistics Performance Index
Logistics	Logistics performance index: Quality of trade and transport-related infrastructure (1=low to 5=high)	World Bank Logistics Performance Index
Logistics	Commercial air connectivity	World Bank World Development Indicators
Logistics	Amazon fulfillment center	Amazon
Finance	Access to finance - see commercial bank branches per 1000 km2	International Monetary Fund
Finance	Collateral requirements	World Bank Enterprise Surveys
Finance	Depth of Fintech ecosystem - National fintech ranking 65 countries	Findexable
Finance	Doing business - credit bureau coverage (% of adults)	World Bank Doing Business
Crossborder payments	Stripe avalable	Stripe
Quality of digital ecosystem	Google office	Google
Quality of digital ecosystem	Amazon offices	Amazon

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