

BRIDGING THE DIGITAL TRADE DIVIDE

NAVIGATING CROSS-BORDER NON-TARIFF BARRIERS



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Executive summary

The Digital Economy

The digital world is immensely different than it was in the few years after the turn of the millennium and continues to evolve very rapidly. The vast majority of the Internet infrastructure, digital business models, and key business players such as Amazon, Google, and Facebook, are barely recognizable from what they were in the early 2000s. Smartphones, artificial intelligence, blockchain, surveillance technologies, the Internet of Things (“IoT”), and data science as a subject were barely items of note for most businesses and regulators a mere decade and a half ago.

Forums such as the APEC (“Asia-Pacific Economic Cooperation”) Business Advisory Council (“ABAC”), as well as many other stakeholders in the region, are well aware of the vast contributions that the digital economy has already made to international trade. When used effectively, digital trade and data can bridge inequality gaps and enhance lives across economies. In the right environment, a wide assortment of groups from micro, small and medium enterprises (“MSMEs”) to large enterprises (“LEs”) stand to benefit from digital trade (APEC, 2019). For the purpose of our report, we define digital trade as:

Trade in goods and services which is digitally enabled and which can be delivered either electronically or physically (including e-commerce and trade in digital goods and services).

Underpinning digital trade is the movement of data. Data not only facilitates design, development, production and distribution of goods and services, it is also an asset that can itself be traded. Data flows are determining how global value chains are organized and services delivered. With the increasing importance of data as an asset, concerns about privacy and cybersecurity have driven policymakers to regulate the handling of data. Restrictions on cross-border data flows are not new, yet they have drastically increased in the last decade.

Policymakers involved in designing frameworks to govern the digital economy and cross-border data flows have the challenging task of enabling the use of Internet and encouraging digital trade and innovation while protecting domestic interests and the rights and privacy of citizens. Given the diversity across the APEC region, it is unsurprising that data flow regulations vary considerably between economies. These differences may be rooted in differences in cultures and economic interests. Whereas some economies may develop regulation from a human rights or citizen protection lens, others see it as a method to spur e-commerce and innovation. Other economies may take into consideration items like national security, and shape their domestic laws accordingly. For the purpose of our report, we refer to these regulations as non-tariff measures (“NTMs”), which we define as follows:

NTMs are policy measures, excluding traditional tariffs, that may have an economic effect on international digital trade. For example, a change in quantities of digital goods or services traded, prices, or a combination. NTMs tend to be reliable and necessary, and serve an important purpose in preserving the safety and integrity of individual economies.

In some cases, regulations may be discriminatory (e.g., discriminating against foreign services or goods), or may not be based on sound science or technological understanding. In these events, NTMs can turn into non-tariff barriers (“NTBs”) – either because the way that they are designed or implemented is more trade-restrictive than necessary to meet a legitimate objective, because they are discriminatory, or because they are in fact designed to keep imports out of a market:

NTBs can inhibit trade by adding costs and making imports or exports more difficult. They can be magnified along global value chains and can inhibit participation in such value chains.

It is therefore important for policymakers to be able to differentiate between an NTB (i.e., a barrier to broader economic benefits across the region) and an NTM (i.e., something that ought to be in place for legitimate reasons such as national security or citizen's individual security).

We learned from our field research that the key challenge businesses face with respect to digital trade, is trying to adapt their business models to the different regulatory frameworks used in various economies. In response to concerns about inconsistent regulations, several initiatives have attempted to harmonize different frameworks and enhance cross-border data flow. To date however, there is no comprehensive multi-laterally adopted set of rules to govern cross-border data flows.

As such, we determined to identify ways to overcome this “noodle bowl” of differing approaches to regulation standards, which appears to be the leading NTB for businesses (World Economic Forum, 2015). Developing a brand-new regulatory framework may be an unrealistic goal. Instead, our interview findings suggested that it would be prudent to try and find interoperability between the top two existing regulatory frameworks for data flow: CBPR and GDPR. Consequently, we propose two alternative approaches, each with their own pros and cons:

1. Enhance “Most Interoperable” Middle-Ground Framework (i.e., CBPR)

If the APEC community wishes to differentiate itself from the EU, then it may be worth pursuing a middle ground ‘least-trade restrictive’ alternative that encourages the free and secure flow of data, yet also builds trust and provide reasonable privacy protections. However, more must be done to improve CBPR and to incentivize widespread adoption.

2. Move to “Most Restrictive” Regulated Approach (i.e., GDPR)

GDPR is seen as a particularly heavy-handed approach to privacy laws. Yet, when one is compliant with GDPR, they are compliant with data regulations almost everywhere in the world. GDPR is effectively here to stay and might only be surpassed by a regulatory framework that was designed to be even more restrictive. For many businesses, it may be easier to just ‘buckle in’.

Whether a binding regulated or middle-ground approach is chosen, it is vital to avoid a future where individual economies, or fragmented FTAs, create their own standalone frameworks. As such, education for policymakers will be needed to design a pragmatic framework, and businesses will need to understand the incentives of adopting the new approach. It is also imperative that this interoperable system is kept up-to-date with technological advances.

In creating a high-functioning APEC-wide digital economy, it is clear that having a consistent and standardized framework is an important foundation. However, during our interviews, one of the challenges we heard with regulatory frameworks is that they tend to be ad-hoc and reactionary attempts to adapt to the business and technological environment. Certainly, this has been the case with CBPR and GDPR, and will be the case with any future versions of them. Yet, one emergent concept we discovered during our research may be a way to respond more proactively to technological advances, while achieving organic and multi-dimensional growth – transforming the digital economy into an ecosystem.

What are Digital Ecosystems?

Digital ecosystems are understood as a collection of companies, people, data, processes and “things” that are connected by the shared use of digital platforms, empowering businesses to quickly apply and adapt to the change within the technology landscape. They can either be understood vertically (within a supply chain) or horizontally (across peer companies) for an industry, such as a “fintech ecosystem” or an “ecom-

merce ecosystem”.

Why they matter to cross-border data flow?

Cross-border data flow-oriented ecosystems encourage stakeholders to grow the size of the pie (by aligning incentives) by creating interdependencies. Furthermore, ecosystems encourage the flexibility of new plug-in solutions, businesses’ incentives shift from delivering products to outcome-as-a-service driven products which focus on integrating services and products into packages (bundled services) and providing a better experience for customers. Finally, ecosystems, when built on a common set of platforms, make it easier to design and implement regulations that are consistent across economies.

How do we create cross border data flow-oriented ecosystems?

Developing the ecosystem requires (i) partnerships between regulators and large enterprises in the digital economy, (ii) decrease in the knowledge gaps among the stakeholders, and (iii) investment in the infrastructure.

1. Leveraging Large Players to create rich ecosystems:

At present, large enterprises often set industry benchmarks, have a greater impact on setting regulatory policy, and have easier access to both data and capital. Economies can partner with large enterprises (who already benefit from preferential treatment oftentimes) to grow the size of their domestic (and regional) digital trade ecosystems. Large players can develop the infrastructure and create frameworks that facilitate design and implementation of regulations that are consistent across economies and sectors within economies. Specific measures to partner with large enterprises are:

- **Interoperable transactional infrastructures:** NZEFTPoS is an example of large players collaborating to create a transaction fee free e-payment infrastructure that has been beneficial for all parties.
- **Infrastructure Development:** Increased access to resources, especially in instances of large

enterprise investment in infrastructure, can be enriching for an ecosystem.

- **Incentivizing MSME entry into the formal sector:** MSMEs in developing economies are incentivized to enter the formal sector to fully realize the benefits of the ecosystem.

2. Prioritizing Narrowing of the Multi-stakeholder knowledge gaps:

Participation in and regulation of the digital economy and ensuing data flows requires new sets of knowledge and capabilities. Gaps in knowledge can result in sub-optimal regulations and prevent stakeholders from realizing the full potential. Thereby, limiting the growth of a robust and homogenous ecosystem.

- **Regulatory Knowledge Gap:**

In creating regulations, regulators face a two-fold challenge of understanding what must be regulated at present and understanding what must be regulated down the line. To keep pace, regulators are challenged by the tasks of finding the bad actors, monitoring compliance and speeding up the regulatory processes to better serve and protect the public. Hence, regulating data flows can be tough to time, messy (due to plenty of contingencies) and expensive to enforce. We recommend that regulators engage with “trusted partner” networks and large enterprises shaping the digital ecosystems to learn about current and emerging issues.

- **Consumer Knowledge Gap:**

Most consumers are not aware of the way their data is being used, re-used, re-packaged and re-sold. Such a knowledge gap breeds fear and lack of trust around legitimate personal (and private) data usage. Consumers may favor overregulation and may demonstrate a size-bias (penalizing bigger players while simultaneously raising the cost of doing business for the smaller ones). We propose a greater emphasis on building consumer trust through multi-stakeholder collaboration and open dialogue.

- **MSME Knowledge Gap:**

MSMEs either do not have enough data or do not know how to best use it. Specifically, MSMEs have

poor availability and accuracy of the information being collected and have difficulty in identifying cross-border MSMEs trading partners. MSMEs inevitably de-risk (avoid riskier markets) or enter conservatively (they will not offer their newest product). We recommend upskilling MSMEs technologically, which entails MSMEs gaining access to software that will allow them to monitor basic processes such as ordering, inventory, SKUs, and basic predictive analytics. An ecosystem that links MSMEs to large enterprises with considerable presence in digital trade, particularly cross-border trade can help in diminishing this gap.

- **Talent Acquisition Knowledge Gap:**

MSMEs and large enterprises need to foster and acquire digitally skilled talent. However, the talent acquisition gap is perpetuated by underinvestment in STEM education. Local hiring rules add to the cost of entry (disincentivizing entry at scale). Economies can make a concerted effort to build entrepreneurial ecosystems through national entrepreneurship policies and programs and we recommend common certificates for digital skills to create pan-APEC standards that allow for quality of talent markers.

3. Build out the physical infrastructure

There is still a noticeable disparity among the APEC region in terms of electricity, internet access, internet speed and data storage. Physical infrastructure is critical to building out rich, digital ecosystems. Five common drivers (connectivity, growth, innovation, prevention, maintenance) shape the conversation around physical infrastructure for digital trade. To address this disparity, economies can follow a two-prong approach:

- **Upgrade electricity grid:**

Major progress has been made in this area. However, electrification in rural areas remains a challenge. Moreover, power outage blackouts can be backbreaking for data centers, key cogs in the cross-border flow of data. Increased utility costs are a corollary of these blackouts. Finally, the unaffordability of electricity (up to 30% of cost of doing business) can be challenging for digital trade.

- **Increase Internet Speed & Access**

High mobile device penetration paired with faster internet connections has meant that consumers can perform data-flow oriented tasks on their mobile devices and drive growth in digital trade. Yet, there is considerable variation in internet access across the APEC region – there are discrepancies across economies (due to variances in infrastructure) and within economies. Disparity within an economy may be due to geography, as it is particularly challenging to improve internet access in remote rural areas in certain APEC economies.

In conclusion, while it is generally understood that the Internet was designed to be open and borderless, we need to somehow reconcile with the various domestic policies, hidden costs, and geopolitical complexity across borders (IEEE Standards Association, 2012). As with non-digital trade, businesses will continue to need an open, transparent, predictable, secure, and relatively low-cost environment – both domestically and internationally. Finding an ideal way forward requires understanding and being able to create the right digital environment, or ecosystem.

University of Southern California—ABAC Coordination

Since 2003, the Asia-Pacific Economic Cooperation’s Business Advisory Council (“ABAC”) has engaged the University of Southern California (“USC”) in an annual research study on a topic of special interest to that year. Twelve USC MBA students are selected to conduct the study under the guidance of ABAC leaders and faculty advisors.

As part of the research, each MBA researcher travels on a fact-finding mission to APEC economies to meet and interview business and policy leaders. Through these candid and sometimes anonymous interviews, the research team gains a unique perspective to capture and report the voice of business. After synthe-

sizing the feedback from the interviews and finishing a comprehensive report, the research team travels to the ABAC meeting and presents their findings. The research is included in the annual prioritized advice report that ABAC provides to the 21 APEC economies.

Topics that USC research teams have tackled in the past include foreign direct investment, the investment landscape of sustainable energy, and trade in services across APEC.

Reports can be found at both the APEC Secretariat and USC.

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Approach and Methodology

The scope of this report is to identify NTBs, trends, and opportunities for LEs and MSMEs that are involved in cross-border data flows. This study is intended to be a field research project predicated on interviews, and may be limited to conditions in the 2019 project period. As such, this report is not intended to substitute existing economic studies. Rather, it is an exposé that illustrates the perspectives reported by individuals, industries, and economies.

The research design and methodology were comprised of four key phases:

1. Review existing digital trade related research and interview relevant thought leaders.
2. Develop interview protocols to identify the relative importance of perceived NTBs to cross-border data flows for businesses.
3. Conduct field research (in-person and virtual interviews) with interviewees to determine real life impact of NTBs on businesses. Challenges, trends, and opportunities were catalogued for further review.
4. Validate interview findings with secondary research and attempt to quantify primary research data around consistent themes identified in each economy.

Twelve researchers and three USC faculty advisors conducted the research and analysis. In most cases, one interviewer conducted all or a majority of the interviews within each economy. Larger economies were assigned to multiple researchers. Interviewees were identified through APEC or USC contacts, cold outreach, and referrals. All interviewees were offered the option to remain anonymous in this report.

While our research was not (and did not attempt to be) fully comprehensive either within economies and across the region, the range of findings from our interviews nevertheless provided us with repeated themes and consistent barriers and impediments, which we

consider to reflect some important concerns and considerations for policymakers. We also supported our findings with comprehensive secondary research.

In addition, the validity and generalizability of any and all findings and conclusions of this report is constrained by the quality and knowledge of the set of business executives, regulatory officials, nonprofit and thought leaders available for interview. The team made every attempt to account for perspectives across all economies, as well as those of the ABAC and APEC Secretariats, and to interview a representative sample of business stakeholders. However, the findings of the report are directly limited to the quality and comprehensiveness of the information received from the interviews.

After summarizing our interview research, we created an assessment of each of the 21 APEC economies (see Appendix I for details). The tables below illustrate the number of interviews that were conducted in each economy and industry.

Economy Interview Count

Economy	Interviews
Australia	23
Brunei Darussalam	3
Canada	5
Chile	18
People's Republic of China	36
Hong Kong, China	19
Indonesia	20
Japan	19
Republic of Korea	16
Malaysia	19
Mexico	10
New Zealand	18
Papua New Guinea	3
Peru	22
The Philippines	9
Russia	5
Singapore	29
Chinese Taipei	14
Thailand	8
The United States	12
Viet Nam	24
Thought Leaders	21
Total	353

Industry Interview Count

Industry	Interviews
Academics	11
Business Association	48
Digital Product & Services	65
E-commerce	19
Finance & Insurance	29
Hardware	10
Healthcare	17
Logistics	16
Media	12
Professional Services (Consulting/Law)	53
Regulatory	26
Telecommunications	13
Travel & Hospitality	13
Total	332*

*Does not include thought leader interviews

1 BUILDING A DIGITAL ECONOMY

*“The Internet is designed to be borderless,
but that’s not how governments are treat-
ing data flow.”*

CEO, Hi-Tech MSME in Japan

1 Overview of the Digital Economy

Today's world is immensely different than it was in the few years after the turn of the millennium. The vast majority of the Internet infrastructure, digital business models, and key business players such as Amazon, Google, and Facebook, are barely recognizable from what they were in the early 2000s. Smartphones, artificial intelligence, internet of things, surveillance technology, and data science as a subject were barely items of note for most companies and regulators.

Forums such as ABAC, as well as many of the various stakeholders in the region, are well aware of the vast contributions that the digital economy has had on international trade. When used effectively, digital trade and transformation can bridge inequality gaps and enhance lives across economies. In the right environment, a wide assortment of groups from MSMEs to LEs could stand to benefit (APEC, 2019).

However, the challenge is understanding and being able to create the right digital environment, or ecosystem. It is generally understood that the Internet was designed to be open and borderless, yet we need to somehow reconcile with the various domestic policies, hidden costs, and geopolitical complexity across borders (IEEE Standards Association, 2012). As with non-digital trade, businesses will continue to need an open, transparent, predictable, secure, and relatively low-cost digital environment – both domestically and internationally.

“The Internet is designed to be borderless, but that’s not how governments are treating data flow.”

CEO, Hi-Tech MSME in Japan

Policymakers involved in designing a framework to govern data flow have the challenging balancing task of enabling the use of Internet and encouraging digital trade and innovation while protecting domestic interests and the rights and privacy of citizens. Given the diversity across the APEC region, it is unsurprising that data flow regulations vary considerably based on cultures and domestic interests of each economy. Whereas some economies may adopt a data-related framework from a human rights lens (e.g., GDPR), others see it as a goal to spur e-commerce and innovation (e.g. CBPR). Other economies may take into consideration domestic security, and shape their domestic laws accordingly. As discussed in the next section, some of these measures can turn into barriers.

To date, there is no comprehensive multilaterally adopted set of rules to govern cross-border data flows. Instead, as discussed in subsequent sections, there are a variety of domestic and international regulations that vary significantly from economy to economy. According to our interviews, the number one pain point businesses face is additional compliance costs they incur when trying to adapt their business models to accommodate regulatory frameworks used in various economies.

To enhance and build out our digital economy, it would be prudent to harmonize rules as practically as possible, while also ensuring that NTMs are designed with legitimate and reasonable policy and business goals, so as not to turn into NTBs.

1.2 Digital Non-Tariff Barriers (NTBs)

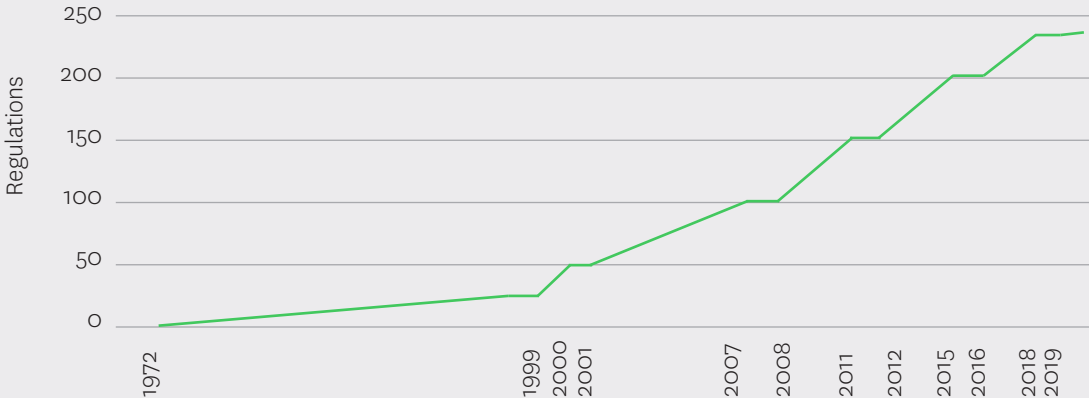


Overview

With the increasing importance of data as an asset, concerns about privacy and cybersecurity have raised questions on how to regulate the handling of data.

Restrictions on cross-border data flows are not new, yet they have drastically increased in the last decade (see chart below).

Exhibit 1 Growing Number of Data Regulations

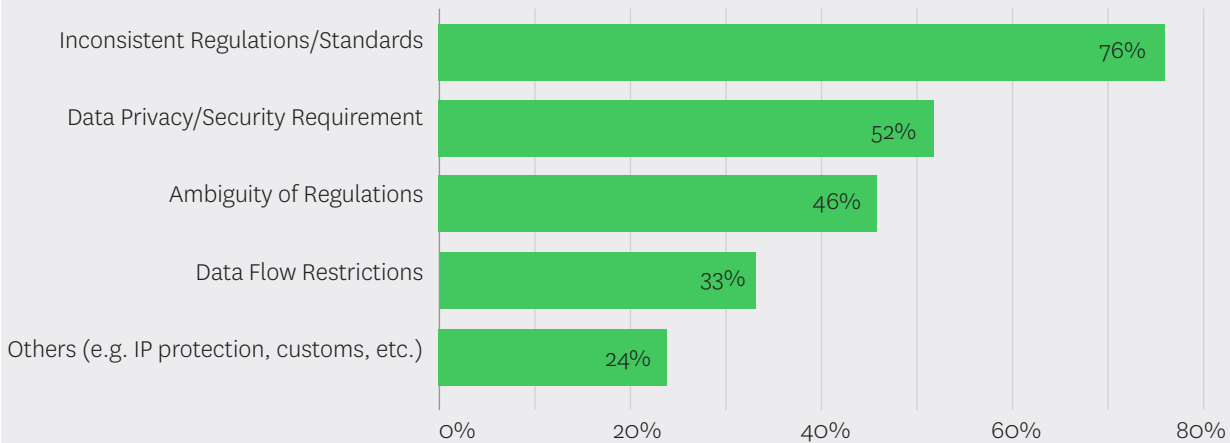


Source: OECD, 2019

The term NTB is commonly used by policymakers and has specific connotations. To simplify the discovery process during our interviews, we asked interviewees

to articulate what they perceived to be their primary pain points or barriers with respect to digital trade. The chart below illustrates our findings:

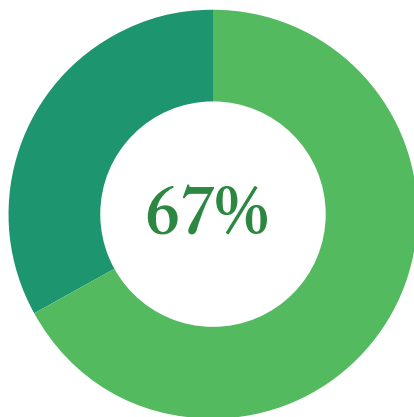
Exhibit 2 Perceived Digital Trade Barriers



It became overwhelmingly clear from our interviews that inconsistency was the primary challenge. Inconsistent regulations and standards consistently ranked in the top 3 comments about digital trade barriers across the APEC region.

While onerous data privacy and security requirements, as well as data localization, were items of concern in some economies, it was the lack of consistency in regulation standards that emerged as the core problem. **Consequently, we attempted to identify ways to overcome this “noodle bowl” of differing approaches to regulations and standards.**

Our findings were in line with similar research conducted in 2015. USC Marshall’s study Driving Economic Growth Through Cross-Border E-Commerce in APEC noted “the lack of comprehensiveness and compatibility of e-commerce laws and regulations across economies remains a major impediment” (USC Marshall, 2015). Of over 500 businesses that were surveyed across the APEC region, 67% identified inconsistency in standards and regulations as a key barrier to cross-border e-commerce. “Poor coordination and harmonization” between the various economies’ regulatory frameworks were cited as concerns during interviews.



Identified inconsistent standards and regulations a major barrier to cross-border e-commerce (USC Marshall, 2015).

“There should be harmonization of rules for data protection and cybersecurity. Free data flow should not be a victim of politics.”

University Professor and cyber law expert

Below is a list of the most prominent digital NTBs, organized by the categories we identified during our interviews:

● **Inconsistent Regulations/Standards**

“Noodle bowl” of divergent approaches to regulation and standards (i.e., a misalignment of regulatory approaches and standards across markets).

“FTAs try to deal with the issues, but so much changes so quickly. Language that was written ten years ago about digital trade is now basically extinct. There are no definitive international agreements to follow”

Trade Association Director in Malaysia

● **Data Privacy/Security Requirements**

Personal privacy or cybersecurity requirements that are more burdensome than necessary to meet the stated goal.

“One possible barrier in going to a new market is personal data. A new user base in new economy means ingesting a ton of new user data. Privacy laws feel very fragmented. It is tough to just try things out across borders because you immediately start ingesting user data.”

Manager, Hi-Tech Startup in Korea

● **Data Flow Restrictions (e.g., localization)**

Data flow restrictions, including forced data localization and data retention policies, which can impact direct services exports as well as the ability of goods exporters to access backbone services to support their global value chains.

“Data localization could potentially hinder sharing of data with overseas colleagues. Many of our clients find data localization very challenging and they can significantly increase operational costs.”

Manager of Global Risk Control Company in China

“Often, data localization regulations are introduced based on the assumption that privacy is enhanced through the definition of where data is stored. This is not necessarily true.”

Executive, Consulting Firm in Singapore

- Other Restrictions (e.g., IP protection, customs, etc.)
- Limited or nonexistent protections for intellectual property rights.
- Procedural obstacles and ‘red tape’ that affect cross-border e-commerce, including inadequately resourced or onerous customs procedures, which can be particularly burdensome e-commerce that involves the delivery of physical goods and services.

“My business does not take on projects where regulation is even slightly onerous. Regulations feel lumpy and there is no place to easily understand them all. I’d rather not fish in that pond.”

CEO, Marketing Agency in New Zealand

- Restrictions or prohibitions on the provision of digital goods or services, such as e-payments. Additionally, any discriminatory rules for the provision of online retailing, local presence requirements, as well as limitations on foreign ownership, and licensing and registration requirements.

“There is almost no enforcement of the data protection and privacy laws in Mexico. Many MSMEs do not abide by the law because of this, in addition to having a lack of resources and knowledge about this law.”

Legal Counsel of Large Travel Agency in Mexico

- Performance requirements including forced transfer of source code or technology. Some regulations require disclosure of intellectual property including source code to give authorities access to encrypted user data. An emerging regulation that could become an NTB is the concept of digital taxation. Some of our interviewees see the

prospect of a digital tax as a potential barrier for business, but will cautiously observe the effects.

“A common story across Asia is that you need a partner in each new location. But it needs to be a trusted partner. Otherwise they can potentially work with you and then just end up locking you out once everything is in their name.”

CEO Entertainment MSME in Korea

In some cases, the measures above may be discriminatory (e.g., discriminating against foreign services or goods), or may not be based on sound science or technological understanding. It is important for policymakers to be able to differentiate between an NTB (i.e., a barrier to broader economic benefits across the region) and an NTM (i.e., something that ought to be in place for legitimate reasons such as national security or citizen’s individual security).

Entire research studies could be conducted on any single one of the above NTBs. However, for the purposes of this study, the focus is on unwarranted or unjustified constraints that affect the volume or value of data flow, and whether – through design or intent – restrict trade more than necessary to meet legitimate objectives on consumer protection, personal data privacy, or cybersecurity.

“This is a problem for most policymakers – ‘data localization’ and other restrictions assume a simple digital landscape, when the internet is far more complicated and interconnected.”

CEO, High-Tech Startup in Japan

1.3 Cross-border Data Flow Barriers

Variance in Data Regulations

As noted earlier, interviewees repeatedly expressed frustration with the lack of consistency in regulations across the region. Some of the variation appears to stem from the goals of data regulations. The goals can include consumer protection, domestic security, law enforcement capabilities, economic protectionism, and antitrust. There are also differences in how regulations are applied to the flow of cross border data. Many regulatory standards, including GDPR, have a focus on data privacy and security, while some regulations regulate more broadly. For example, China’s Cybersecurity Law requires security measures to protect “important data” as well as personal information.

“Licenses and regulations can differ so much country-to-country. For global regulation, there are so many people trying so many different things. Lack of standards can create market fragmentation – every region creates new, unique regulations.”

Manager, Blockchain Startup in Malaysia

China’s Cybersecurity Law Article 37

Personal information and important data collected and generated by critical information infrastructure operators in the PRC must be stored domestically. For information and data that is transferred overseas due to business requirements, a security

assessment will be conducted in accordance with measures jointly defined by China’s cyberspace administration bodies and the relevant departments under the State Council. Related provisions of other laws and administrative regulations shall apply.

The range in data regulations across APEC is illustrated by the following:

- Singapore allows organizations to transfer private data to other organizations provided they have protection protocols comparable to the Personal Data Protection Act (“PDPC”) to transfer private data (DLA Piper, 2019).
- The U.S. emphasizes free data flow, while some industries have stricter data regulations (e.g., the Health Insurance Portability and Accountability Act) and some individual states have more stringent data privacy laws (e.g., the California Consumer Privacy Act).
- China, Indonesia, and Vietnam require the location of data centers inside their respective economies.
- Vietnam published its Cybersecurity law in 2017 but it has not yet provided any detailed guidance on how to implement it.

As many of our interviewees noted, the myriad of global data related regulations is challenging to comprehend and stay up to date with, resulting in compliance headaches for businesses.

To better illustrate the variances in data regulations, the European Centre for International Political Economy (“ECIPE”) developed the Digital Trade

“Licenses and regulations can differ so much from economy to economy. For global regulation, there are so many people trying so many different things. Lack of standards can create market fragmentation – every region creates new, unique regulations.”

Manager, Blockchain startup in Korea

Restrictiveness Index (“DTRI”), which comprehensively measures the impact of an economy’s digital trade policies across several areas. In determining the index values, ECIPE reviews national data protection regulations as well as legal analyses from high profile law firms.

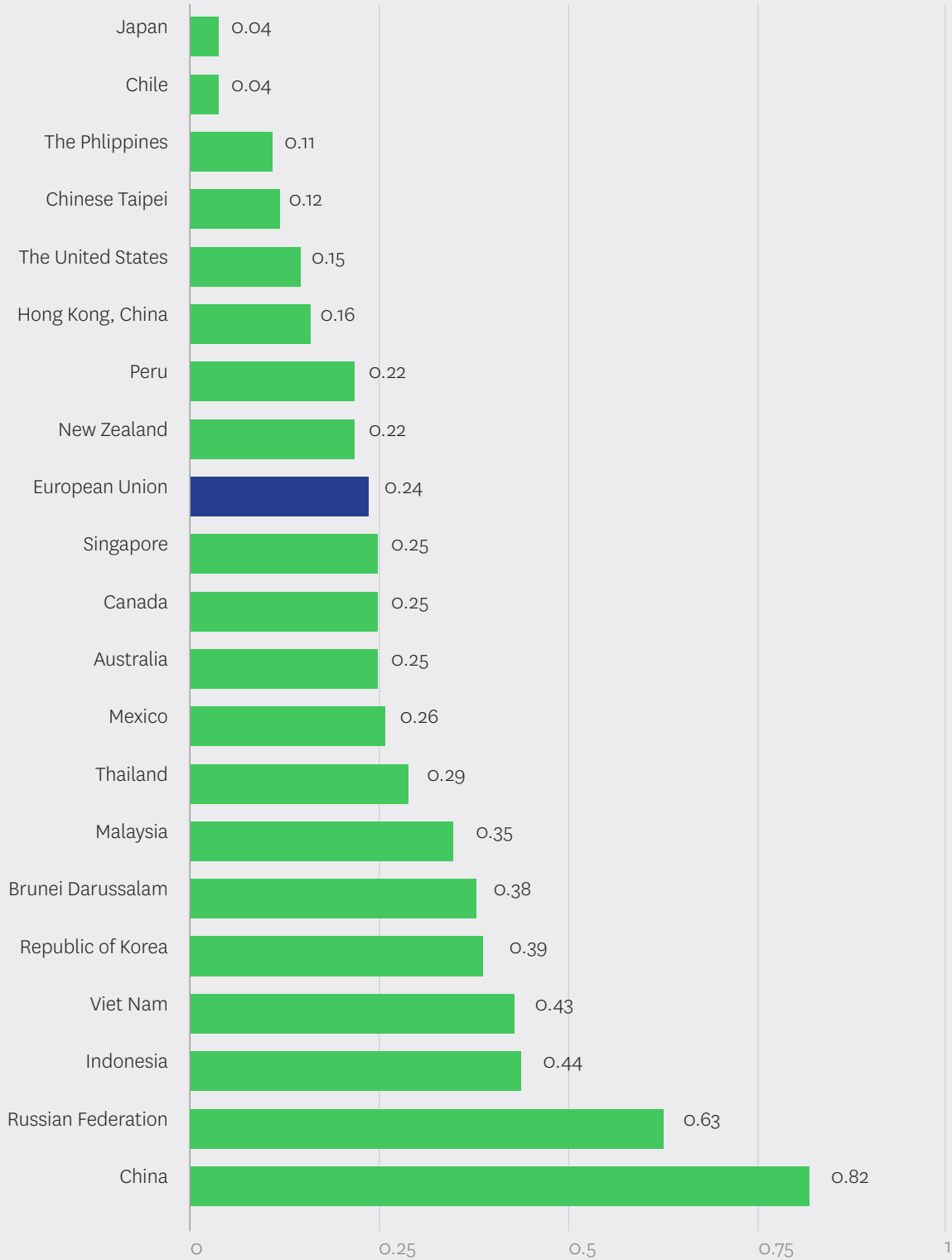
For the purpose of our study, we focused on ECIPE’s Data Restrictions Index, a subset which assesses economies across the following items:

- Cross-border flow restrictions, including:
 - Bans on the transfer of local processing equipment
 - Local storage requirements
- Data retention requirements
- Subject rights on data privacy (e.g. burdensome consent requirement)
- Administrative requirements for data privacy
- Sanctions for non-compliance
- Other data policy related restrictive practices (e.g., cloud computing requirements)

A higher value denotes a more restrictive digital trade environment (i.e., 1 is virtually restricted), while a lower value denotes a less restrictive environment (i.e., 0 is completely open). As the index value increases, so do the costs of conducting digital trade in that economy (ECIPE, 2018). The chart below presents the APEC economies by increasing level of data restrictiveness.

As a benchmark reference, the EU’s score has been included.

Exhibit 3 Digital Trade Restrictiveness Index - Data Restrictions



Source: ECIPE, 2018. Data for Papa New Guinea was unavailable



Dichotomy Between Developed and Developing Economies

In addition to variation in regulations, our interviews also revealed a difference in awareness and concern

about data regulations across economies and with-in economies.

“We lack even the most basic, necessary infrastructure to measure the impacts of e-commerce on the country. We’re essentially flying blind.”

Manager, Bank of Indonesia

“We see our environment as very business-friendly. The process to amend laws is transparent and regulations are well enforced.”

Consultant in Singapore

USC Marshall uncovered a similar trend in 2015. As illustrated in the chart below, there was a major divide with how businesses in developed versus developing economies perceived the problem of quality and enforcement of e-commerce laws and regulations.

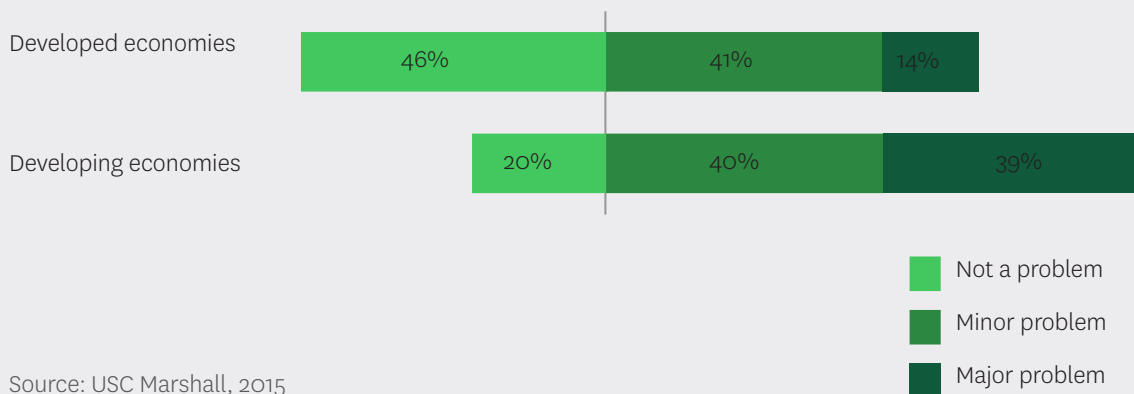
During our interviews, we found that many businesses, particularly MSMEs were unaware of CBPR or the work APEC is doing to promote the interoperability between the CBPR and EU’s GDPR

We surmise that this divide is in large part related to how ‘digitally enabled’ the economies are – or, a snapshot of how each economy stands with respect

to digital growth (APEC, 2017). APEC developed a digital enabler ranking for each economy based on several indicators including:

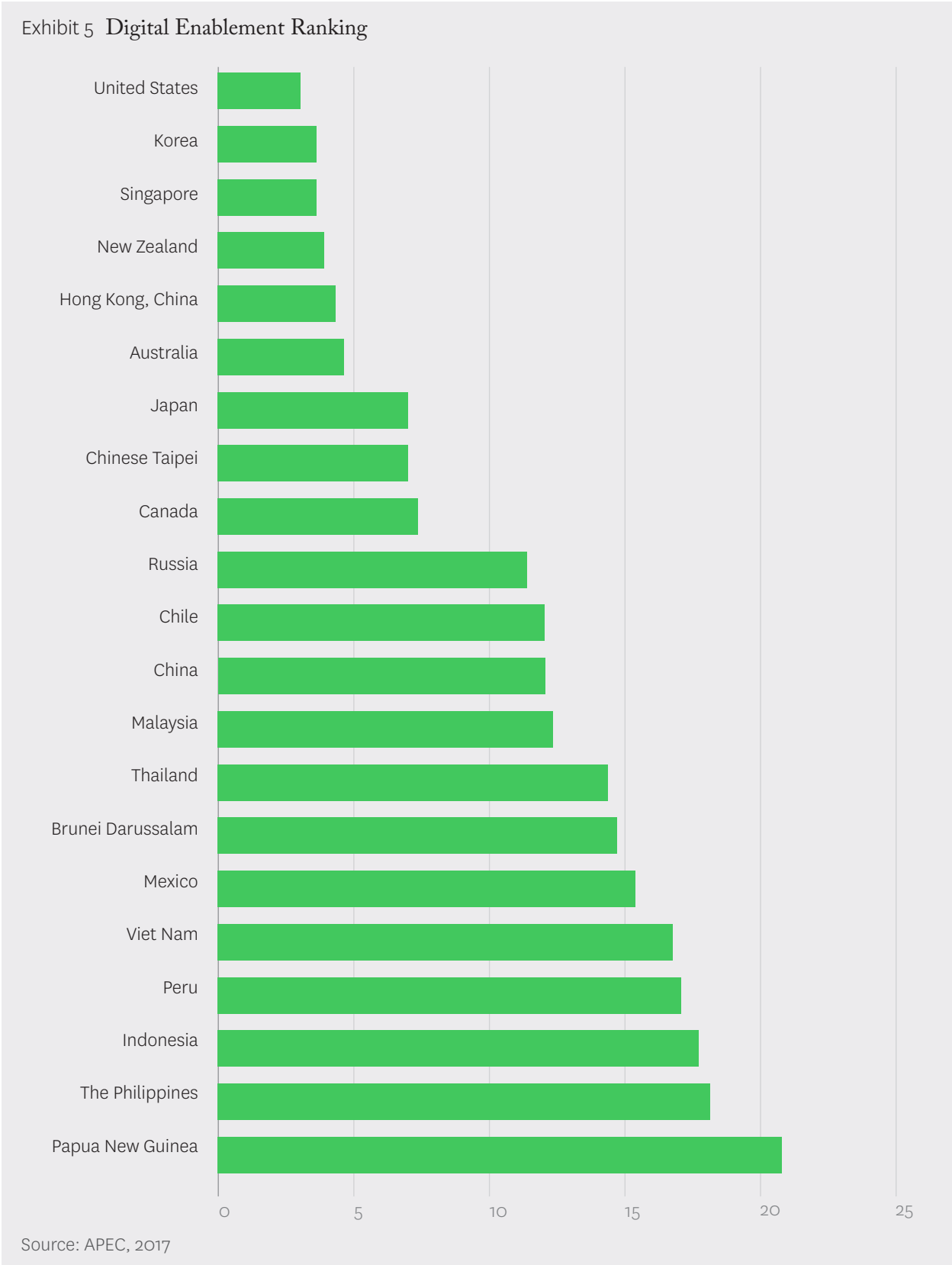
- Access (e.g., number of internet servers, internet bandwidth, electricity production and costs etc.)
- Labor (e.g., math and science education, availability of engineers etc.)
- Speed (e.g., internet connection speed)
- Price
- Capital (e.g., banking, loans etc.)
- Economic environment (e.g., IP protection, contract enforcement time etc.)

Exhibit 4 Perceived Digital Trade Barriers



Source: USC Marshall, 2015

The chart below shows the overall rank index for each of the APEC economies.





Challenges for Businesses

As we learned during our research, a major challenge for companies is adapting their business models for individual APEC economies because of differing regulatory frameworks. For example, it may be necessary to use multiple databases and possibly store data in different ways across economies. This often results in increased costs for businesses in the way of compliance costs, technical complexities, difficulty in hiring local talent to understand data regulations, and stymied innovation because of inefficiencies managing data.

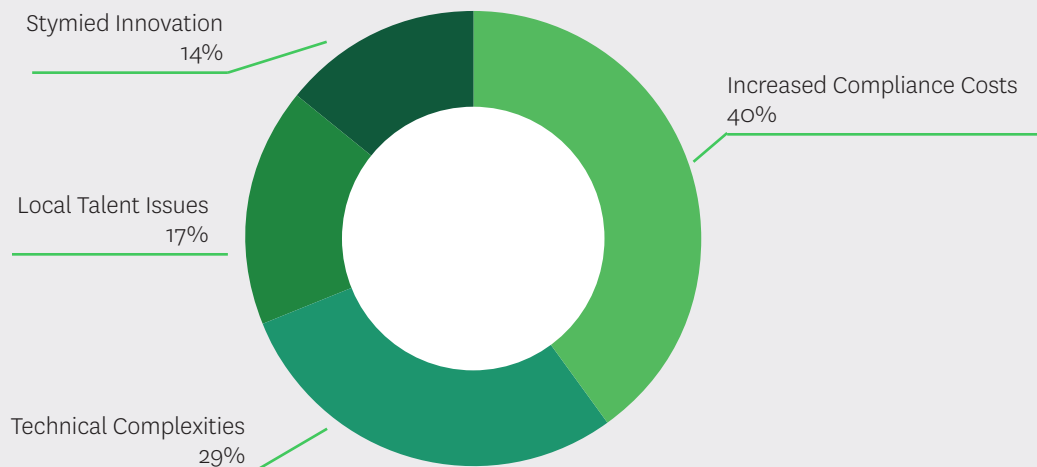
As illustrated in the chart below, increased compliance costs were the top pain point for interviewees. MSMEs generally do not have the capacity to adjust their business operations economy by economy. Moreover, many MSMEs are unaware of the costs they will need to incur when expanding globally, simply because the landscape is so fragmented.

Another dimension that is impeding business investments is uncertainty in the evolution of regulations. Rapid changes in digital technology and business models is causing regulators to frequently tweak regulations.

Even with robust regulations, there can be confusion when those regulations are not enforced. Interviewees in Chile and Peru for example, noted that businesses do not take privacy or security regulations seriously, as they believe enforcement agencies are too small and lack the ability to completely enforce regulations. In some cases, we learned about ‘informal economies’ or black markets, where citizens are well aware of digital trade occurring, but regulators are unable to enforce laws. On the other hand, some interviewees in Asian economies noted that their domestic regulations are ambiguously written, yet regulators engage in heavy enforcement. In these cases, businesses become too self-restrictive and avoid risks to avoid legal problems.

With respect to international regulatory frameworks, there was a universal consensus amongst interviewees in all APEC economies that the EU’s GDPR is strict and costly to comply with. Many APEC businesses need to comply with GDPR because the rules are applied to any businesses providing goods or services to European residents or monitoring the residents’ behavior. To give some perspective on the magnitude of these costs, the International Association of

Exhibit 6 Impact of Inconsistent Regulations on Business



Privacy Professionals (“IAPP”) estimated in 2017 that the Global Fortune 500 alone would spend USD \$7.8 billion in compliance costs for the GDPR (IAPP, 2017).

Most of our interviewees are aware that the APEC region has no unified set of rules yet – certainly nothing as robust as the EU. However, there appears to be a

desire for greater consistency in regulations across the economies. In addition to the cost of working through a “noodle bowl”, the nature of the digital transactions and the flow of data in cross-border trade, as illustrated by the Rakuten case study below, also argues for greater consistency in regulations.

Rakuten case study

The misalignment between policymakers and the actual workings of the internet is a common theme that was uncovered from interviews over a majority of APEC economies.

Although the Internet was designed to be borderless, policymakers around the world have attempted to apply regulations as if it coexisted with traditional national borders. Data storage requirements are just an example of this regulatory reaction.

It is tempting to imagine cross-border data flow occurring between two economies, though this is not at all the case. In Japan, a CEO of a high-growth technology company shared an illustrative example of data flow for a messaging app he had overseen:

- A user in Tokyo sends a message on her smartphone to send to a friend in Mexico City.
- The initial message, in the form of a data packet, is routed through a local gateway or router in Tokyo.
- From Tokyo, the data packet makes its way to Minamiboso, to the Japan-Guam-Australia (JGA) cable system.
- The data packet then travels across a giant network of submarine fiber optic cables: to Guam,

Sydney, Honolulu, Tijuana, and finally to a local router in Mexico City.

- The friend in Mexico City then receives the data packet on their smartphone and views the message on their application.

Now, this was just one possible route the data packet could have taken. In reality, data packets will travel across multiple combinations of routes, all over the world, to get to the same final destination.

While this example involved a simple message data packet, how might the flow impact transfer of more sensitive data? Moreover, what are the implications for e-commerce and online payments? For example, if a customer purchased a digital good or service in one economy, but the final data transaction occurred on a cloud server in a completely different economy, where was the point of sale? What are the tax implications for the buyer and seller?

It is clear then, that cross-border data flow is far more intricate than might be imagined by many of us. Traditional views on regulating data flow may result in unnecessary non-tariff barriers.

1.4 Current Initiatives for the Digital Economy

In response to concerns about inconsistent regulations, several initiatives have attempted to harmonize different frameworks and enhance cross-border data flow. There are three primary types of approaches: binding regulations or treaties, “middle ground”, or co-regulated, and self-regulated.

1. Binding Regulations or Treaties

This approach involves enforceable and binding regulations such as GDPR (EU), PIPA (Japan), HIPAA and CCPA (U.S.) as well as economy-to-economy trade agreements. This more traditional approach typically has the strongest level of enforcement (and therefore, adoption), but tends to take a longer time to negotiate or update. The following are the most prominent frameworks with respect to digital trade:

The World Trade Organization (“WTO”)

The WTO, formed in 1995, is the largest platform intended to harmonize international trade rules. WTO members have long since agreed not to impose customs duties on electronic transmissions. While digital trade is encompassed in one of the WTO’s key treaties, the General Agreement on Trade in Services (“GATS”), specific digital issues such as data localization and forced technology transfer are not addressed. As one might expect, managing this treaty is very cumbersome due to the involvement of many economies with different interests. Thus, while the WTO encompasses much of the world, its regulations on digital trade are not as comprehensive.

Recently, in January of 2019, 76 WTO members, including China, the EU, and the U.S., announced their intention to launch negotiations on the trade-related aspects of e-commerce. In June of 2019, G20 leaders agreed on the necessity of interoperability of different legal frameworks related to data at the G20 Osaka Summit. The members are attempting

to promote “data free flow with trust” to harness the opportunities of the digital economy, reaffirming the importance of the Work Programme on Electronic Commerce at the WTO (G20, 2019).

Free Trade Agreements (“FTAs”)

FTAs have emerged as another venue for groups of economies to develop regulatory frameworks for cross-border digital trade. In March 2018, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (“CPTPP”) was the first to set the rules and the United States-Mexico-Canada Agreement (“USMCA”) followed that trend in October 2018.

- CPTPP encourages the cross-border transfer of data, including personal information, by electronic means when such activity is for the conduct of business (Article 14.11), while prohibiting localization requirements of computing facilities as a condition for conducting business in that territory (14.13); the disclosure of source codes as a condition for the import, distribution, sale or use of mass-market software (Article 14.17); and customs duties on electronic transmissions (Article 14.3).
- USMCA, which was formerly known as the North American Free Trade Agreement (“NAFTA”), includes similar arrangements regarding e-commerce, binding cross-border data flow obligations, and prohibiting data localization. Like CPTPP, there is also a requirement for the parties to have a privacy system with “key principles” for such systems specified for the first time in a trade agreement. These principles are “limitation on collection; choice; data quality; purpose specification; use limitation; security safeguards; transparency; individual participation; and, accountability.” In addition, Article 19.8 (6) specif-

ically states that the parties “recognize that the APEC Cross-Border Privacy Rules system is a valid mechanism to facilitate cross-border information transfers while protecting personal information.”

GDPR and Adequacy Status

GDPR streamlines cross-border data transfers when participating economies are accorded with an adequacy status (i.e., when two domestic regimes are deemed equivalent and no further regulatory approvals are needed). It should be acknowledged that an adequacy status is difficult to obtain. Only four APEC member economies, Canada, Japan, New Zealand and U.S. (limited to the Privacy Shield framework) have received an adequacy status for exemption.

As discovered in our interviews, some economies, like the Russian Federation, have shown interest in changing domestic laws to be like EU’s GDPR, in order to harmonize regulations by imitating the most restrictive one. In the U.S., federal legislation is also considering mirroring key provisions of GDPR, and many large companies that already comply with GDPR are supportive.

2. “Middle Ground”

This approach is based on collaboration between businesses and economies, as well as some form of NGO or international organization to help set and maintain the rules, but is not necessarily binding or as easily enforced. Businesses tend to have more input with this approach, but need to be incentivized properly for adoption to occur. However, it is worth noting that this approach is much less effective when there is another, more strict, regulatory framework in place.

CBPR

CBPR is a leading framework for a digital ecosystem – a means to coordinate flows of data. In 2005, the APEC member economies first endorsed the APEC

Privacy Framework—a principles-based model for national privacy laws that recognized the importance of “effective privacy protections that avoid barriers to information flows.” This document was followed by the creation of the CBPR, an aspirational opt-in form of cross-economy legislation that was designed to protect personal data, while facilitating cross-border trade to benefit consumers and businesses.

In 2011, this framework was developed by APEC economies to promote the interoperability of privacy regulation through enforcement of minimum standards. There are currently eight participating APEC economies: U.S., Mexico, Japan, Canada, Singapore, the Republic of Korea, Australia, and Chinese Taipei. The Philippines is currently seeking to join the system, as the ninth member.

In order for CBPR to be more effective, it is vital that participation rates increase, and more companies become certified. **During our interviews, we found that many businesses, particularly MSMEs were unaware of CBPR or the work APEC is doing to promote the interoperability between the CBPR and EU’s GDPR.**

Industrial Standards (ISO27001, BS10012)

Some of our interviewees shared that they adhere to industrial standards such as ISO27001 and BS10012, to prove their excellence in managing data.

- The ISO27001, developed by the International Organization for Standardization (“ISO”) is the international standard for information security and provides the basis for achieving the technical and operational requirements necessary to comply with EU’s GDPR. The standard helps organizations of all sizes and in all sectors to keep their information assets secure.

- BS10012 on the other hand, developed by British Standards Institution (“BSI”) provides the core standards that firms need to comply when collecting, storing, processing, retaining or disposing personal records related with any individuals.

3. Self-Regulated

This approach leaves room for businesses to decide which rules to follow based on guidelines from associations, trade bodies, or corporate policies. Some

firms indicated that they apply sophisticated and comprehensive in-house data governance frameworks and that it usually consists of classifying all data according to sensitivity and restricting access to data within the firm based on sensitivity level. The approach is the least costly to comply with for businesses, yet provides the least security to consumers, as there is no independent enforcement of the internally set regulations.

1.5 APEC’s Future Digital Economy

Given the interviewees’ desire for a consistent and widespread regulatory framework and need to eliminate the “noodle bowl” effect, clearly more must be done to establish a harmonized and interoperable digital economy.

If the resources were available, most stakeholders would agree that an ideal framework would:

- Support the secure and free flow of data.
- Consider legitimate objectives around privacy, cybersecurity, and consumer protection.
- Account for reasonable national and economic security concerns.
- Ensure all the above are addressed using a last trade restrictive approach.

Yet, it is very apparent from the various existing regu-

latory frameworks and trade agreements that designing a suitable framework is no small task. Ongoing geopolitical pressures make it difficult, if not impossible, to objectively define how reasonable national or economic security concerns may be. As such, obtaining buy-in from the various economies and stakeholders involved on whether an NTM is an NTB or not is an even greater challenge.

Our interviews provided some helpful insight on the general perception of the current state. The chart below summarizes the preference interviewees had for type of regulatory framework. While a co-regulated approach was the most popular (over 52%), a significant number of interviewees voiced a preference for a fully regulated approach such as GDPR.

Exhibit 7 Preferred Framework Approach



“Even with the costs of switching to something like GDPR, if there was a level playing field and all other companies had to do it, I think it would be much easier for us to follow the same rules everywhere our company operates.”

Executive, Digital Marketing LE in Japan

For the reasons described above, developing a brand-new regulatory framework may be an unrealistic goal. Instead, it would be prudent to try and find interoperability between the top two existing regulatory frameworks for data flow: CBPR and GDPR.

A Comparison of CBPR and GDPR

CBPR and GDPR are both premised on consent and notice, meaning that the consumer has consented to their data being controlled, and has adequate notice about how their data will be used. Both systems also build off the original eight privacy principles developed by the OECD (OECD, 2013). However, the two frameworks differ in that CBPR is more hands-off, while GDPR is much more hands-on:

- CBPR allows for the data controller to “exercise due diligence and take reasonable steps” as an alternative to obtaining consent. Since CBPR is principles-based, it is not quite clear what legal standard a business must apply when determining “due diligence” or “reasonable steps.” For example, CBPR does not define “data breach” or establish notification requirements. The framework encourages data breach notifications but does not require it. CBPR also takes a more lenient path in terms of punishment, including involving accountability agents and engaging in dispute resolution.
- GDPR covers data subjects, controllers, proces-

sers, and data protection authorities. It requires immediate notification of data breaches and has much stronger fines and punishments for the entities involved. GDPR tends to take the stance that industry self-regulation of data security has been tried and been unsuccessful. GDPR is a legally binding framework, and it enforces itself anywhere in the world that an EU citizen’s data is being held or used.

“CBPR’s requirements are very much aligned with other global frameworks such as the EU’s Binding Corporate Rules and Privacy Shield. Preparing the supporting documentation for CBPR helped expedite the preparation for Shield and BCR certification. However, CBPR is still in its early stages and needs more companies and economies to join for the network effect. It is too costly to comply for MSMEs because we need to renew it annually. The fee to the accountability agent is quite high.”

Manager, Hi-Technology Company in Singapore

Given the state of the two market leading systems, we propose the following alternative paths to the APEC community:

Alternative 1: Enhance “Most Interoperable” Middle-Ground Framework

If the APEC community wishes to differentiate itself from the EU, then it may be worth pursuing a middle ground alternative that encourages the free and secure flow of data, yet also builds trust and provide reasonable privacy protections.

Bearing in mind that a significant stakeholder population expressed preference for a co-regulated

approach rather than being forced to comply with a legally binding set of requirements, the CBPR appears to be a good starting point, or template, to work with. It certainly is the most developed and international co-regulated framework in existence.

Criticisms for CBPR included challenges in incentivizing companies to become certified, as well as principles that were not aligned with some economies' domestic laws. For MSMEs in particular, the certification costs can be burdensome. Moreover, the CBPR system was first endorsed in 2005, and last updated in 2015. The digital economy however, has evolved far more frequently, and quickly.

We recommend a multi-pronged approach, with the objective being to enhance the CBPR system using the following guidelines:

● **Interoperable basis:**

To address the concerns of the framework not being in line with other economies' laws, CBPR could be further enhanced.

- Using a phased approach, small groups of APEC economies could request that their respective ABAC workgroups (e.g., ABAC 'Pathfinders') focus on reviewing and updating specific areas of CBPR (e.g., data security protocols, privacy standards, etc.).
- Each group is then able to provide input on a section of the framework, running parallel workstreams, rather than having all 21 economies attempt to tackle the system at once.

● **Flexible design:**

Core to the adoption of any type of co-regulated framework is the concept that it cannot be a 'one-size fits all' approach. One of the biggest challenges with incentivizing entire economies, let alone individual MSMEs, to adopt a co-regulated set of guidelines is

the problem of certification compliance costs.

- A 'cliff' or 'sliding scale' set of requirements would essentially require full compliance for businesses that have exceeded a specified threshold (e.g., annual revenues). LEs would need to be in full compliance, while smaller MSMEs ought to be able to waive some of the more stringent data standards.
- For developing economies, a sliding scale will help support local businesses competing with some of the larger multinational digital businesses.

● **Living framework:**

To ensure that the framework remains relevant and not outdated, it must be continuously aligned with technological trends. Thus, APEC should consider dedicating a working group (e.g., the Electronic Commerce Steering Group) to monitor the framework's rules and maintain dialogue with businesses involved in digital trade.

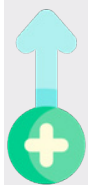
- ABAC members, or a specific APEC working group, would likely lead the charge on better educating businesses as well as policymakers on the intricacies of technology and cross-border data flows, as they pertain to CBPR.
- Several of our interviewees, particularly policymakers and academics, discussed the idea of regulatory 'sandboxes' to:
 1. Encourage experimentation and safely monitor effects of regulations.
 2. Create ongoing dialogue between businesses, policymakers, and regulators.
 3. Offer guidance on how to better develop and comply with regulatory requirements.
- APEC as an organization, or specific economies, may wish to offer or promote incentives to businesses to encourage adoption. For example:
 1. Case studies demonstrating how businesses following this harmonized and in

teroperable framework ultimately benefit from a more streamlined business model, greater market access, and trust from customers.

2. Implementing a form of digital development goals (similar to the United Nations' Sustainable Development Goals).
3. Economies could offer initial tax credits to companies that become certified under the frame-

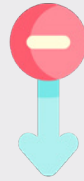
work.

It is worth noting that this alternative could initially be pursued by a few core APEC economies that have expressed a strong interest in a co-regulated approach such as CBPR. Once the cross-border digital trade benefits are observed, other APEC economies may wish to either adopt, or pursue mutual recognition in order to participate.



Pros

- Provides MSMEs with greater flexibility to be compliant with data protection principles.
- Levels the playing field for emerging economies and MSMEs by allowing 'cliff' or 'sliding scale' style requirements.



Cons

- Harder to enforce relative to a fully-regulated approach.
- Steep adoption curve that requires additional education and incentives for businesses.
- Participants will still need to comply with much stricter GDPR requirements if they conduct business with EU citizens.

Alternative 2: Move to “Most Restrictive” Regulated Framework

Businesses rarely welcome new regulations, and GDPR was seen as a particularly heavy-handed approach to data laws. However, it is important to recognize part of the world moving toward a GDPR style framework in an arguably reasonable attempt to balance the protection of citizens' individual rights, alignment with the growth of data and technology, and the legitimate concerns of harm to economic development through overly rigid data privacy and security regulation. In addition, a modest 40% of interviewees voiced a preference for GDPR as a regional regulatory framework.

We believe it should be stated that the GDPR is unlikely to go away, even if APEC and its member economies were to design a new system. When one is compliant with GDPR, they are compliant almost everywhere in the world. Structurally, this means that even businesses operating outside of the EU still have to be compliant with GDPR requirements if they handle EU citizen data. Thus, there is a strong incentive for businesses to endorse GDPR-like legislation, as they would not have to frequently reconfigure their technology or internal controls. GDPR is effec-

tively here to stay and might only be surpassed by a regulatory framework that was designed to be even more restrictive. For many businesses, it may be easier to just 'buckle in'. Moreover, as with any initially burdensome regulation, it will eventually become much easier to comply with the legislation due to the introduction of numerous compliance related products and services.

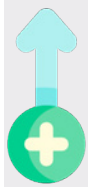
Some of the economic benefits of voluntary compliance with GDPR would include an increase in the ease of cross-border data flows, greater access to European markets, and the ability to preempt future legislative changes. Canada, Japan, New Zealand, and the United States (under the Privacy Shield framework only) have already attained adequacy status with GDPR due to their stringent domestic data laws. Other APEC economies could also work towards adequacy or mutual recognition with GDPR. As noted earlier, emerging regulations in some APEC economies appear to be designed with GDPR as a baseline. For example:

- China's Personal Information Security Specifica-

tion, introduced in May 2018, is very comprehensive and modeled similarly to GDPR. However, the specification is not yet legally binding.

- In the Russian Federation, especially given its vicinity to the EU, domestic regulations are being

adjusted to be more harmonious with GDPR in terms of privacy protection. For example, there is a push to align with the Council of Europe's Convention 108+, a unified set of legally binding requirements for privacy protection.



Pros

- Most comprehensive data privacy and security features.
- Level playing field for all member economies and businesses.



Cons

- Less flexible with respect to interoperability.
- May initially be burdensome for smaller MSMEs to comply.

1.6 Case for a Digital Ecosystem

Interviewees across economies have made it abundantly clear that an interoperable and consistent regulatory framework is greatly desired. In addition to taking on the burden of compliance costs, businesses face unnecessary technical complexities in the existing cross-border regulatory environment.

“The biggest hurdle for MSMEs is understanding the international regulatory frameworks. Fortunately, we have access to legal consulting services for free.”

Executive, Hi-Tech Startup in the Russian Federation

- Whether a binding regulated or middle-ground approach is chosen, it is vital to avoid a future where individual economies, or fragmented FTAs, create their own versions of GDPR (or similar frameworks). As such, education for policymakers will be needed to design a pragmatic framework, and businesses will need to understand the incentives of adopting the new approach.
- There is a risk of a future state where so many

fragmented data regulatory frameworks will result in ‘data islands’ of sorts, isolating certain economies and populations. This would effectively stifle innovation and sideline many MSMEs from digital trade due to the dramatic increases in compliance costs.

- In addition, consideration should be given for the various stakeholders (e.g., LEs vs. MSMEs or developed vs. developing economies) that will play a role in the selected framework. A level playing field ought to be created using mechanisms such as a ‘cliff’ or ‘sliding scale’ set of requirements.

Finally, it is imperative that this interoperable regulatory framework is kept up-to-date with technological advances. In creating a high-functioning APEC-wide digital economy, it is clear that having a consistent and standardized framework is an important foundation. However, one of the challenges with regulatory frameworks is that they tend to be ad-hoc and reactionary attempts to adapt to the business and technological environment. Certainly, this has been the case with CBPR and GDPR, and will be the case with any future versions of them.

Moreover, a framework, as the name suggests, tends to place perspectives into a ‘box’ of sorts. Ideas and innovations can be limited, resulting in staggered economic growth. Yet, digital technology continues to grow at a rate that regulations cannot keep up with.

What if there was a way to organically create an environment for multi-dimensional growth for the digital economy? We believe cross-border data flow-oriented digital ecosystem is that solution. The next section explains how such ecosystems can be built.

“The strategy for Indonesia is to release regulation and see how hard the business community pushed back on it. This approach appears business-friendly, but it’s not the best way for businesses or the larger economy to operate in the long term.”

Regulatory Official, Indonesia

“Among the 21 economies, we at least have clear consensus that we need to have something consistent so that we can trade more effectively.”

Senior Executive, Industrials LE in Japan



2 TRANSFORMING INTO A DIGITAL ECOSYSTEM

2 The Digital Ecosystem

As discussed in the previous section, the challenges of creating and implementing a top-down, frame-work-driven approach has the potential to set us on a path toward disjointed ‘digital islands’, where digital trade and regulations diverge across the APEC economies. We learned from our interviews that businesses feel burdened by the oppositional relationship with regulators. We posit that an ecosystems-based approach, where all stakeholders have the incentive to grow collaboratively the overall size of the pie, can enhance cross-border digital trade and create a uniform regulatory environment. To more fully understand

how cross-border data flow-oriented ecosystems can be created, this section of the report will closely consider the following three ingredients:

- Incentivizing large enterprises (to become better actors and active participants in the digital ecosystem building process),
- Narrowing knowledge gaps (to enhance trust amongst all stakeholders), and
- Continued investment in physical infrastructure (to lower the cost of entry and the cost of operation for firms of all sizes).

We will begin by trying to understand ecosystems.

2.1 Overview of Digital Ecosystems

To build richer ecosystems, we must take a closer look at digital ecosystems and how economies can play a role in nurturing them. Harmonious digital ecosystems are understood as a collection of stakeholders (regulators, large enterprises, MSMEs, and consumers), processes and “things” that are inter-

connected in organic, symbiotic relationships. These relationships are enriched by open, multi-channel communication across a mutually beneficial infrastructure, while lowering the cost of operating businesses who can rapidly evolve to changes within the technology landscape.

2.1.1 Types of Digital Ecosystems

Digital ecosystems can either be understood vertically (within a supply chain) or horizontally (across peer companies) for an industry, such as a “fintech ecosystem” or an “e-commerce ecosystem”. In a narrower context, ecosystems are also used to describe the products, services and components of comprehensive solutions.

According to McKinsey, existing digital ecosystem can be divided into five main groups (McKinsey & Company, 2017):

	Objectives	Examples
 Sales	<ul style="list-style-type: none"> Allow users to interact with one another socially; Attract as many customers and social interactions as possible. 	<ul style="list-style-type: none"> Individual social platforms such as Facebook, Instagram, WeChat; Professional social platforms such as LinkedIn.
 Data	<ul style="list-style-type: none"> Share data using standard data definitions; Provide additional data and analytics-based services; Capture and use external and proprietary data. 	<ul style="list-style-type: none"> Internet of Things (IoT) efforts by GE, Apple iHealth; Property and casualty insurers (e.g., using weather data patterns to assess fire risks).
 Technology	<ul style="list-style-type: none"> Enabled through industry standard software and hardware; Provide better/faster IT delivery through broad range of specialist IT firms and technologies. 	<ul style="list-style-type: none"> Consumer mobile such as Apple iOS and Google Android; Enterprise-technology platforms such as Oracle ERP, SAP ERP; Visa/MasterCard's payment processing platforms.
 Customer journeys	<ul style="list-style-type: none"> Leverage company's core commerce functionality and value proposition to attract customers; Add capabilities to complete the customer journey and create network effect. 	<ul style="list-style-type: none"> Ridesharing platforms such as Lyft and Uber; Shopping platforms such as Amazon; Banks allying with fintech players in value chain (e.g., SME app players linked via APIs into bank.)
 Services	<ul style="list-style-type: none"> Integrate multiple companies' services to holistically address customers' pain points and make the initial product/services much more attractive. 	<ul style="list-style-type: none"> Explicit services platforms such as Salesforce.com and the Salesforce ecosystem.

Firms providing goods and services across borders can use one or more of the above ecosystems. Two other note-worthy eco-systems are the FinTech ecosystem and digital hubs. FinTech is an important driver in the online payment ecosystem that in turn enables e-commerce and online digital services. A key component of the FinTech is digital payments

that includes payments for online purchases for good and services through credit cards, debit cards, or payments systems such as Paypal or Alipay. Mobile wallet-based payments for purchases at point of sale are also considered digital payments.

A digital hub serves as a catalyst in promoting new

technologies, fostering innovations, nurturing entrepreneurship through incubators and accelerators, and knowledge sharing. This ecosystem supports the development of new digital business and business models. While most developing APEC economies are unable to tap into the potential of new and disruptive technologies, a few have succeeded in creating digital hubs in major cities.

Two emerging trends that are going to have significant impact on digital business and cross-border data flows are the Internet of Things (IoT) and machine learning as a service (MLaaS).

Internet of Things (“IoT”) Ecosystem

IoT is at the epicenter of digital transformation and is central to the concept known as ‘Industry 4.0’. Devices embedded with electronics, software, sensors and network connections with machine-to-machine capabilities span from smart phones, smart watches, and smart televisions, to advanced industrial, energy and agriculture technologies. Tens of billions of devices will be expected to connect to the internet, empowering MSMEs and addressing social development issues such as access to healthcare, water and energy management. For example:

- In Indonesia, smart cities are an integral part of Indonesia’s Industry 4.0 initiative; consequently, the Indonesian economy’s demand for automation and IoT solutions is increasing significantly.
- Singapore launched a USD \$2.4 billion IT Invitation to Bid in 2017 and decided that technology spending would be shifted from infrastructure to digital, data analytics, and smart applications.
- An interviewee at the Japan Economic Research Institute noted: “Although Japan has historically been a manufacturing exporter, some of its prod-

ucts like construction equipment, will require Internet of Things to support the transfer of all of the data the devices will collect around the world.”

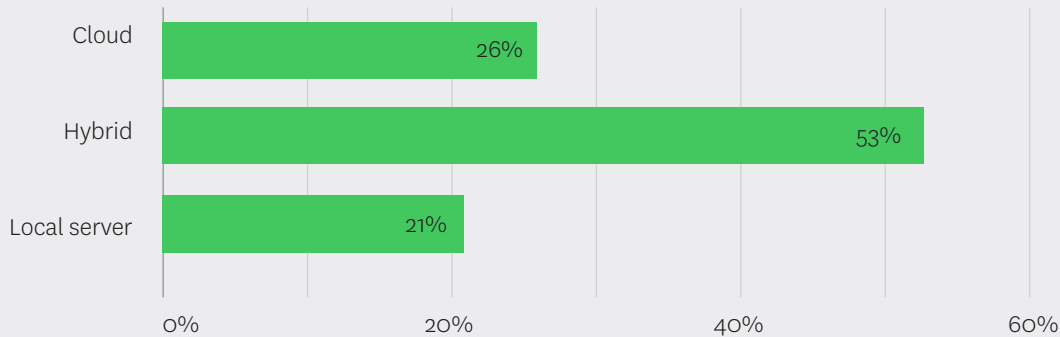
Machine Learning-as-a-Service (MLaaS)

MLaaS is understood as services mostly offered by cloud service providers to offer built-in machine learning tools, in a subscription model. Leveraging pre-built algorithms and models in those services, developers can speed up their application development. While the supply of knowledgeable and skilled software engineers is still limited and costly, the ease, speed and availability of MLaaS solutions is transforming the way businesses apply data to improve their efficiency, enhance product capabilities, and customer engagement. Data is the driver behind machine learning.

Firms powering the above ecosystems provide services through the following types of services.

1. **Infrastructure-as-a-service** is the classic cloud idea which offers access to storage or computational resources (example: Amazon S3 cloud service or Dropbox online file storage solution). Of the 166 interviewees who addressed data storage preferences for their business, 26% are using cloud-based storage and 53% are using a hybrid of cloud and local servers.
2. **Platform-as-a-service** offers users the whole platform to build their products or launch their services. A typical example is Shopify – an e-commerce platform that enables merchants’ access to a variety of ecommerce solutions, from setting up a website, managing content and product categories, to integrating with payment system.
3. **Software-as-a-service** is most popular amongst

Exhibit 8 Data Storage Types



MSMEs since businesses of that size are offered the flexible usage of the software that fits their needs without being locked into spending resources to build and administer in-house (example: Google’s email services).

2.1.2 Digital Ecosystems and Cross-Border Digital Trade:

Digital ecosystems enable data-focused businesses to be more agile and adaptive, reducing their burden of infrastructure management and IT investment. Therefore, established businesses can lower their costs and focus on improving internal business processes. Newly founded businesses have lower barriers to enter new digital markets, especially outside their domestic market. More importantly, with the flexibility of new plug-in solutions, businesses are shifting from delivering products to outcome-as-a-service driven products, which focus on integrating services and products into packages (bundled services), providing a better experience for customers.

Finally, these resourceful and flexible ecosystems provide businesses (especially MSMEs) the opportunities to create new sources of revenue, change their business models and disrupt industries. Ecosystems give access to resources at scale and cross-border trade will gain from ecosystems to increase access for players of all sizes.

The existing ecosystems have already led to the creation of several new business models such as those listed below.

- Subscription/freemium business model used in media platforms such as Spotify and Netflix, social search platforms such as Bumble, or collaboration platforms such as Slack and Skype;
- Information business model used in review platforms such as Glassdoor and Yelp;
- Advertising business model used in search engine platforms such as Google search, or social platforms such as Facebook and LinkedIn, or knowledge platforms such as Lynda;
- E-commerce business model used in e-commerce platforms such as Shopify, or online marketplace such as Amazon marketplace
- Pay-as-a-service business model used in service exchange platforms such as Uber and Airbnb; or cloud platform-as-a-service, infrastructure-as-a-service, and database-as-a-service (example: Amazon S3, Microsoft Azure)

2.2 Development of Cross-border Digital Ecosystems

In addition to variations in regulatory regimes across economies, there are a number of challenges to creating cross-border digital ecosystems. We group them broadly into the following categories:

- Variation across economies in the state of the digital ecosystems,
- Variation in the underlying infrastructure
- Knowledge gaps among the stakeholders

These three factors are closely related and have a bearing on the variation in regulations. Addressing these challenges can diminish the “noodle bowl”

problem but more importantly lead to growth in cross-border digital trade in the APEC region.

We propose the following three

- Incentivizing large enterprises (to become better actors and active participants in the digital ecosystem building process),
- Narrowing knowledge gaps (to enhance trust amongst all stakeholders), and
- Continued investment in physical infrastructure (to lower the cost of entry and the cost of operation for firms of all sizes).

2.3 Partnering with Large Enterprises

Digital ecosystems require interoperable platforms if they are to enjoy strong network economies. As a result, we have very large digital firms such as Alibaba, Amazon, Ant Financials, Facebook, Google, J.D., Mercado Libre, Rakuten, and SoFi that have significant presence in many APEC economies. Besides these digital giants, even within individual economies we are witnessing a concentration of market shares. The Herfindahl–Hirschman Index (“HHI”) is published by the World Bank and it shows the market power of the largest corporations within a given economy. The HHI in all APEC economies has increased in the last decade. The HHI of most APEC economies showed a downward trend since 1991 until 2011.

As stated earlier, two emerging trends that will have a major impact on cross-border digital trade are Internet of Things (IoT) and machine learning as a service (MLaaS).

Internet of Things has tremendous potential for transforming industries and society. IoT, however, requires a very robust infrastructure to transport, analyze, and act on the enormous amount of data will flow

from connected devices. This infrastructure has to be developed and supported by large private or public entities.

MLaaS solutions is transforming the way businesses apply data to improve their efficiency, enhance product capabilities, and customer engagement. While MSMEs do not have comparable resources invested in data gathering and data storage, large companies have access to warehouses, allowing them to leverage their strengths to build and train their machine learning models in-house and offer to external clients as MLaaS. Without MLaaS, it would be very challenging for MSMEs to develop their own machine learning algorithms and models. However, there are some methods to promote MLaaS-driven, cross-border data flow as it pertains to MSMEs. Based on our interviews, MSMEs are already working on building machine learning models from public and niche data for specific domains. They provide the machine learning models to their clients to plug in clients’ data and explore business insights.

In this field, using big data precepts, Amazon, Google and Microsoft offer a wide range of solutions. The following table displays the product offerings (delivered

by larger players) within the MLaaS space that could be valuable as recommendations for MSMEs operating within the APEC region:

AI platforms	Natural language processing	Speech recognition	Computer vision
<ul style="list-style-type: none"> Amazon Sagemaker Azure Machine Learning Studio Google Cloud Machine Learning Engine Amazon Machine Learning 	<ul style="list-style-type: none"> Amazon Polly Amazon Lex Amazon Translate Amazon Comprehend: NLP Azure Language Understanding (LUIS) Azure Bing Spell Check API Azure Web Language Model API Azure Text Analytics API Azure Linguistic Analysis API Azure Linguistic Analysis API Google Cloud Translation API Google Cloud Natural Language API 	<ul style="list-style-type: none"> Amazon Transcribe Azure Bing Speech API Azure Speaker Recognition API Azure Translator Speech API Azure Custom Speech Service Google Cloud Speech API Google Dialogflow Enterprise Edition 	<ul style="list-style-type: none"> Amazon Rekognition Azure Computer Vision API Azure Content Moderator Azure Custom Vision Service Azure Face API Azure Emotion API Azure Video Indexer Google Cloud Vision API Google Cloud Video Intelligence

2.3.1 Role for Large Enterprises

Platforms by definition support interactions among large number of enterprises and customers. Thus, platform owners have a natural incentive to improve interoperability and thereby reduce the friction in cross-border trade. Platforms also benefit by standardizing data flows across economies. In short, network economics that results in market concentration also incents platforms to standardize and make it easier for MSMEs to participate in cross-border digital trade.

Large digital firms have an incentive due to networks efforts to support the growth of digital ecosystems in the following ways:

1. Build interoperable transactional infrastructure:

Transactional infrastructure requires scale and favors the larger (oftentimes publicly-owned) players. Absence of this infrastructure impedes digital trade between MSMEs across economies.

2. Create greater access to finance:

Lack of access to finances often keeps firms trapped

in informal and overcrowded markets. Furthermore, cross-border data flows are impeded by the lack of financial resources for businesses that are attempting to digitize their operations. These conditions are especially true for primary-sector dependent economies that have yet to make the leap into prioritize the digital economy. In our interviews, MSMEs shared their concerns around the lack of capital being devoted to the ecosystem that allows them to thrive. In economies with a significant informal sector, the lack of funding was even more acute. Cross-border FinTech platforms offer much promise.

3. Incentivizing entry into the formal sector for MSMEs:

Many MSMEs in developing and emerging markets try to stay ‘under the radar’ in the informal sector (primarily due to taxation and corruption issues). Incentives to transition to the formal sector can be made more attractive through large enterprise – economy partnerships, by offering the ability to reach broader product, labor, and financial markets.

4. Collaborate in creating regulations that are consistent across economies

Platforms that lie at the core of ecosystems create new business models that transform the nature of digital trade and create new challenges for regulators. Scale of these firms incents them to shape and abide by regulations.

2.3.2 Mechanisms for Engagement

In this section we briefly comment on some mechanisms we observed that facilitate the development of the ecosystems and engage multiple stakeholders.

To facilitate the growth of the FinTech ecosystem, some APEC economies have developed regulatory sandboxes allowing fintech companies to test their products and services in a supportive regulation

environment. We learned of a great example from the Australian Securities and Investments Commission’s initiative, which established a regulatory sandbox allowing eligible fintech companies to test certain products and services for up to 12 months without an Australian financial services license or credit license.

In addition, some economies have leveraged ‘e-government’ to facilitate digital payments and services. For example, in 2018, Thailand’s Electronic Transactions Development Agency partnered with Omise, a Japanese blockchain-based start-up, to initiate the National Digital ID project, with the aim to build a national electronic Know Your Customer (eKYC) portal to offer a standardized process to verify users. With that initiative, instead of having users physically coming to e-wallet or e-payment service providers’ offices to verify their identities, e-wallet and e-payment service providers can access a shared and trusted database to verify users. For cross-border partnership, during ASEAN Finance Ministers and Central Bank Governors held in April 2019 in Thailand, eight out of ten ASEAN members agreed on ASEAN Payment Connectivity. The initiative aims to cut cross-border transaction fees for migrants, tourists and businesses. Krungthai Bank of Thailand and Shwe Bank of Myanmar have also developed a secure, convenient and instant remittance service using blockchain platforms.

New Zealand's Electronic Funds Transfer at Point of Sales: Lessons for large player collaboration

New Zealand's EFTPoS (Electronic Funds Transfer at Point Of Sale) has led to a cashless economy. Retail banks were able to come together to create the infrastructure necessary for reducing fees for customers, thereby lessening the friction felt in conducting day-to-day transactions. As one executive from a shipping company in New Zealand explained: "In shipping, we have to understand that we are in the technology business and that we are moving containers around." When asked further how data standards affecting his business, he explained: "Our master data optimization algorithms work well for us but a lot of our competitors have labor intensive-practices in data gathering." He cited the EFTPoS model as the way forward for shipping.

In EFTPoS' case, five domestic banks in New Zealand came together and took ownership of a

frictionless system that was given away for free to retailers. Banks clear and settle hourly, which allows for real-time banking in New Zealand. EFTPoS' adoption sits at 100% today, with New Zealand emerging as a cashless society (for the most part), with the lowest incidence of cash in circulation per capita in the OECD. The executive recommended learning the lessons of EFTPoS to apply to his own industry (shipping). To get started, he explained: "You're trying to build a Rolls Royce, when a skateboard would do." He emphasizes the use of elegant degradation: "start off with a few variables to get going." Our sense in this interview was that for cross-border data flow-oriented systems to live and breathe, larger players can jointly partner to create infrastructure that reduces their costs and that of the customer. New Zealand's EFTPoS fits cleanly into that line of thinking.

Conversely, in some economies, restrictions or reservations on foreign payment services have been increased. For example, the Financial Supervisory Services in Korea has advised card issuers to charge lower annual fees than international card providers, and to give preference to local brands for customers not using international transactions. In 2017, Malaysia's Bank Negara created an Interoperable Credit Transfer Framework, which required credit transfers between banks, other banks, and e-wallet holders to be processed in Malaysia via a single payment operator. Similarly, Indonesia, Thailand, and Vietnam have a draft revision to the Tax Administration Law requiring cross-border services providers to process payment through the NAPASS domestic payment gateway in order to enable tax authorities to control the revenues.

In September 2017, Hong Kong unveiled the first smart city digital hub to leverage the new technol-

ogies of sensors to address challenges of urbanization. China also created economic and technological development zones for the digital sector. These zones encourage both domestic and foreign firms to set up and start operations in the easiest way, overcoming the bureaucratic hassles. Special economic regulations including tax incentives are leading to the growth of digital hubs in China's important cities. These hubs create an opportunity for proactively shaping the evolution of ecosystems.

A World First - Malaysia's Digital Free Trade Zone

Responding to the rise of the digital economy, in a world first, Malaysia has launched a Digital Free Trade Zone (“DFTZ”) to capitalize on the vitality of its USD \$1 billion e-commerce market and to provide seamless support for MSMEs and innovative enterprises engaging in cross-border trade. The joint initiative with Alibaba Group aims to accelerate e-commerce growth rates from 10.8% to 20.8% by 2020, and achieve a USD \$8 billion e-commerce valuation by 2025, leading to the creation of 60,000 new jobs. The zone focuses on building the capabil-

ity and reach of Malaysia's MSMEs, which account for a disproportionately low 37% GDP contribution despite representing 97% of all businesses. The DFTZ will be rolled out in stages commencing in late 2017 and finalization is expected by 2019. A part of Alibaba's Electronic World Trade Platform—which will provide SMEs with the commercial infrastructure for cloud computing, mobile payment, and training—the zone includes a high-tech fulfillment warehouse near Kuala Lumpur's international airport.

The above examples illustrate the active engagement of governments and regulators in the development of ecosystems. Our interviewees also referred to other Private Public Partnerships (PPP) in APEC economies. While PPP hold much promise there are also some cautionary notes. Some interviewee opined that PPPs lead to digital MSMEs being crowded out of the market, innovation being stagnated by public sector red tape and specific market actors being favored due to stronger ties within the public sector (as compared to the best company being picked for a partnership). PPPs favor larger data-oriented businesses that have the relationships to leverage their relationships to gain favorable regulatory treatment. In our interviews, we learned of MSME concerns around PPPs becoming the band-aid fix for economies that are under pressure to modernize but less willing to make the deep investment into their innovation ecosystem. MSMEs aspiring to transact based on cross-border data flows are being left behind as a result.

In short there appear to be a number of mechanisms already available and in use for engaging large players and shaping ecosystems.

Why act now?

The HHI of most APEC economies showed a downward trend since 1991 until 2011. In the last decade

this index has increased in almost all APEC economies. Meanwhile, though the trust in business increased in 8 out of the surveyed 14 APEC economies, the global public confidence in the big corporations decreased 16% between 1985 to 2018. What is more, 69 percent of our interviewees expressed concerns over the preferential treatment received by the large enterprises. Large enterprises have an opportunity to reshape this narrative by engaging with the APEC economies to help build the ecosystems necessary for greater cross-border data flows that are mutually beneficial.

2.4 Prioritize Narrowing the Multi-Stakeholder Knowledge Gaps

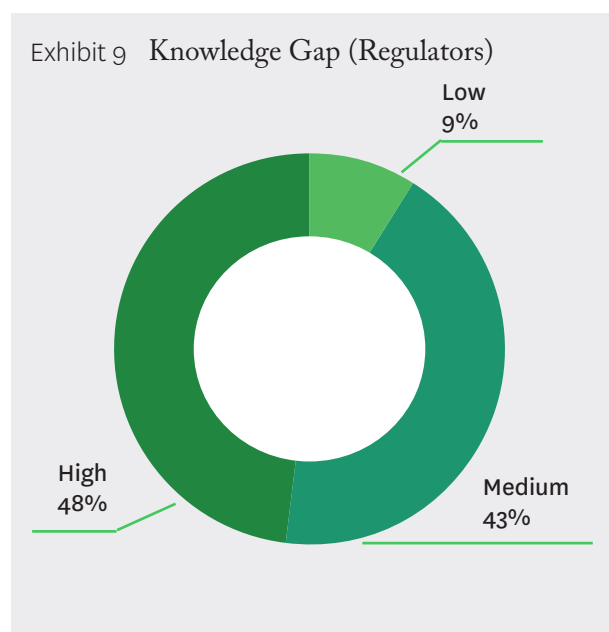
In building cross-border data flow-oriented ecosystems, economies must address knowledge gaps, which exist at the regulatory level, the consumer level, the MSME level and at the talent acquisition level. The following sections outline what our research was able to point to with respect to the aforementioned levels.

2.4.1 Regulatory Knowledge Gap

Challenges:

During our interviews, 80% of interviewees who discussed entering new markets noted that the biggest challenge is understanding regulations of other countries. Also, 63% felt MSMEs did not fully recognize regulatory requirements to access markets. In fact, of the 201 interviewees who addressed the regulatory knowledge gaps in our interviews, 48% rated the knowledge gap of regulators as high (43% rated it medium and 9% rated it low).

In the struggle to regulate technology at the pace at which it is developing, regulators face a two-fold chal-



lenge in creating regulations:

- **Understanding what must be regulated at present:**

The challenge here is to fully understand the impact of the technology being regulated. This challenge is compounded by the differing standards of regulation based on the industry that technology operator is operating in. Furthermore, limited interoperability (especially in the physical trade of goods) muddies digital transactions because entire supply chains are partially digital. As one MSME CEO of a crowdsource delivery platform explained to us: “Digital seamless-ness does not exist in the physical trade of goods since there is not a sophisticated digital supply chain. It is merely digital in certain parts.” In fact, a FinTech entrepreneur from a smaller APEC economy bemoaned the lack of emphasis on the digital economy: “We have not moved from physical goods paradigm to services paradigm.”

- **Predicting what may need to be regulated down the line**

Technology evolves based on the needs of the market. Regulators must keep pace with the rate of technology change in order to regulate appropriately. As one APEC regulator claimed: “We lack even the most basic, necessary infrastructure to measure the impacts of e-commerce on the country. We’re essentially flying blind.” This sentiment was widely shared in developing APEC economies where the rate of technology change can be overwhelming and poorly understood. Furthermore, regulators are reacting under time pressure and with limited resources at their disposal.

In building cross-border data flow-oriented ecosystems, regulators are challenged especially by platform-based businesses that offer a plethora of

services and a rapidly evolving portfolio of products. In fact, platform-based businesses have economies of scale and the nimbleness to compete at different levels, in different markets at the same time. Such “jurisdictional blurring” creates conundrums such as the challenge in regulating Uber. “Is it a technology platform that connects users with drivers? Is it a car-sharing platform? Is it a cab? Is it a restaurant business, because it delivers food? Oftentimes, the explicit focus is to find the niche that is not being exploited but has the potential for economic profit. The “niche-entry” strategy becomes the basis for a larger entry strategy once the foothold has been established such as the case of Netflix providing only DVD rentals by mail.

To keep pace, regulators are experiencing three specific challenges:

1. How to find the bad actors
2. Monitoring compliance
3. Speeding up the regulatory processes to better serve and protect the public

In addition, regulators are increasingly becoming responsible for international capacity building as well as external capacity building, specifically in educating consumers in instances where their digital rights are being infringed upon. To address these challenges, there needs to be systematic dialogue between the public and private sectors.

Consequences:

The consequences of regulatory knowledge gaps are oftentimes tied to a regulatory overreaction, with a single (usually large) company rather than a broader application. The focus on data regulation is to open up competition for early stage, smaller tech companies and yet, we face the following challenges:

● **Tough to time it**

Technology regulation must be timed for when it is most relevant. Implementation can take a long time to institute, by which time it may be obsolete and lead to sub-optimal cross-border data flows;

● **Messy: Plenty of contingencies**

In order to fully capture the repercussions of a given technology on the consumer, regulation must account for the various contingencies that can make it hyper-specific and general enough at the same time.

● **Expensive: How best to enforce it**

Technology regulation mechanisms can prove to be costly and difficult to enforce. . Business and regulators can partner and allow self enforcement in some instance and in other cases if the regulating body has the knowledge and the capabilities they can regulate cross-border data flows directly.

To address these challenges, economies can promote legitimate data sharing endeavors. In fact, open data policies can help create an ecosystem of trust and build on the educational competencies of all the stakeholders involved (a net positive effect seen with digital commons).

What can be done:

The discussion highlights the importance of regulators understanding emerging technologies and business models. Regulators have the challenge of keeping abreast of these developments while balancing the specific interest of their economies. A cross economy coordination can mitigate some of the challenges of staying abreast. This discussion once again underscores the role and importance of proactively engaging with existing platforms and emerging businesses.

2.4.2 Consumer Knowledge Gap

Challenges:

Consumers tend to fear what they do not know. The current technology landscape is tethered to implicit opt-ins i.e. you have opted in to your data being used by the product as part of the terms of service. Most consumers are not aware of the way their data is being used, re-used, re-packaged and re-sold. Such a knowledge gap breeds fear around personal (and private) data usage, especially when it comes to identity theft. As one hi-tech entrepreneur explained: “Our consumers are not fully aware of the benefits of cross-border trade. I think that more efforts should be made to educate the principle of this mechanism operation to consumers here.”

To that end, 161 of our interviewees addressed consumer knowledge gaps, with 49% rating these gaps as high and 37% rating them as moderate.

Knowledge gaps around cross-border data flows permeate how technology in general is perceived by the general public. In Intel’s “Next 50”, 40% of respondents expressed fear that “new technologies will introduce as many new problems as solutions”. In the

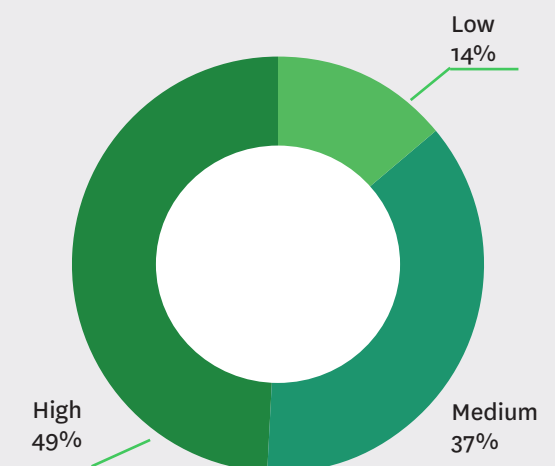
same survey, 37% of respondents were “concerned that people may end up isolated from one another.” In fact, respondents were split over the emergence of 5G i.e. whether it would improve our lives or create just as many problems. Moving on from general concerns about technology, to cross-border data flows, consumers undervalued the value of their own data (approximately USD \$250) in a survey conducted by LoopMe, an advertising agency.

It should be noted that consumer concerns about privacy and personal data usage vary significantly across economies in the APEC region. There are also differences in financial literacy levels (OECD/INFE Report on Financial Education in APEC Economies 2019). These differences also contribute the differences in knowledge gaps across the economies.

Consequences:

A consumer knowledge gap feeds into a push to over-regulate cross-border data flows i.e. “It is better to overregulate than to under-regulate” according to one of the thought leaders we spoke with. Furthermore, consumers can sometimes demonstrate a size-bias, pushing for greater regulation towards digital platforms and letting smaller players get away with less scrutiny. In obverse scenario, data-driven businesses of all sizes are penalized because the regulation is an orphaned measure: it neither serves companies of a large size or of a smaller size. Moreover, unsized regulation yields negative outcomes for upstream and downstream partners of the firm being regulated, thereby adding to the cost of doing business (which is oftentimes passed on to the end-consumer). In fact, consumer overreaction can be best described as a desire to tolerate what is peripherally understood until it comes knocking on your door (for example in the instance digital privacy breaches such as identity theft or the misuse of personal data).

Exhibit 10 Knowledge Gap (Consumers)



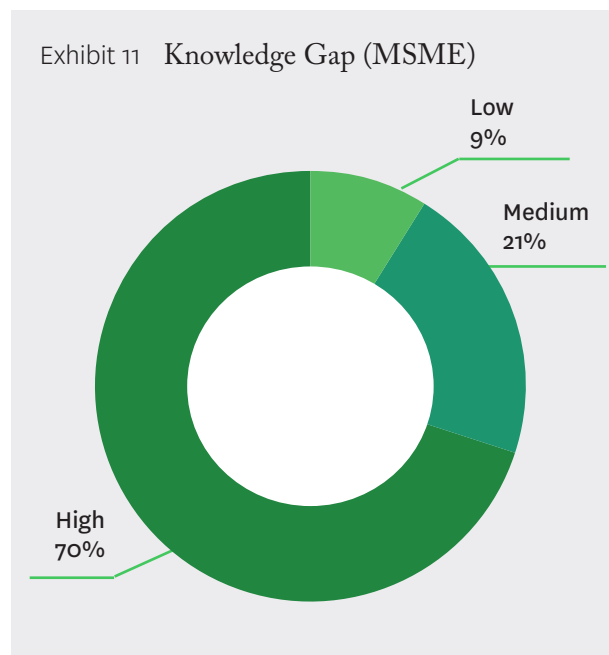
What can be done:

Building consumer trust through education, collaboration, and open dialogue – APEC economies have several efforts under way to increase financial literacy. These efforts in principle can increase knowledge about digital data and business models. Legislative trends in some economies (California Consumer Privacy Act) to increase customer control of personal data also presents a non-market threat to larger global platforms. This in turn creates an incentive for the larger digital platforms to proactively educate their customers.

2.4.3 MSME Knowledge Gap

Challenges:

MSMEs face the daunting task of either not having enough data (given the scale of their business operations) or collecting data but not knowing how to best use it. The knowledge gap, as it pertains to MSMEs, directly impacts MSME participation in building cross-border data flow-oriented ecosystems. As one academic interviewee explained: “Last year, [our] economy tried to educate [our citizens] on GDPR but MSMEs do not really have time for knowledge gain.”



Of the 221 interviewees who addressed MSME knowledge gaps, 70% perceived these gaps to be high, highlighting the perils of navigating NTBs as a small player within the digital economy.

With such challenges in mind, MSMEs are discouraged from engaging in cross-border data flow in the following ways:

- **Poor availability and accuracy of the information being collected.**

The “absence of digitized public information and digital footprint of MSME transactions, unavailability of data, or poor data quality” makes it difficult for MSMEs to engage in cross-border transactions (thereby curtailing the flow of data across borders). As a director of a trade association explained to us: “[Our] MSMEs don’t necessarily realize the importance of digital trade. They know the world is changing, but don’t know what it means.”

- **Difficulty in identifying MSMEs across borders**

Inconsistent and non-standardized identification systems exist in each jurisdiction. For MSMEs to transact across borders (especially for APEC economies composed almost entirely of MSMEs), a mismatch of size impedes cross-border data flows. MSMEs must be competitive from the get-go as a CEO of a data infrastructure company explained to us: “With small economies, MSMEs need to be born great.”

Such challenges inevitably lead data flow-oriented MSMEs to pursue strategies tied to de-risking and conservative entry, which are explained as follows:

- **De-risking**

MSMEs are better served to either walk away from entering the market (and pick particular markets to focus on) or to offer a lesser developed product within that market. As one Healthcare technology

company CEO explained to us: “There is a disincentive to sell leading edge technology in certain markets. You’re better off selling 2-3 year old commoditized technology.”

- **Conservative Entry**

MSMEs will oftentimes enter a market with strictest of interpretations of the regulations in place. The downside of the “overly-compliant” entry is that MSMEs will have to devote even more resources to make sure that they are truly by the book at all times, which adds to the costliness of transacting within that economy.

Of the 151 interviewees who addressed the logistical challenges around entering new economies, 47% felt that it was difficult to enter new markets as a digital business (30% felt it was somewhat difficult).

Consequences:

MSMEs are less likely to engage in cross-border data flow due to their scale and their own non-digital business practices. Their knowledge gap directly feeds into MSMEs being “entrapped in smallness”, thereby curtailing cross-border data flows. Moreover, the lack of interoperability hits MSMEs hard. Difference in

data standards across borders favors larger companies. These larger players can use data as a tool for anti-competitive practices, hurting the players within their own economy and the economy they wish to enter.

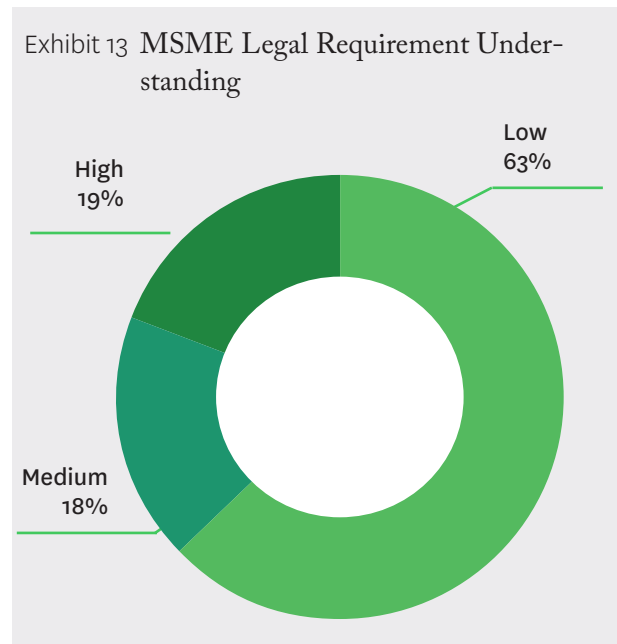
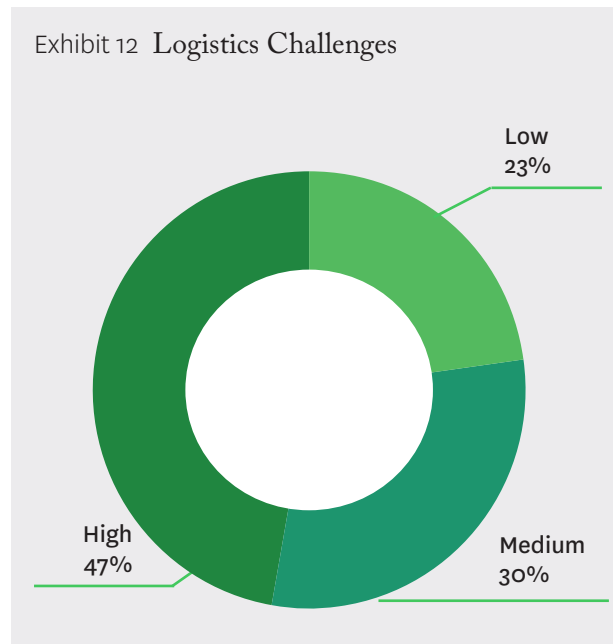
Of the 209 interviewees who addressed the understanding of legal requirements for MSMEs, 63% believed that MSMEs did not have the capacity to fully understand the digital noodle bowl of regulations.

To combat these challenges, MSMEs follow heuristics such as the one explained by one MSME-focused investor we interviewed: “It is better to go to same size economy than to go to a bigger economy...it is an apples to apples jump”.

What can be done:

- **Accelerating to leverage single window for APEC economies**

A good example of this is ASEAN Single Window. Single Window provides the secure IT architecture and legal framework that will allow trade, transport, and commercial data to be exchanged electronically among economies agencies or the trading commu-



nity. This will expedite the cargo clearance process, reduce cost and time of doing business, and enhance trade efficiency and competitiveness (APEC, 2018).

● Upskilling MSMEs technologically

Ensure firms are not disadvantaged in the business environment based on their size (and recognize that while a law, regulation or procedure may appear neutral, it can have very different effects on firms of different sizes). The vast majority of the MSMEs that we interviewed use at least one major platform for selling their goods and services. These platforms provide a multitude of services from web hosting to pricing to advertising and are integral to their success. A lack of clarity regarding advertising benefit relative to cost, the need to pay for advertising to move even minimal product due to algorithmic prioritization, and a lack of business data can hamstring these businesses and lock them into the tech platforms. Economies can aid MSMEs gain access software that will allow them to monitor basic processes such as ordering, inventory, SKUs, and basic predictive analytics so that these businesses are able to compete with entirely online businesses. This incentivizes MSMEs to partner with larger platforms in order to drive analytics, without locking MSMEs into their smaller size.

2.4.4 Talent Acquisition Knowledge Gap

Challenges:

Enterprises need to foster and acquire digitally skilled talent and economies ought to support them by creating special programs. Of the 133 interviewees queried regarding digital talent shortage, 86% responded that digital talent shortage discouraged the cross-border data flow of their business.

The talent acquisition gap has been perpetuated by decades of underinvestment in STEM programs within certain economies. Such a shortage of tech-savvy

talent can short circuit attempts to create cross-border data flow-oriented ecosystems. A lack of local capacity slots the market entrant into the foreign player role, which can be especially challenging given the “penalty of foreignness” that the entrant has to incur. Such a penalty is further compounded in areas where there are local hiring rules (“You must hire one local manager”) and the entrant is forced to provide older technology in order to meet the high cost of entry. As one entertainment-focused startup CEO explained: “[Our] biggest challenge in setting up in developing countries is finding talent, specifically well-educated, experienced people that you can trust.” In fact, a recent survey for Southeast Asia MSMEs by Ernst & Young shows that among the top five hindrances to impact digital successes are the lack of access to digital experts (64.7%) and difficulties for existing staff to reskill and transition toward a digital-first culture (62.5%).

Of the 187 interviewees who addressed the economy level support for technical education, 60% felt that support was low in terms of accessing a digitally-savvy talent pool (with 31% stating that the economy was somewhat supportive).

Exhibit 14 Digital Talent Shortage

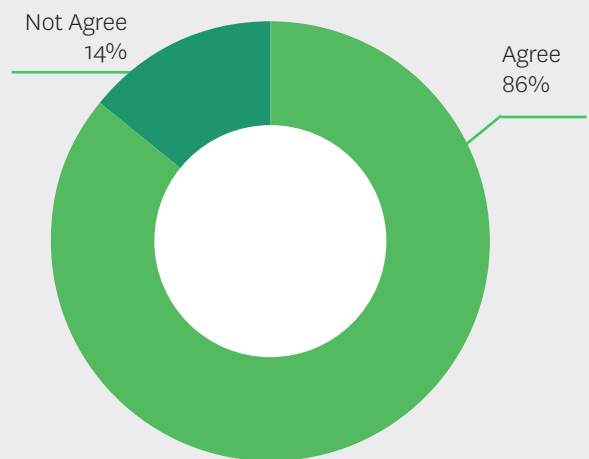
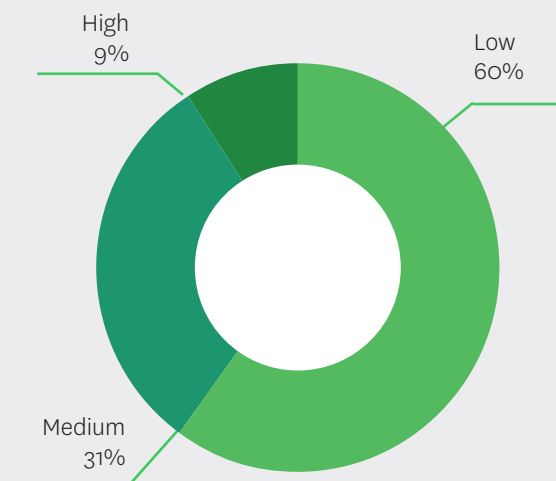


Exhibit 15 Government Support for Education



Consequences:

A shortage of local talent discourages businesses (especially MSMEs) from entry in certain APEC economies, where the necessary capacity-building investments have not been made for businesses to enter and scale. Specifically, low investments in STI (Science, technology and innovation) focused educational infrastructure has led to low enrolment rates in higher education within the STI field. Such conditions have yielded an inadequate pool of skilled labor that can staff data-oriented enterprises, especially for MSMEs looking to hire locally.

Moreover, understaffing by foreign entrants can also lead economies to push for “local manager” rules in an attempt to upskill the local workforce. However, these measures end up serving as NTBs since interoperability issues emerge: Standardization of data practices between the home country unit and the foreign venture unit require significant capacity-building at the local level. If the local workforce is not trained on how data-driven a given business unit must be, more cost is incurred to set up oversight and to be compliant with hiring quotas. In the absence of such onerous investments, especially for MSMEs, sub-optimal cross-border data flows are the resultant effect.

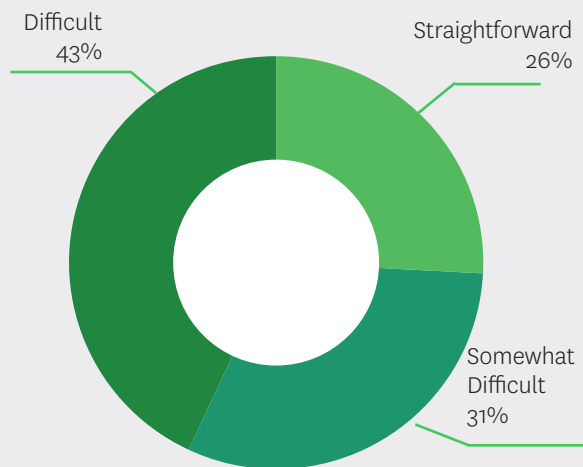
lead economies to push for “local manager” rules in an attempt to upskill the local workforce. However, these measures end up serving as NTBs since interoperability issues emerge: Standardization of data practices between the home country unit and the foreign venture unit require significant capacity-building at the local level. If the local workforce is not trained on how data-driven a given business unit must be, more cost is incurred to set up oversight and to be compliant with hiring quotas. In the absence of such onerous investments, especially for MSMEs, sub-optimal cross-border data flows are the resultant effect.

What can be done:

● **Entrepreneurship**

The talent acquisition gap can be narrowed by designing and implementing national entrepreneurship policies and programs, which include support for entrepreneurship education, finance, innovation, and culture, and are mostly focused on entrepreneurial start-ups. Based on our interview data, of 132 interviewees who spoke about entrepreneurship within their respective economies, 43% felt that it was difficult to start a digital business within their economy (with 31% believe that it was somewhat difficult).

Exhibit 16 Entrepreneur Friendly



● Digital Skills Common Certificate

Although some certificates are operated by private enterprises, there is no internationally common public certification for digital skills. It is apparent for future economy to depend on technologies further, so this certificate will give people motivation to learn digital skills. Interviewees consistently mentioned the

lack of training regarding basic financial education, data analytics, stock managements, and logistics, as well as compliance best practices. Economies need to spend more time focusing on empowering their smallest businesses to succeed for the future if the goal is to create real, lasting economic development going forward

2.5 Build Out the Physical Infrastructure

Through almost 300 interviews conducted, 21% of the respondents identified infrastructure as their top pain point. As identified by a Korean Professor who is a researcher in economic policy, “One issue for free data flow for some developing countries is physical infrastructure. [We] have to invest a huge amount of money to create [it]. So free isn’t ‘free’ – [we] have to have infrastructure.” The Vice President of a large technology company in China expressed that “the infrastructure in China is developing very quick and, in fact, rather advanced even compared to developed countries.”

There is still a noticeable disparity among the APEC region in terms of electricity, internet access, internet speed and data storage. Physical infrastructure is critical to building out rich, digital ecosystems.

Some of the more obvious reasons would be that the extent of digital economy is very much reliant on the availability of physical infrastructure. Below are five additional drivers tied to a well-established physical infrastructure needed to facilitate the creation of thriving ecosystems that encourage cross-border digital trade (APEC Economic Committee, 2018):

1. Connectivity

Traditional transportation infrastructure such as highway, rail and airports are essential, particularly for e-commerce which needs to be supported by a

strong network for delivering goods in addition to connecting people among the regions. In addition, energy connectivity is the foundation for internet access and establishes the backbone for digital trade both domestically and cross border.

2. Growth

Investment in physical infrastructure leads to economic growth that creates jobs, enables households to access economic opportunities, and allows economies as well as the private sector to provide essential services, which all contribute to improved living standards. Edquist’s study suggests a 10% increase in mobile broadband penetration may lead to a 0.6 – 2.8% increase in GDP, but not vice versa.

3. Innovation

In competitive markets, private companies continuously introduce innovation to outperform peers. In non-competitive markets, disruptive technologies such as next-generation broadband or alternative transmission can reduce the historical high fixed cost and therefore deliver better quality services at an affordable price.

4. Prevention

Physical infrastructure needs to be able to survive natural disasters, minimizing the interruption to connectivity. Depending on the unique geographic location, economies have taken different approaches to

be crisis ready, such as Brunei Darussalam for floods, Japan for tsunamis, Canada for climate change, and New Zealand for earthquakes.

5. Maintenance

The ability to avoid deterioration of existing physical infrastructure is just as important as building new infrastructure. Developed economies such as Canada plan to harmonize asset management standards, and Japan is developing maintenance cycles to reduce costs.

Having considered these factors, let us take a closer look at how greater investment in electricity, internet access and speed can enable the creation of rich cross-border data flow-oriented ecosystems.

2.5.1 Upgrade Electricity Grid

Of the interviewees that addressed electricity, only 5% view electricity as a barrier for doing business. Such responses might speak to major progresses that have been made to ensure access to electricity.

Except for Papua New Guinea and the Philippines, all APEC economies have 100% electricity access for urban population. However, for rural population, three additional economies (China, Indonesia and

Peru) have yet to achieve 100% electricity access. The challenge for bringing electricity to the rural areas is often correlated with low population concentration in villages, therefore the high cost per capita for installation, and justification for commercialization.

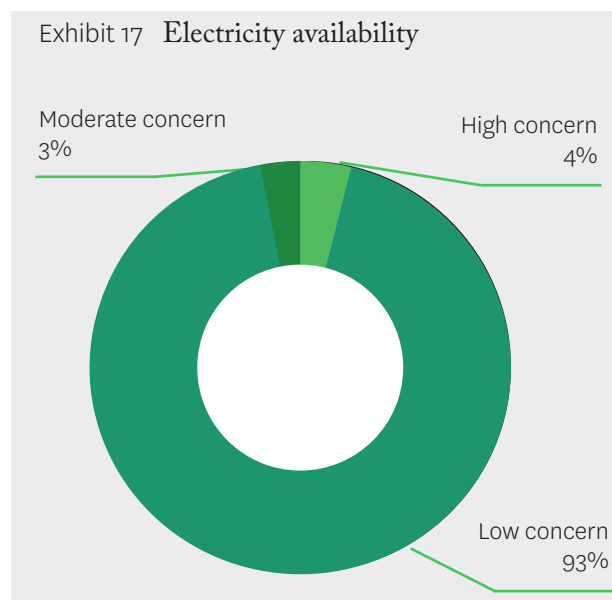
However, such initiatives have precedents. In November 2018, a joint effort to aid Papua New Guinea's electrification was led by Australia, Japan, New Zealand and the US. Set in 2010, the goal focused on delivering reliable electricity access to 70% of Papua New Guinea's population by 2030 (White House, 2018). Based on a 2016 figure, Papua New Guinea's electrification sat at 13%.











Blackouts:

Along with achieving 100% access to electricity, ensuring reliable access is another critical priority. The Vice President of a listed Chinese data storage company shared during our conversation that "2% of the national electricity was consumed by data centers. One of the biggest challenges to data centers are power outage. Utility expenses is the single biggest operating costs. We have multiple backup generators on site. In one incident, the backup generators were operating for a month due to power shortage." Such shortages impede cross-border data flow because they raise the cost of service for data storage.

Two key indexes that measure electricity blackouts are the system average interruption duration index (SAIDI) and the system average interruption frequency index (SAIFI). SAIDI measures the duration of an outage while SAIFI records the frequency during the year. Across APEC, end-users experienced an average interruption of 4.7 hours, and 3 interruptions to their electricity service in 2018. Papua New Guinea experienced the longest electricity interruption of 83.7 hours and 54 occurrences (World Bank Doing Business, 2019).

Electricity outage is certainly not unique to only one economy and it can be caused by a variety of reasons: outdated facilities, human error, natural disasters and etc. In a conversation with a technology consultant in Mexico, the interviewee noted that "internet



World Bank Data	% Access to Electricity		% Urban Population		% Rural Population	
	2013	2017	2013	2017	2013	2017
 China	100.00	100.00	100.00	100.00	99.97	99.97
 Chile	99.60	100.00	99.80	100.00	100.00	100.00
 Indonesia	96.46	98.14	99.67	100.00	93.06	95.66
 Malaysia	99.94	100.00	100.00	100.00	99.79	100.00
 Papua New Guinea	34.90	54.43	75.49	81.03	28.84	50.42
 Peru	92.14	96.36	98.78	100.00	69.91	83.68
 Philippines	87.50	93.00	94.10	96.40	81.90	90.02
 Thailand	99.88	100.00	99.70	100.00	100.00	100.00
 Vietnam	99.87	100.00	100.00	100.00	99.81	100.00
 Mexico	99.51	100.00	99.74	100.00	98.64	100.00

access and electricity are unreliable in some areas in Mexico. Some companies open servers or offices in different locations to mitigate this risk. For example, sometimes a storm may cause a blackout, so servers become inoperable.”

Mexican Technology and Travel Services Case Study

Firms in Mexico face challenges with internet access because the infrastructure in some regions are susceptible to blackouts or lack adequate infrastructure to reliably provide internet access. For instance, a cybersecurity executive of a technology and travel services firm in Mexico shared challenges or risks they have faced and how the mitigation to these risks have increased their operational costs:

“To meet the needs of their customers, they are required to provide consistent and reliable customer service in terms of call centers and local server storage. However, they have experienced blackouts or inability to access the internet to provide such services especially during periods of excessive heat or subsequent to natural events, such as storms, earthquakes, and hurricanes. Consequently, to mitigate this risk, they had to open multiple server and call center locations throughout Mexico, substan-

tially increasing their operational costs and diminishing their ability to compete in the market.”

Although their operations did not heavily rely on cross-border data transfers, this case study illustrates the challenges some firms in APEC face in terms of reliable internet access. What are the implications for data centers that transfer cross-border data? How can MSMEs focus on innovation when much of their efforts are invested in mitigating infrastructure risks?

Thus, it is critical to have funding dedicated to ensuring physical infrastructures are well-maintained and up-to-date. Meanwhile, economies also need to diversify the sources of electricity to strengthen cross-border data flow by ensuring minimum interruption and improved reliability.

Affordability

Economies need to ensure the affordability of electricity to households and businesses since on average, electricity cost can make up about 30% of the cost of doing business. Making electricity affordable would empower data-driven MSMEs to actively engage as participants of cross-border data flow-oriented ecosystems.

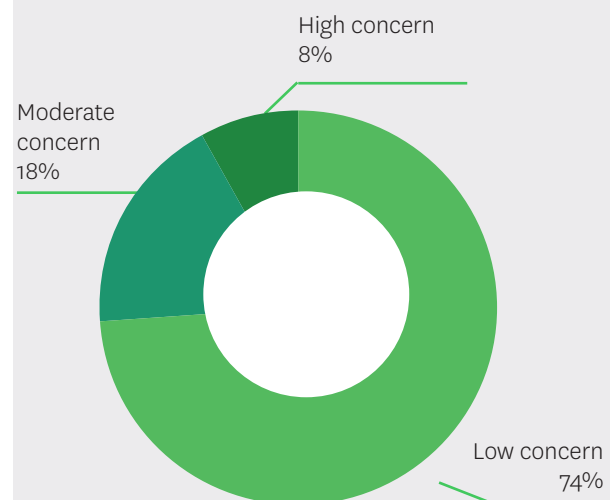
Within the APEC economies, however, there is a huge difference in terms of affordability. While the real dollar paid for electricity range only from USD \$0.08 to USD \$0.30, economies such as China and Japan have the lowest cost of electricity, when calculated as a percentage of income per capita, reporting close to 0%.

2.5.2 Increased Internet Access

From the interviews conducted, only 26% of the respondents view access to internet as a barrier for doing business. 8% of the respondents reflected that it is burdensome to obtain access to internet and it is a detriment to the growth of their business. In com-

parison to electricity, access to internet is even more widely spread across the APEC region. According to the World Bank’s DataBank, in 2017, South Korea has the highest number of internet users with 95% of its total population having used internet in the last 3 months, and the lowest is Papua New Guinea with 11% of its total population having access to internet

Exhibit 18 Internet Access



(World Bank DataBank, 2019).

We see that developing economies has significantly lower internet users in comparison to developed economies. A Peruvian official shared their struggle with us during the interview, “There is huge gap between cities, highland and jungle. Internet infrastructures are not good enough in highland and jungle, while people in Lima don’t see that is a problem. Lima has 1/3 of the population, seaports and international airports are only located near Lima.” An executive of a Chilean consulting firm echoed the same concern that “internet connectivity is also the barrier for Chile. Internet highway cable concentrate on the northern part of the hemisphere. Large companies invest mainly in these areas.” 50% of the APEC economies have less than 80% of total population using the internet. However, just within the last five years, with policy initiatives, Indonesia and Papua New Guinea both have experienced the greatest percentage change of 116% and 120% respectively. Yet, due to the nature of Indonesia’s geographic location with 17,000 islands, providing internet access to the entire population remains a challenge.

Mobile

Cross-border data flow within the APEC region is also deeply affected by the usage of mobile devices. The percentage increase for individuals using the internet has contributed to the increased cost of mobile cellular subscriptions. Among all the modes of internet access, mobile has undoubtedly the highest penetration. The highest mobile cellular subscriptions among the APEC region are in Hong Kong (250 subscriptions per 100 people). Even the lowest, Papua New Guinea, has 48 subscriptions per 100 people.

Looking at network coverage and the affordability of mobile services, measured with purchasing power parity (PPP) for each economy, we notice that Hong Kong has the lowest prepaid mobile cellular tariffs, at USD \$0.02/min. In contrast, Philippines has the highest at USD \$0.40/min (World Economic Forum, 2016).

Broadband

Fixed broadband subscriptions directly affect the

speed of cross-border data flow within the APEC region. At present, these subscriptions remain low in comparison to mobile subscriptions. For developing economies, infrastructure for fixed broadband is yet to be delivered to expand the coverage, and the monthly fee is yet to become more affordable. Access remains varied across the region: South Korea being the highest (42 fixed broadband subscriptions per 100 people) and Papua New Guinea being the lowest (0.22 fixed broadband subscriptions per 100 people) (World Economic Forum, 2016).

Nevertheless, a well-developed broadband is the backbone of building cross-border data flow-oriented ecosystems. Since there is no one-size fits all, each economy must account for economy-specific barriers for establishing physical infrastructure. In economies such as Peru, the inaccessibility of physical geographic location and the low population in rural areas can be a barrier to the commercial expansion of broadband services (ABAC, 2018).

However, these challenges can be surmountable with a sustained commitment to improving cross-border data flows. For example, Singapore came up with a model that worked for its geographically compact, low-lying high-income economy. Singapore understood that in order to sustain multiple wholesale carriers, the high capital costs of building fixed-lined broadband networks needed to be split. To develop physical infrastructure, rights were awarded to a Passive Infrastructure Company, and an Active Infrastructure Company handled the bandwidth services. By ensuring these two types of companies operate separately, Singapore has positioned itself to benefit from increased cross-border data flows (ABAC, 2018).

In addition, internet tariffs also affect the creation of cross-border data flow-oriented ecosystems when it comes to broadband access. Fixed broadband internet tariffs are much higher in comparison with Prepaid mobile cellular tariffs. With a greater range within the APEC region, Malaysia has the highest of USD \$60.97 per month, where Vietnam has the lowest of only USD \$2.59 per month (World Economic Forum, 2016).

Economy	Individuals using the Internet (% of population)			Mobile cellular subscriptions (per 100 people)			Fixed broadband subscriptions (per 100 people)		
	2013	2017	%	2013	2017	%	2013	2017	%
Korea, Rep.	84.77	95.10	12.18%	108.99	124.86	14.56%	37.35	41.58	11.32%
Brunei									
Darussalam	64.50	94.87	47.08%	115.55	127.07	9.96%	6.79	9.61	41.52%
Canada	85.80	92.70	8.04%	80.44	86.54	7.58%	34.31	38.02	10.82%
Japan	88.22	90.87	3.01%	115.26	135.54	17.60%	28.77	31.79	10.50%
New Zealand	82.78	90.81	9.70%	105.50	136.00	28.91%	29.13	33.64	15.48%
Hong Kong SAR,									
China	74.20	89.42	20.51%	237.43	249.76	5.19%	31.27	36.09	15.42%
Australia	83.45	86.54	3.70%	107.73	112.69	4.60%	25.84	32.40	25.41%
Singapore	80.90	84.45	4.38%	157.40	146.82	-6.72%	27.86	25.85	-7.21%
Chile	58.00	82.33	41.94%	135.49	127.46	-5.93%	13.14	16.94	28.91%
Malaysia	57.06	80.14	40.46%	144.77	133.88	-7.52%	9.89	8.50	-14.09%
Russian Federation	67.97	76.01	11.83%	152.02	157.86	3.84%	16.54	21.60	30.63%
United States	71.40	75.23	5.37%	98.47	120.69	22.57%	30.43	33.85	11.23%
Mexico	43.46	63.85	46.92%	87.12	88.52	1.61%	10.40	13.28	27.64%
Philippines	48.10	60.05	24.86%	104.41	110.40	5.73%	2.61	3.24	24.02%
China	45.80	54.30	18.56%	88.89	104.28	17.32%	13.66	27.97	104.71%
Thailand	28.94	52.89	82.76%	137.72	176.03	27.82%	7.62	11.89	56.04%
Vietnam	38.50	49.57	28.75%	135.23	125.62	-7.11%	5.63	11.80	109.47%
Peru	39.20	48.73	24.31%	97.47	120.98	24.12%	5.28	7.18	36.12%
Indonesia	14.94	32.29	116.15%	124.28	164.85	32.64%	1.29	2.35	82.49%
Papua New									
Guinea	5.10	11.21	119.79%	39.51	48.70	23.25%	0.15	0.22	46.58%

Secure Internet Servers

Another aspect of internet access would be to have access to a secure internet server. Secured servers are critical when there is an increasing trend of e-commerce and transactions done online. Secured servers use additional protocols for data encryption and decryption to protect data from unauthorized interceptions such as cyber-attacks and identify thieves.

Considering each of the APEC economy's number of internet servers, research of World Bank shows that even though the US has the greatest number of secure internet servers, with over 21 million servers, Singapore has the most servers per one million people, with almost 85,000 (World Bank DataBank, 2019). Part of the reason being that Singapore is the top destination for data storage for many developing economies.

2.5.3 Enhance internet speed

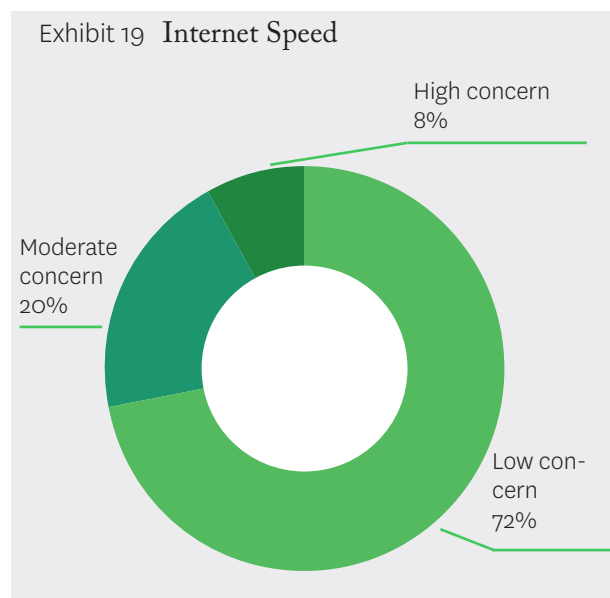
From the interviews conducted, 28% of the respondents view internet speed as a barrier for doing business. Moreover, 8% of the respondents reflected that it is burdensome to get fast internet connection and it is detriment to the growth of their business.

The World Economic Forum's 2016 report outlines the international Internet bandwidth, which is the

sum of the capacity of all Internet exchanges offering international bandwidth, for the APEC economies. The spread among economies is noticeably wide.

The table below shows the difference between mobile and fixed broadband internet speed, as well as the difference between download and upload. The global average for mobile download is 27.69 mbps, and fixed broadband download is 63.85 mbps. Within APEC regions, Korea has the fastest mobile download with 97.33 mbps, and Singapore has the fastest fixed broadband download with 191.93 mbps.

Understandably, the majority of the internet speed increases are occurring within the developed economies, where physical infrastructure for internet access is less of an issue.



3 Conclusions

The digital world is evolving extremely rapidly. Forums such as the APEC Business Advisory Council, as well as many other stakeholders in the region, are well aware of the vast contributions that the digital economy has already made to international trade. When used effectively, digital trade and data can bridge inequality gaps and enhance lives across economies. In the right environment, a wide assortment of groups from MSMEs to large enterprises stand to benefit from digital trade (APEC, 2019). The primary goal of this research was to learn about non-tariff barriers impeding cross-border digital trade and data flows. Towards this end, we conducted 353 interviews with executives, regulators, academics, and thought leaders in 21 APEC economies.

A majority of the interviewees identified variations in regulations between economies, or the “noodle bowl” effect, as a major impediment to cross-border data flows. Addressing this problem requires a coordinated effort across economies. Harmonizing regulation will require carefully navigating differences in cultures, political philosophies, and economic priorities among the APEC economies. Coordination will also have to take into account differences in infrastructure.

Developing a brand-new regulatory framework for the APEC region appears to be an unrealistic goal. Instead, our interview findings suggested that it would be prudent to try and find interoperability between the top two existing regulatory frameworks for data flow: CBPR and GDPR. Consequently, we propose two alternative approaches, each with their own pros and cons. In the first approach, CPBR would be enhanced to create a regulatory regime that reduces trade friction. The second approach would be to move towards GDPR, a more restrictive framework, but one that several enterprises across APEC are already conforming to.

Whether a binding regulated (GDPR-like) or middle-ground approach (CBPR) is chosen, it is vital we avoid a future where individual economies, or fragmented FTAs, create their own standalone frame-

works. As such, education for policymakers will be needed to design a pragmatic framework, and businesses will need to understand the incentives of adopting the new approach. It is also imperative that this interoperable system is kept up-to-date with technological advances.

In creating a high-functioning APEC-wide digital economy, it is clear that having a consistent and standardized framework is an important foundation. However, one of the challenges with regulatory frameworks is that they tend to be ad-hoc and reactionary attempts to adapt to the business and technological environment. Certainly, this has been the case with CBPR and GDPR, and will be the case with any future versions of them. Yet, one emergent concept we discovered during our research may be a way to respond more proactively to technological advances, while achieving organic and multi-dimensional growth – transforming the digital economy into an ecosystem.

We identified key elements of a cross-border digital ecosystem and its benefits. We see an ecosystem has potential to align incentives of multiple stakeholders and lead to growth and consistency in regulatory regimes across the APEC region. Developing this ecosystem will require collaborating with large global and domestic firms that are developing and growing digital platforms. In parallel, there is a need to fill knowledge gaps among regulators, MSMEs, and consumers. A final critical piece to growing the ecosystem is investments in infrastructure.

Appendices

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PAIN POINTS

- **Inconsistent & ambiguous** regulations are the greatest pain points when navigating the regulatory environment; MSMEs are largely **unaware** of domestic & international regulations that affect their digital business
- **High speed internet access** was a major problem among respondents; felt the national broadband initiative did not work out

TRENDS

- Australia is rapidly transitioning to a **services-based** economy; lack of understanding & skilled digital labor left MSMEs playing catch-up; felt **poorly organized** for success in the digital age
- Current Australian sentiment towards data regulations are more closely **aligned with EU** than US: “ABAC should do more regarding digital standards”
- Data privacy and protection is not currently viewed as a major concern among Australian officials; more of a concern among MSMEs who are **uncertain** of how to navigate the evolving landscape

OPPORTUNITIES

- **Access to capital** is currently an issue for MSMEs trying to access new markets
- MSMEs are not confident in their understanding of how to access new markets; provide **training & resources** to assist
- Difficult to attract & keep foreign talents due to **visa restrictions**; changes to reward R&D can empower the MSME community

LEADING INDEXES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	13	5
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	39	9
HBR Ease of Doing Digital Business 2019 (n=42)	6	3
ITU Global Cybersecurity Index 2018 (n=175)	10	5
UN E-Government Development Index 2018 (n=193)	2	1
The World Bank Infrastructure 2018 (n=140)	31	9
UN Telecommunication Infrastructure Index 2018 (n=193)	22	6
The World Bank Internet User 2018 (n=140)	18	6
UNCTAD B2C E-commerce index 2018 (n=151)	11	3





PAIN POINTS

- Brunei’s population of approximately 429,000 residents makes it challenging for **scale** technology implementations; the high primary sector concentration (petroleum and petrochemicals) makes it challenging to **prioritize data flow-driven** infrastructure projects
- Lack of an updated **consumer protection** measures puts domestic regulators in an ad hoc role

TRENDS

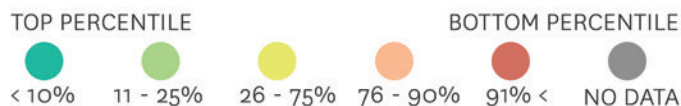
- MSMEs affected by cross-border data flows view the digital economy as a slow emerging reality; interviewees felt that Brunei Darussalam has been **slow to modernize** the economy and to prep MSMEs for international competition
- At last year’s ASEAN meeting, Brunei Darussalam pushed for the **protection of consumer data**

OPPORTUNITIES

- The Sultan of Brunei’s Youth Entrepreneur Ecosystem (YEE) initiatives are aimed at creating the ecosystem for entrepreneurship & technology-driven innovation; hope for more initiatives focused on **capacity-building**
- Brunei Darussalam has the opportunity to **diversify** economically but it must first build a broader base of economic relations

LEADING INDEXES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	●	●
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	46	12
HBR Ease of Doing Digital Business 2019 (n=42)	●	●
ITU Global Cybersecurity Index 2018 (n=175)	64	16
UN E-Government Development Index 2018 (n=193)	59	11
The World Bank Infrastructure 2018 (n=140)	54	15
UN Telecommunication Infrastructure Index 2018 (n=193)	49	9
The World Bank Internet User 2018 (n=140)	13	4
UNCTAD B2C E-commerce index 2018 (n=151)	●	●





TRENDS

- Global Talent Stream, created in 2017, has **streamlined** the visa application process for **IT & STEM-related fields**; Canada's technology sector is attractive to global talent, helping fuel a digital transformation of the economy
- **Digital openness** may be easier in specific sectors; when entering global markets, it may be easier to start in strategic sectors, before moving to broader sectors; 100% openness in the digital economy may not be necessary

PAIN POINTS

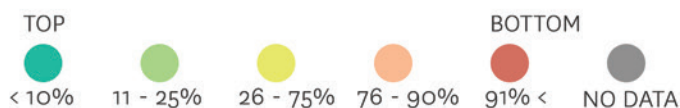
- While digital infrastructure is largely in place, significant **digital barriers** remain; one of the biggest concerns is the **bifurcation of technology streams** and whether businesses will need to duplicate their platforms to access different economies
- Regarding data protection and regulation, Canadians **lean more towards GDPR** in terms of data privacy; there is **growing apprehension** about how privacy works within the digital economy
- Canadian businesses concerned with the **implications** of entering digital systems must keep up with the evolving regulatory, legal & data privacy environments of global markets

OPPORTUNITIES

- A **substantive research effort** to understand the strengths & weaknesses between the different digital ecosystems; allows policy makers to work with business in building bridges, leading pipelines & expanding to digital highways in the long term
- While significant opportunities exist for Canadian businesses to access the digital systems of global markets, they must do so with a **full awareness** of the associated **risks** as well

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	8	3
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	37	8
HBR Ease of Doing Digital Business 2019 (n=42)	9	4
ITU Global Cybersecurity Index 2018 (n=175)	9	4
UN E-Government Development Index 2018 (n=193)	23	7
The World Bank Infrastructure 2018 (n=140)	25	7
UN Telecommunication Infrastructure Index 2018 (n=193)	38	7
The World Bank Internet User 2018 (n=140)	10	3
UNCTAD B2C E-commerce index 2018 (n=151)	14	5





TRENDS

- **Internet connectivity** in Chile is of a higher standard in the Latin America region, however high level policy makers & business leaders recognize that the infrastructure still has room for development
- With respect to regulations, policymakers refer to the **EU or U.S.** for guidance
- **LEs are more aware** of the need for international data standards & some have been preparing to comply with the strictest regulations

PAIN POINTS

- In terms of digital culture, strategy, and infrastructure, there is a **huge gap between LEs and MSMEs** in Chile – MSMEs feel left behind
- Two challenges seem to exist among our interviewees: one is the **lack of communication** among government, academic & enterprises; second is the type of **mindset** that inhibits enterprises from entering new markets
- Currently there is **no data protection authority** in Chile, which proves to be an obstacle in participating in systems like CBPR
- The privacy data protection **law has not been updated since 1999**; however, Congress is discussing the renewal of the law, in order to adjust current international standards
- If new data protection law **becomes strict** one such as GDPR, MSMEs will need to hire a person who is in charge of data protection, which will generate the **extra cost** for them

OPPORTUNITIES

- Chilean regulatory bodies can provide **additional support for MSMEs** in terms of financial & digital education
- **More cooperation** among policymakers, academics, LEs & MSMEs will likely reduce knowledge gaps & enhance overall preparedness
- Creating a **data protection authority** will expand opportunities to participate in more global regulatory framework

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	37	12
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	10	5
HBR Ease of Doing Digital Business 2019 (n=42)	27	8
ITU Global Cybersecurity Index 2018 (n=175)	83	17
UN E-Government Development Index 2018 (n=193)	42	9
The World Bank Infrastructure 2018 (n=140)	41	12
UN Telecommunication Infrastructure Index 2018 (n=193)	65	11
The World Bank Internet User 2018 (n=140)	26	9
UNCTAD B2C E-commerce index 2018 (n=151)	50	12





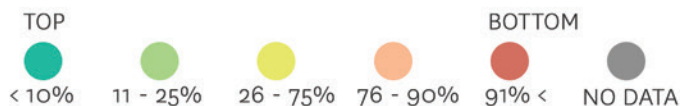
PEOPLE'S REPUBLIC OF CHINA

OPPORTUNITIES

- China has made it a **state priority to support industry R&D & 5G commercialization** in its 13th Five-Year Plan; there are a lot of opportunities for companies to leverage the fast-speed internet, especially for companies embracing the new ways of doing business in the 5G era
- Professional service providers like IT services, data center, law firms are **benefiting** from the increasing regulations by offering services to help companies navigating the laws

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	30	11
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	65	20
HBR Ease of Doing Digital Business 2019 (n=42)	39	13
ITU Global Cybersecurity Index 2018 (n=175)	27	9
UN E-Government Development Index 2018 (n=193)	65	13
The World Bank Infrastructure 2018 (n=140)	29	8
UN Telecommunication Infrastructure Index 2018 (n=193)	77	13
The World Bank Internet User 2018 (n=140)	82	16
UNCTAD B2C E-commerce index 2018 (n=151)	63	13



TRENDS

- China's Security Law **mirrors many of GDPR's provisions**; interviewees believe that such law will become **stricter & more detailed provisions** will be implemented in the near future
- MSMEs and consumers' **awareness** of the privacy importance **has been increasing** in the past few years
- The rural Internet users increased by 1.1% to 201M accounting 26.7% of the total national internet users in 2017; China has been devoting both human & capital resources toward lower-tier cities to **reduce the economic gap** between East & West of China

PAIN POINTS

- The data regulations are **relatively young** & evolving due to rapid development in its digital economy and structure in the past decade; there is a **knowledge gap** in privacy/data regulation & the value of data on MSME and consumer levels
- 58% of our interviewees in China identified the new **data regulations as their main challenge** in navigating the business environment, and 42% of which said it **increased** the compliance and operation costs in the economy
- Foreign companies expressed the **compliance challenges** posted by the ambiguities in the new personal data regulations and hoped for a **clear guideline**



PAIN POINTS

- Businesses in Hong Kong can be **slow to adopt** to the digital technology despite growing demand
- To date, there is **no legal or regulatory restriction** on cross-border transfer of data to and from Hong Kong. Section 33 of the **Personal Data (Privacy) Ordinance** governs the transfer of personal data from Hong Kong to the overseas jurisdictions, but the section is not yet in force

TRENDS

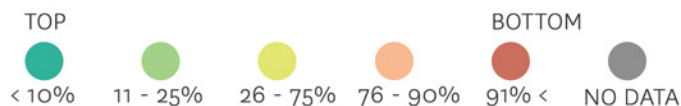
- Organizations across Hong Kong are tightening their **cybersecurity measures** as a result of the rise in the rate of cybercrimes
- The legal regime **does not restrict** Hong Kong from being a global data hub to receive, store and share data
- Revenue generated from **digital market** in Hong Kong such as over the top streaming video & internet advertising is forecast to reach **US\$5.8 billion** by 2022

OPPORTUNITIES

- Compared to mainland China & South Korea, Hong Kong is considerably behind in **digital spend**
- **5G** is a key opportunity. Hong Kong is one of the leading economies thriving on **digital capabilities & transformation**; projected to add US\$9 billion to GDP in the next three years & increase the economic growth rate by 0.5% every year

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	11	4
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	5	2
HBR Ease of Doing Digital Business 2019 (n=42)		
ITU Global Cybersecurity Index 2018 (n=175)		
UN E-Government Development Index 2018 (n=193)		
The World Bank Infrastructure 2018 (n=140)	2	2
UN Telecommunication Infrastructure Index 2018 (n=193)		
The World Bank Internet User 2018 (n=140)	20	7
UNCTAD B2C E-commerce index 2018 (n=151)	15	6





PAIN POINTS

- The **island-based** nature of the economy means that logistics are a constant challenge; there is also a consistent **lack of quality talent** for technology companies
- The regulatory policy is **unclear** for business & requires **large investments** by companies or political connections in order to navigate; data privacy is not seen by the majority of Indonesia business as a concern

TRENDS

- Indonesia is currently going through a **massive transformation** of their economic infrastructure; industrialization has largely been confined to the urban island of Java, as the rest of the country is primarily resource-based; massive rise in **FDI & VC money** for Indonesia technology companies in the past 5 years
- Indonesia prefers a **cooperative regulatory environment** when ideas are proposed by the regulators and then gauged for reaction by the business community
- Most businesses are targeting Vietnam, Singapore, Malaysia & Thailand due to immature markets & size; but each economy has **vastly different policies** regarding data, regulation, etc, makes compliance difficult without someone from the country

OPPORTUNITIES

- Quality **data & logistics** infrastructure has the potential to drastically improve the quality for Indonesian companies
- Clearer **cross economy** regulatory standards would drastically improve the experience of doing business; far too much ambiguity currently, which limits the overall trust from foreign investments

LEADING INDEXES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	62	18
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	62	18
HBR Ease of Doing Digital Business 2019 (n=42)	41	14
ITU Global Cybersecurity Index 2018 (n=175)	41	12
UN E-Government Development Index 2018 (n=193)	107	18
The World Bank Infrastructure 2018 (n=140)	71	17
UN Telecommunication Infrastructure Index 2018 (n=193)	116	19
The World Bank Internet User 2018 (n=140)	110	20
UNCTAD B2C E-commerce index 2018 (n=151)	90	15

TOP PERCENTILE



< 10%



11 - 25%



26 - 75%



76 - 90%

BOTTOM PERCENTILE



91% <



NO DATA



PAIN POINTS

- **Inconsistency** in data related regulations is a key challenge, as businesses have to **adapt** business models to **accommodate** individual APEC economies
- **Data localization** in certain economies is viewed as a major NTB; ; it is widely believed that by enacting overly restrictive data regulations, overall societal value is greatly limited

TRENDS

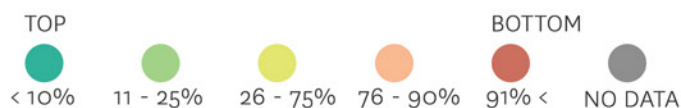
- Senior business leaders & policymakers are heavily focused on and invested in building out the next stage of Japan’s digital economy: **“Society 5.0”**
 Manufacturing & healthcare industries in particular are poised to benefit from the IoT and enhanced data flows
- Policymakers **champion** the role of cross-border data flows in socio-economic development, and are **supportive** of removing barriers to free data flow; but personal privacy is deeply ingrained in Japanese culture, so policies need to balance & accommodate **cultural sensitivities**
- The Japanese Act on the Protection of Personal Information (**APPI**) is **interoperable** with both CBPR & GDPR, as it recognizes the CPBR system & has been given adequacy status by the EU
- Japan’s digital infrastructure is expected to face challenges in the coming years, primarily due to an **aging workforce** & shortage of **skilled digital labor**

OPPORTUNITIES

- Overwhelming desire for **one single framework** of regulations or market rules
- A **single information portal** to host detailed data regulations for APEC economies
- Digital growth can be accelerated through **enhanced education** of policymakers, MSMEs & the public
- **“Digital regulatory sandboxes”** can encourage innovation, increase adoption & encourage dialogue between MSMEs & policymakers

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	22	9
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	16	6
HBR Ease of Doing Digital Business 2019 (n=42)	5	2
ITU Global Cybersecurity Index 2018 (n=175)	14	6
UN E-Government Development Index 2018 (n=193)	10	5
The World Bank Infrastructure 2018 (n=140)	5	3
UN Telecommunication Infrastructure Index 2018 (n=193)	6	2
The World Bank Internet User 2018 (n=140)	8	1
UNCTAD B2C E-commerce index 2018 (n=151)	24	8





TRENDS

- Korean regulators are in contact with private companies and try to react in a way that **helps local MSMEs**
- Korea has **historically** had such strong data privacy regulations that consumers accept it; GDPR implementation was not an issue since most businesses are already complying; interviewees seemed to be **in favor** of the policies, as protecting individual privacy is seen as very important

PAIN POINTS

- Many of the issues that arise when considering how Korean MSMEs can expand geographically come down to not having **access to the talent** they need
- The lack of a **harmonious framework** in the region really hurts Korean MSMEs: to expand geographically, MSMEs focus on Japan/USA, which are big enough to be worth it, or Singapore/Hong Kong, which have light touch on regulations, because it's not worth dealing with regulations otherwise
- **Strict data privacy** laws can serve to make it difficult for foreign firms to enter & to succeed in Korea, but can end up lowering local business power, which can lead to the local economy being hurt from **slowing global competitiveness**

OPPORTUNITIES

- Continuing to grow the support for **innovative start-ups** from regulators
- **Educating MSMEs** on the differing regulatory frameworks would go a long way in allowing to easily expand geographically
- Build trust & access to qualified **foreign talent**, who can handle both business & cross-border regulatory issues

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	14	6
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	51	14
HBR Ease of Doing Digital Business 2019 (n=42)	24	7
ITU Global Cybersecurity Index 2018 (n=175)	15	7
UN E-Government Development Index 2018 (n=193)	3	2
The World Bank Infrastructure 2018 (n=140)	6	4
UN Telecommunication Infrastructure Index 2018 (n=193)	3	1
The World Bank Internet User 2018 (n=140)	9	2
UNCTAD B2C E-commerce index 2018 (n=151)	21	7





PAIN POINTS

- **Lack of digital ecosystem**, such as logistics, connectivity gaps between city & rural, e-payments for online transactions & cross-border payments
- Lot of ministries, MSMEs can **easily get lost**, but need to get the right information & understand which regulations to comply
- MSMEs need to **be trained** & to have the knowledge to **first go online** or e-commerce, then cross border

TRENDS

- Privacy/cybersecurity related regulations are not as important since Malaysia is still **getting people online**; relative easy to start as digital products & services are **not overly regulated**
- Most MSMEs are **aware & in compliance** of the Personal Data Protection Act (**PDPA**); rely on the cybersecurity governing body, not too concerned as an individual/business entity
- Frequent trading with **neighborhood Southeast economies**; Malaysia is pushing all MSMEs to go online, have an e-commerce presence, and to be more connected
- Leverage on major **e-commerce platforms** as well as **social medias** such as Facebook & Instagram to trade online

OPPORTUNITIES

- In need to develop a more solid infrastructure. For example, financial infrastructure to enable digital transactions, limited license that government assigned.
- Professional service providers like IT services, data center, law firms are benefiting from the increasing regulations by offering **innovative solutions**

LEADING INDEXES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	27	10
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	55	15
HBR Ease of Doing Digital Business 2019 (n=42)	36	12
ITU Global Cybersecurity Index 2018 (n=175)	8	3
UN E-Government Development Index 2018 (n=193)	48	10
The World Bank Infrastructure 2018 (n=140)	32	10
UN Telecommunication Infrastructure Index 2018 (n=193)	59	10
The World Bank Internet User 2018 (n=140)	34	11
UNCTAD B2C E-commerce index 2018 (n=151)	34	9





MEXICO

OPPORTUNITIES

- Businesses need **standardized technologies** for data protection to simplify meeting the minimum legal requirements rather than buying multiple different products to comply with regulations
- Need to **increase awareness** on data privacy and cybersecurity of MSMEs and consumers

PAIN POINTS

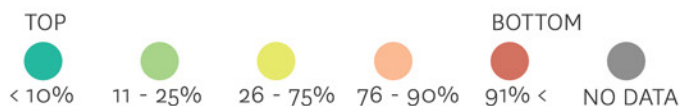
- Businesses see Federal Law on Protection of Personal Data Held by Individuals (LFPDPPP) as **ambiguous & outdated**
- Lack of law **enforcement capabilities**; many MSMEs do not abide by regulations or do not meet the minimum legal requirements for cybersecurity or privacy protection
- Some regions have **limited/lack** reliable internet access for business operations; has been improving with **fiber optics**

TRENDS

- Businesses believe that cybersecurity tools are sufficient to protect data, so they **do not hire adequate professionals** to protect sensitive data
- Confidential information is usually stored in **local servers** because MSMEs do not fully trust cloud servers. If necessary, companies usually would only store with **US databases**
- Mexico is trying to increase awareness on privacy and cyber security through **advertising campaigns**; but there is still a **knowledge gap** for MSMEs and consumers
- **Larger companies** are aware of the need for international standards and some have been preparing to comply by the strictest standards

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	51	15
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	48	13
HBR Ease of Doing Digital Business 2019 (n=42)	31	9
ITU Global Cybersecurity Index 2018 (n=175)	63	15
UN E-Government Development Index 2018 (n=193)	64	12
The World Bank Infrastructure 2018 (n=140)	49	13
UN Telecommunication Infrastructure Index 2018 (n=193)	92	15
The World Bank Internet User 2018 (n=140)	69	14
UNCTAD B2C E-commerce index 2018 (n=151)	95	18





TRENDS

- **Anti-platform sentiment**, especially in light of the ChristChurch mosque attacks, has built momentum towards strictly regulating privacy & data collection and usage (despite New Zealand’s efforts to digitize its agrarian economy)
- **MSMEs comprise 97%** of New Zealand’s, China is the country’s largest overall trading partner; trend points towards larger, **homegrown** digital firms emerging as the ecosystem matures

PAIN POINTS

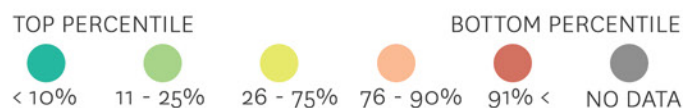
- GDPR & CBPR pose significant **compliance challenges** for MSMEs. Pan-region frameworks, paired with domestic regulations, make it **cumbersome to expand** in international markets
- New Zealand takes its legislative lead from Australia, especially when it comes to model legislation; in general, Kiwis have focused on their commodity-driven economy and addressed data-related issues on **an ad-hoc basis** (rather than an overarching national framework)
- MSMEs face tough challenges because they need to **scale at birth** in order to compete with international players. Instead of voicing their concerns, a lot of MSMEs **“push through”** and find a way around the challenges faced in other APEC markets

OPPORTUNITIES

- A hyper-connected, digitally-savvy population is primed for **educational investment** in a digital labor force that MSMEs and larger enterprises can equally tap into
- High internet penetration within households; opportunities exist to test drive **new data flow models** within this hyperconnected society (such as new models of data ownership)

LEADING INDEXES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	19	8
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	1	1
HBR Ease of Doing Digital Business 2019 (n=42)	12	5
ITU Global Cybersecurity Index 2018 (n=175)	36	11
UN E-Government Development Index 2018 (n=193)	8	4
The World Bank Infrastructure 2018 (n=140)	39	11
UN Telecommunication Infrastructure Index 2018 (n=193)	21	5
The World Bank Internet User 2018 (n=140)	17	5
UNCTAD B2C E-commerce index 2018 (n=151)	9	2





PAPUA NEW GUINEA

OPPORTUNITIES

- Policy makers can push in helping local MSMEs grow & expand
- Enabling Papua New Guinea businesses to **participate in the global economy**, through things like harmonizing regulations and crossing the knowledge gap, could allow economy to grow

PAIN POINTS

- Low levels of **business education** for individuals and low levels of **support** for small businesses lead to growth challenges
- Internet access is **limited & inconsistent**, and there is a severe lack of talented digital economy workers for MSMEs to access

TRENDS

- Foreign companies are increasing their presence within Papua New Guinea; currently discussing new **foreign investment** reforms to adjust to these new times
- It is difficult to conduct digital business across borders given lack of **digital infrastructure** & clear rules and regulations

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	●	●
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	●	●
HBR Ease of Doing Digital Business 2019 (n=42)	●	●
ITU Global Cybersecurity Index 2018 (n=175)	139	19
UN E-Government Development Index 2018 (n=193)	171	19
The World Bank Infrastructure 2018 (n=140)	●	●
UN Telecommunication Infrastructure Index 2018 (n=193)	83	14
The World Bank Internet User 2018 (n=140)	●	●
UNCTAD B2C E-commerce index 2018 (n=151)	●	●





PAIN POINTS

- **Lack of last-mile delivery, mistrust** in online payment and technology are the biggest pain points for e-commerce
- Domestic regulatory **enforcement** has a **gray zone**; people see regulators are **not capable enough** to fully enforce privacy regulation, especially to the **large informal economy**
- There is **huge internet infrastructure gap** between cities, highland and jungle; population and logistic hubs are concentrated around Lima

TRENDS

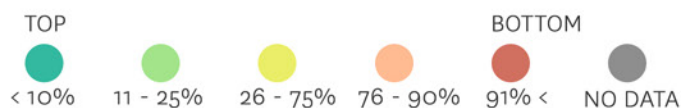
- **Open economy** with trade representing 44% of GDP; member of many FTAs including CPTPP
- Businesses **don't see barriers** around data regulations yet; domestic personal data protection law is not too strict and similar to Spanish law
- Most MSMEs are operating domestically or within South America so that they are **not aware** of international inconsistency in data regulation
- Dominated by large conglomerates and not friendly for startups yet; **"Startup Peru"** and university incubation programs are intended to enhance the startup ecosystem

OPPORTUNITIES

- Public & private sectors should collaborate to **establish trust for e-commerce** & create a safe online environment for consumers
- Public-private programs are trying to help **MSMEs** to expand abroad by solving high logistic cost, providing digital and legal literacy
- People want regulators to **enforce regulation equally**, especially to informal economy

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	60	17
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	8	3
HBR Ease of Doing Digital Business 2019 (n=42)		
ITU Global Cybersecurity Index 2018 (n=175)	95	18
UN E-Government Development Index 2018 (n=193)	77	16
The World Bank Infrastructure 2018 (n=140)	85	19
UN Telecommunication Infrastructure Index 2018 (n=193)	99	16
The World Bank Internet User 2018 (n=140)	89	19
UNCTAD B2C E-commerce index 2018 (n=151)	94	17





PAIN POINTS

- Domestic regulation is **not too strict but ambiguous** for enterprises to implement; not kept up with innovations; policy makers are **actively co-operating** with enterprises & industry association to further develop regulatory framework
- Even though tech companies are interested in data privacy, most of them **do not recognize** what data flow should be dealt freely/restricted in law because there is not clear privacy law
- Difficult to develop the **infrastructure** with a **lot of islands**; internet speed is on the **bottom** level in international standard
- End-users do not have **high awareness** about protections or risks related to privacy

TRENDS

- Policy makers actively cooperate with enterprises to make **innovative initiatives** in both regulation framework & ecosystem; for example, “E-commerce roadmap 2016 – 2020” is to develop the industry in a scalable & strategic way
- In some emerging industry such as fintech, while there is a lack of detailed regulation & guidance, **Fintech Association** plays an important role in shaping the market & promoting best practice
- Philippines is one of eight economies signing CBPR; there is a **high level of consistent** & compliance in term of data privacy & cybersecurity, facilitating cross-border data transfer; businesses are **comfortable applying CBPR**; ISO 27001 is widely adopted

OPPORTUNITIES

- **Internationally consistent regulation** will enhance business chance for enterprises especially MSMEs
- The **dialogue between enterprises & regulators** will overcome the knowledge gap to enforce & guide enterprises & consumers to the right way to protect their business & privacy

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	56	16
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	34	7
HBR Ease of Doing Digital Business 2019 (n=42)	34	11
ITU Global Cybersecurity Index 2018 (n=175)	58	14
UN E-Government Development Index 2018 (n=193)	75	15
The World Bank Infrastructure 2018 (n=140)	92	20
UN Telecommunication Infrastructure Index 2018 (n=193)	109	18
The World Bank Internet User 2018 (n=140)	76	15
UNCTAD B2C E-commerce index 2018 (n=151)	92	16





PAIN POINTS

- The primary hurdle for MSMEs is **grappling** with the myriad of data related regulatory frameworks
- Many MSMEs are **aware** of cross-border digital trade but do not have **comprehensive & objective** information on the benefits

TRENDS

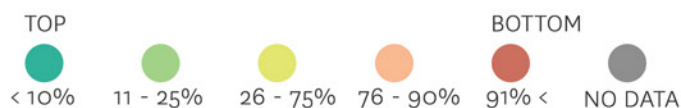
- The digital economy is a **hot topic**: business leaders & policymakers are working closely with telecoms operators to ensure more **stable connectivity** and aiming for **97% broadband coverage** by 2024
- The **largest** Russian technology companies (~80 core digital companies) tend to be the **drivers** for the digital economy & the development of **data governance**
- Current focus is on **adoption of GDPR** convention, reforming local laws so that businesses can work more freely with the EU
- Economic **initiatives** are in place to support companies that are entering international markets, especially MSMEs engaged in **hi-technology**

OPPORTUNITIES

- MSMEs would like to see **one single platform or market rule**; a fully regulated approach like GDPR is viewed as the best to date
- More can be done to **educate** policymakers, regulators, MSMEs & the general public on data privacy, security, and how to most **effectively utilize data**; for example, free legal consulting services are provided to MSMEs to help them

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	40	14
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	64	19
HBR Ease of Doing Digital Business 2019 (n=42)	42	15
ITU Global Cybersecurity Index 2018 (n=175)	26	8
UN E-Government Development Index 2018 (n=193)	32	8
The World Bank Infrastructure 2018 (n=140)	51	14
UN Telecommunication Infrastructure Index 2018 (n=193)	45	8
The World Bank Internet User 2018 (n=140)	49	13
UNCTAD B2C E-commerce index 2018 (n=151)	42	10





PAIN POINTS

- More and more economies around Singapore have data localization regulation; **increases cost** for businesses
- Businesses are suffering from **international inconsistency** in data regulations; many companies spend much cost to **comply with GDPR**
- **Fake news law** & **digital tax** are causing big debate but not implemented yet

TRENDS

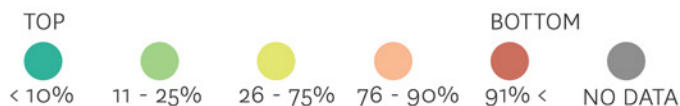
- Singapore is **easy to do business**, encouraging **free trade**; succeeded to be a testbed of **innovations**; global companies' ASEAN headquarters location
- Data regulations such as "Personal Data Protection Act" & "Cybersecurity Act" are **well aligned** with CPTPP, encouraging cross-border data flow; businesses feel both are **reasonable, not redundant**
- Regulators are aware of compatibility between different frameworks is important; **open for discussion** with business; taking **initiative to harmonize** regulations in ASEAN region
- MSMEs are in favor of **platformers** because platformers are **supporting** MSMEs for capacity building
- Attracting global businesses to locate **data centers** in Singapore

OPPORTUNITIES

- Businesses feel **mutual recognition** between different privacy frameworks is needed
- **Data classification framework** may avoid over-protection of non-sensitive data
- MSMEs need **single window** to get information about regulation of new market

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	2	2
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	9	4
HBR Ease of Doing Digital Business 2019 (n=42)	13	6
ITU Global Cybersecurity Index 2018 (n=175)	6	2
UN E-Government Development Index 2018 (n=193)	7	3
The World Bank Infrastructure 2018 (n=140)	1	1
UN Telecommunication Infrastructure Index 2018 (n=193)	9	3
The World Bank Internet User 2018 (n=140)	24	8
UNCTAD B2C E-commerce index 2018 (n=151)	1	1





CHINESE TAIPEI

OPPORTUNITIES

- Chinese Taipei is among the leading economies in terms of data openness, and there are lots of opportunities in **IoT infrastructure development**
- The economy has rolled out different **incentives to encourage & create guidelines for startups**; June 4, 2019, the first Chinese Taipei-EU Digital Economy Dialogue took place in Brussels regarding the tech solutions addressing economic and social challenges in today's digital era

TRENDS

- While innovative tech solutions enabled many local MSMEs to digitalize their operations, but many MSMEs were still struggling to adopt the digitalization **due to costs**
- There is an **increase in consumers' awareness** about data privacy; Personal Data Protection Office was established in July 2018 to in charge of the Personal Data Protection Act (PDPA) interpretation and enforcement

PAIN POINTS

- 10 out of the 14 interviewees indicated **short of tech talents** has been a challenge for their business expansion; many local tech talents are attractive to the high technology manufacturing industry due to higher pay and better benefits, while many other industries were hard to recruit qualified tech talents
- **Geopolitics & trade disputes** increased the difficulties in demands forecasting, and historical data became less reliable
- Due to the **unfamiliarity of different data regulations** in the region, the local firms often hesitate to commit to the relevant terms in the contracts

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	16	7
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	43	10
HBR Ease of Doing Digital Business 2019 (n=42)		
ITU Global Cybersecurity Index 2018 (n=175)		
UN E-Government Development Index 2018 (n=193)		
The World Bank Infrastructure 2018 (n=140)	22	6
UN Telecommunication Infrastructure Index 2018 (n=193)		
The World Bank Internet User 2018 (n=140)	30	10
UNCTAD B2C E-commerce index 2018 (n=151)		





PAIN POINTS

- Regulators have pushed various “**surface level**” regulations that are not up-to-dated; MSMEs are either confused with **ambiguous regulations** or **gaming the system**, intentional taking advantage of the grey area
- Huge **gap in connectivity** that varied by region: city v.s. rural
- **Logistics** & attracting **foreign talent** is one of the main issues expressed by MSMEs

TRENDS

- Thailand is in the process to **build out** the entire e-commerce ecosystem; established Ministry of Digital Economy and Society (**MDES**) in 2016 to lead the move towards a **digital economy**
- “The Personal Data Protection Bill” (**PDPB**) is similar to GDPR; the most recent version of the PDPB has **specific data security requirements**: a data controller is required to prepare a security system in order to provide appropriate security measures to prevent loss, access, use, modification or disclosure of personal data without authorization or in a wrongful manner
- “**Thailand 4.0**” seek to achieve economic stability, human capital constraints, equal access to economic opportunities, environmental sustainability, competitiveness & effective governance; **investing in startups**, converting public services to paperless online services

OPPORTUNITIES

- A **clear** set of regulations that all business has to follow; should be **flexible** to adopt the latest technology
- Achieve internet **connectivity nationwide** at high quality & low price; educate MSMEs & consumers, **build awareness** about privacy concerns

LEADING INDEXES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	39	13
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	56	16
HBR Ease of Doing Digital Business 2019 (n=42)	33	10
ITU Global Cybersecurity Index 2018 (n=175)	35	10
UN E-Government Development Index 2018 (n=193)	73	14
The World Bank Infrastructure 2018 (n=140)	60	16
UN Telecommunication Infrastructure Index 2018 (n=193)	66	12
The World Bank Internet User 2018 (n=140)	87	17
UNCTAD B2C E-commerce index 2018 (n=151)	43	11

TOP PERCENTILE



< 10%



11 - 25%



26 - 75%



76 - 90%



91% <



NO DATA

THE UNITED STATES



OPPORTUNITIES

- A **national data law** that complies with CBPR & acknowledges the post-GDPR landscape
- **Enforcement** of antitrust legislation & tmodern tech company violations
- Clear **sliding scale standards** regarding data use, sharing, collection & analytics
- Increasing **penalties** and reporting requirements for cybersecurity violations

PAIN POINTS

- Existing laws are **not updated** for the current technology & are showing significant age; current regulation has led to large-scale fines, but **lack of lasting changes** to the technological landscape
- **Lack of clear regulation** regarding data policy that is due to a wide range of state and federal laws, conflict with each other & cause non-compliance in foreign economies
- MSMEs are limited in growth potential, often intending from inception to **be acquired** rather than develop their businesses

TRENDS

- The United States is one of the major drivers of E-commerce & digital trade; recent **trade disputes** with China threaten to disrupt this long-term
- The Trump administration has led a **drastic re-evaluation** of FTC antitrust policy against large technology companies Bipartisan coalition wants to better regulate & potentially **break up existing tech giants**
- Consumers are placing a higher priority on **individual privacy**, feel less comfortable with giving their data away for free Omnipresent **data breaches & leaks** have become “normal”
- Large waves of M&A activity have led to heavily **consolidated large enterprises** that are able to re-write business regulation to advantage themselves vs. MSMEs

LEADING INDEXES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	1	1
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	44	11
HBR Ease of Doing Digital Business 2019 (n=42)	1	1
ITU Global Cybersecurity Index 2018 (n=175)	2	1
UN E-Government Development Index 2018 (n=193)	11	6
The World Bank Infrastructure 2018 (n=140)	9	5
UN Telecommunication Infrastructure Index 2018 (n=193)	20	4
The World Bank Internet User 2018 (n=140)	40	12
UNCTAD B2C E-commerce index 2018 (n=151)	13	4





PAIN POINTS

- Businesses need more detailed guidance on implementing the “**Cybersecurity Law**,” some consider this as an obstacle, some think it will not have a strong impact in the short/medium term
- **Internet quality** is not stable & does not fully meet the requirements & growth of businesses with limited cables
- Significant **language barriers**, understanding local regulation & satisfying legal requirements when entering new markets

TRENDS

- Vietnam does not have **data privacy regulation**; digital consent is not legal approval, digital terms & conditions are not enforced for companies when acquiring new users
- **Low awareness** among consumers of the right to protect their privacy; **low concern** of the risk when private information is being used by third party
- Businesses are more confident & active in using **global open-source solutions**; significantly save time for building a product & improve its quality

OPPORTUNITIES

- Policy makers actively **motivate & create** favorable conditions for MSMEs in digital & technology sector; business also positively contribute to law-making process
- **4G & 5G** network is developed very quickly: significantly boosts user experience & opens opportunities for businesses
- Great **talent pool** for IT hard skills; but needs to enhance soft skills & professionalism

LEADING INDICES

	World Ranking	APEC Ranking
IMD World Digital Competitiveness Ranking 2018 (n=63)	●	●
ECIPE Digital Trade Restrictiveness Index 2018 (n=65)	61	17
HBR Ease of Doing Digital Business 2019 (n=42)	●	●
ITU Global Cybersecurity Index 2018 (n=175)	50	13
UN E-Government Development Index 2018 (n=193)	88	17
The World Bank Infrastructure 2018 (n=140)	75	18
UN Telecommunication Infrastructure Index 2018 (n=193)	100	17
The World Bank Internet User 2018 (n=140)	88	18
UNCTAD B2C E-commerce index 2018 (n=151)	69	14





Appendix II: Glossary

ABAC	APEC Business Advisory Council
APEC	Asian-Pacific Economic Cooperation
CBPR	Cross-Border Privacy Rules
CCPA	California Consumer Privacy Act
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
Digital Tax	Taxation of digital goods
FTA	Free Trade Agreements
FTC	Federal Trade Commission
G20	International forum for the governments and central bank governors from 19 countries and the European Union
GATS	General Agreement on Trade in Services
GDPR	General Data Protection Regulation
HIPPA	Health Insurance Portability and Accountability Act
ISO	International Organization for Standardization
LE	Large Enterprise
MSME	Micro, Small and Medium Enterprise
NAFTA	North American Free Trade Agreement
NGO	Non-Governmental Organization
NTB	Non-Tariff Barrier
NTM	Non-Tariff Measure
PIPA	Personal Information Privacy Act
Privacy Shield	Framework for regulating transatlantic exchanges of personal data for commercial purposes between the European Union and the United States
USMCA	United States-Mexico-Canada Agreement
WTO	World Trade Organization



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