

Globally Connected, Locally Delivered:

The Economic Impact of Cross-Border ICT Services

EXECUTIVE SUMMARY



U.S. CHAMBER OF COMMERCE
International Affairs

Research Authorship

This study was independently executed by Spire Research and Consulting. It was commissioned by the U.S. Chamber of Commerce.

Spire Research and Consulting is Asia's leading strategic market intelligence consultancy focusing on growth and entry studies. We provide expert analysis across 18 Asia-Pacific countries as well as all other global emerging market regions of Latin America, Russia/CIS/ Eastern Europe, the Middle East and Africa.

Spire Research and Consulting was established in 2000 to address a gap in the research and consulting industry in global emerging markets. Unlike most agencies that focus on traditional consumer research, our founders saw a profound need for holistic research projects.

These projects integrate traditional customer research with knowledge of the broader business eco-system; for instance, competitors, channels, legal and regulatory factors. They support strategic decision-making for market growth and entry. Our studies provide indispensable tools for creating business plans, setting sales quotas, quantifying budgets and investment as well as making product launch decisions.

To date, the company has delivered over 2000 market research and consulting projects for over 50 Global Fortune 1000 companies and numerous Government agencies across a wide range of industries.



THE ECONOMIC IMPACT OF CROSS-BORDER ICT SERVICES GLOBALLY

Executive Summary

The “digital economy” is increasingly indistinguishable from the global economy, with the ability to offer and use services across borders serving as the foundation. The interconnected nature of the Internet means businesses can reach potential customers anywhere. By leveraging the best available Information and Communications Technology (ICT) services and seamlessly offering products on an open marketplace, small and medium enterprises (SMEs) are able to compete on a level playing field with large multinationals. The benefits of digital trade aren’t just theoretical – a recent study by McKinsey found that ability to transfer, store, and process data globally adds USD \$2.8 trillion to the economy in 2014 alone¹.

Moreover, as large as USD \$2.8 trillion seems, that figure doesn’t even capture the full positive impact of digital trade due to a number of direct and indirect restrictions on the use and provision of cross-border ICT services. This report details regulatory and other barriers, including localisation and data onshoring requirements, that hinder the adoption of cross-border ICT services and serve as a brake on growth in the sector consistently shown as most primed to help countries move up the value chain.

Removing these barriers presents a clear path for governments to jump start their economies on a path towards increased jobs and growth. Business of all sectors and sizes will benefit from more cost-effective ICT solutions and the ability to safely and seamlessly move data. In fact, the study indicates creating a positive policy environment leads to an opportunity to realise hundreds of billions of dollars of GDP increases, billions of dollars in potential new government revenues, millions of new jobs, and hundreds of thousands of new businesses.

¹ Manyika, J., Lund, S., Bughin, J., Woetzel, J., Stamenov, K., & Dhingra, D. (2016, March). *Digital Globalization: The New Era of Global Flows*. Retrieved from McKinsey Global Institute Website: <http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows>

In order to better demonstrate that both end users and providers are winners in an open ICT services environment, the study examines a group of eight globally important markets from a diverse range of economic development, including Brazil, the European Union, Indonesia, Japan, Korea, Nigeria, Turkey, and Vietnam. Our findings demonstrate across the board benefits.

The study creates a model to quantify the economic impact of full liberalisation of cross-border ICT services rules globally by creating an open, competitive marketplace. This entails the removal of all current regulatory and legal barriers that inhibit the provision of cross-border ICT services. Governments from other countries are assumed to reciprocate and remove the relevant barriers in their countries as well. Moreover, it is also assumed that governments will undertake efforts to address other market specific barriers, such as language barrier, lack of awareness by SMEs, etc.

For the purposes of this study we define “cross-border ICT services” as those which can be provided from outside a jurisdiction and used globally, with examples including website design, hosting and maintenance services, data analytics, data processing, software development and maintenance, helpdesk and support, application and data migration, call centre services, and mobile application/system development. This definition further includes cloud-based services which require cross-border data flows.

The study found that barriers to an open competitive ICT marketplace come in different forms but with a few core goals – albeit goals that can largely be achieved without the creation of barriers. The first strand of barriers, stem from data protection requirements, where governments aim to protect their citizens’ rights and privacy with the recent introduction of data protection laws. Next are rules related to national security, where a few strategically important sectors are highly regulated. Finally there is a streak of industrial policy or protectionism as governments attempt to strengthen their own ICT industries and rely less on imports, as protectionist regulations noted. However, as the study recommendations discuss, all of these goals can and should be achieved without requirements for localization or restrictions on cross-border services, with an ultimate result of an open competitive environment created by the liberalisation of cross-border ICT services undeniably leading to growth of the world’s economy in many ways.

The rights of citizens and their privacy should be respected and protected. In fact, the introduction of data protection laws is often welcome in light of the rapidly changing technological environment. However, as pointed out in this study, the current rules remain inadequate, unclear, and may cause a huge burden to comply, without adding any protections. Hence, it is suggested that the current guidelines and requirements with regards to cross-border transfer of data to be revisited and streamlined, while maintaining data protection principles under the risk-based approach. Cumbersome, unclear, or costly procedures would not only hinder compliance, but also potentially discourage ICT adoption.

In addition, forcing data to be stored within national borders, whether targeting certain sectors or more broadly, could lead to higher expenditure, lower data security, and limit the variety of ICT services available to these regulated sectors. Firstly, not every country has an established ICT industry that can provide cost competitive services and building out new redundant infrastructure would divert investment from other more productive functions. Secondly, storing data on premise or within national borders does not guarantee the security of the data. In many cases, on premise IT security is less than adequate compared to cloud service providers and has resulted in several security breaches in recent years². Thirdly, there are other means of protecting data from being stolen by external parties such as the use of cloud security gateways, which render stolen data useless to hackers in the event of a security breach. Hence, forced data localisation regulations should be considered to be removed and the required data security measures should be explored and adopted to safeguard personal data.

It is also recommended that governments abolish protectionist regulations such as local content requirement or preferential treatment in public tendering. It must be noted that studies have shown that moving towards protectionism will not only bring about economic losses, but also tends to introduce inefficiencies and stifles innovation.

Other than the removal of regulatory barriers, governments should address soft barriers such as the lack of awareness and understanding of advanced ICT

² Rossi, B. (2015, March 9). *The great IT myth: is cloud really less secure than on-premise?* Retrieved from Information Age Website: <http://www.information-age.com/technology/security/123459135/great-it-myth-cloud-really-less-secure-premise>

services and solutions. Companies should be educated concerning the wide array of ICT services available to them and how their businesses can benefit from adopting these services. Only when local companies are empowered to make an informed decision will the ICT service market be truly liberalised. Furthermore, the fear of foreign governments' surveillance programs by the end users should also be addressed. In order to facilitate the development of an open ICT marketplace, end users would require concrete assurance from governments around the world that their personal data would be kept safe and that their rights would not be compromised. While the removal of regulatory barriers and raised awareness may have improved the accessibility and availability of cross-border ICT services, the rectification of the misconceptions surrounding foreign IT service providers will likely determine the adoption of such services.

Finally, the supporting infrastructure of each country has to be able to keep up with the enhanced utilization of ICT in the coming years. Middle income countries and developing countries still have relatively low broadband penetration rates. A number of countries covered in this study, such as Brazil, Nigeria, and Indonesia have introduced national broadband plans and are in the midst of implementing them. The respective government should closely monitor the implementation progress and ensure that targets are met. Moreover, telecommunication service providers should be incentivised to develop broadband infrastructure in less developed areas to increase access to fast and reliable broadband internet in the country. Aside from ICT infrastructure, improvement in power infrastructure is of significant importance to minimize downtime and enhance feasibility of ICT adoption. Therefore, the government ought to attract private investments to develop the necessary infrastructure.

Considering the current state of the global ICT industry and the identified soft barriers, a hybrid method of adoption and delivery of cross-border ICT services is the most likely scenario for the next few years. Considering the need of adequate perceived control and confidentiality of certain company data, end users are expected to retain certain IT functions in-house with a team to oversee and manage the outsourced tasks. Taking into account the trend of nearshoring, cross-border IT service vendors are likely to set up local offices or regional offices to serve the relevant markets. However, the vendors' global pool of resources will be shared for the execution and delivery of services to take advantage of

different national comparative advantage. In the case of cloud based services, hybrid cloud architecture is also expected to be the preferred choice of end users. Computing resource pooling will be taken to the next level and all cloud users would benefit from this enhanced efficiency. By liberalising cross-border ICT service provision, local companies stand to benefit from a wider variety of ICT services. Furthermore, competition from cross-border vendors will spur innovation in the local ICT service industry. In conclusion, with a free and open market, end users benefit from more options, good quality services, and competitive prices.

The Numbers at a Glance

The economic model created as part of this study found that an open policy and regulatory environment that facilitates cross-border delivery of ICT services will generate significant cost savings, spur the development of new business boosting jobs, and ultimately add to the overall growth of the economy for those countries studied. The summary results from the economic modelling can be seen in the tables below.

Estimated Cost Savings Impact (in USD billion)

| EU | Japan | South Korea | Brazil | Turkey | Indonesia | Vietnam | Nigeria |
|-------|-------|-------------|--------|--------|-----------|---------|---------|
| 68.17 | 17.84 | 7.42 | 5.62 | 1.75 | 3.04 | 0.22 | 1.15 |

Estimated Number of New Business Creation

| EU | Japan | South Korea | Brazil | Turkey | Indonesia | Vietnam | Nigeria | World |
|---------|--------|-------------|--------|--------|-----------|---------|---------|-----------|
| 342,845 | 27,099 | 44,551 | 33,304 | 14,854 | 285,526 | 3,882 | 185,332 | 2,893,255 |

Estimated Net Job Creation ('000 jobs)

| | EU | Japan | South Korea | Brazil | Turkey | Indonesia | Vietnam | Nigeria | World |
|------------|---------|-------|-------------|--------|--------|-----------|---------|---------|----------|
| Short-Run | 759.8 | 143.2 | 127.1 | 27.1 | 31.6 | 1,012.7 | 51.4 | 336.2 | 5,759.4 |
| Medium-Run | 1,823.0 | 337.3 | 316.5 | 52.8 | 77.5 | 1,377.8 | 62.2 | 796.5 | 14,398.5 |
| Long-Run | 2,886.2 | 531.4 | 505.8 | 78.4 | 123.4 | 1,742.9 | 72.9 | 1,256.8 | 23,037.7 |

Estimated Long Run Contribution to GDP (in USD billion)

| | EU | Japan | South Korea | Brazil | Turkey | Indonesia | Vietnam | Nigeria | World |
|------------|--------|-------|-------------|--------|--------|-----------|---------|---------|----------|
| Short-Run | 91.98 | 28.43 | 8.33 | 9.16 | 1.92 | 14.24 | 1.78 | 7.99 | 430.11 |
| Medium-Run | 184.35 | 56.19 | 20.76 | 17.37 | 4.60 | 22.05 | 2.64 | 15.74 | 1,075.27 |
| Long-Run | 275.57 | 83.64 | 33.01 | 25.44 | 7.15 | 29.38 | 3.46 | 23.43 | 1,720.43 |

Barriers to an Open, Competitive Marketplace

There are two broad categories of identified barriers to an open competitive marketplace, namely regulatory barriers and market specific barriers.

Regulatory

Three major types of regulatory barriers found in this study include restrictions on cross-border transfer of data, data localisation requirements, and industrial regulations. In recent years, many countries have introduced their own data protection laws, and it was found that countries like Brazil, Japan, and Turkey have been influenced by the data protection regulations of the European Union, such as the EU Data Protection Directive 95/46/EC. The Directive regulates the collection and use of personal data. It also regulates the transfer of personal data from EU member states to a third country by stipulating that the receiving countries must have adequate levels of data protection. The data protection laws of the respective countries have seen to include similar requirements. Companies that have their data stored outside the list of “adequate” countries are likely to incur hefty costs for repatriating their data. However, oftentimes the list of countries permitted to transfer data to is not clearly specified or communicated to local companies; cross-border IT service vendors may well be excluded from local companies’ consideration altogether for fear of breaching the law. Hence, the cross-border data transfer requirement is expected to limit the breadth of ICT services that would otherwise be available to local companies.

All of the examined countries in this study require data subjects’ consent for the collection, storage, processing of personal data. While the consent requirement is a mechanism to keep data subjects informed and to protect their rights, the approach to acquiring consent may affect the efficacy of data-driven cross-border ICT services such as business intelligence (BI), thus impacting adoption. Qubit’s analysis of 500,000 interactions since the enforcement of the EU Privacy Directive in May 2012 pointed out that when explicit consent is required from consumers, the consent rates could fall by more than 40% when compared to implicit consent³. The explicit method of gathering consent may not be suitable in cases

³ O’Reilly, L. (2012, June 13). *‘Implicit consent’ best practice on cookies*. Retrieved from Marketing Week Website: <http://www.marketingweek.com/2012/06/13/implicit-consent-best-practice-on-cookies/>

where data subjects or consumers do not have sufficient knowledge to understand the activity of data processing or when processing is expected to occur on a frequent basis, such as anti-fraud protections for credit cards. Furthermore explicit or express consent might lead to so many notices that the truly important ones get lost in the noise. In addition, the definition of personal data has been broadened by data protection laws such as the EU's General Data Protection Regulation (GDPR). The definition has been broadened to include economic status, social status, and other online identifiers such as ID number, location data, cookie ID, etc. A wider range of data subjected to the consent requirement, coupled with lower consent rate would result in a reduction of data available to be processed. As such, the efficacy of data analytics or BI services provided by cross-border service vendors may be reduced, thus, adoption of data-driven cross-border ICT services would be lower.

Data localisation regulations require data to be stored within national borders, thus, the procurement of cross-border ICT services are out of question. These regulations can be sectoral in nature, where strategic industries such as oil and gas and financial services are regulated, or they can be applied to the whole economy. In this study, it was found that countries like Turkey, Indonesia, South Korea, and Nigeria have put in place sectoral data localisation regulations. Turkey and Indonesia require data centres to be maintained within their national borders, while South Korea prohibited banks from outsourcing data-processing activities to third parties. In addition, Indonesia also requires upstream exploration data of its oil and gas sector to be stored in the country. In the case of Nigeria, all government data and ICT companies' customer and subscriber data need to be hosted locally.

Apart from sectoral data localisation regulations, Indonesia and Vietnam have put in place data localisation regulations that apply to the broader economic sector. Indonesia's Government Regulation No. 82/2012 stipulates that electronic system operators who provide public services are obliged to establish data centres and disaster recovery centres within the country. On the other hand, Decree 72 of Vietnam requires information service providers on mobile telecommunication networks, news or general information websites, game service providers, and social networks to locate one server system in Vietnam. Although data localisation regulations can come in multiple forms, their impacts

are the same. Data localisation regulations block companies' access to cross-border data centres or other ICT services that can potentially be more cost efficient and of higher quality.

The third major form of regulatory barrier identified is the presence of industrial policies that shield local market players from some or all foreign competition. There is a tendency for emerging economies to erect such regulations. While cross-border IT service vendors are not excluded from public procurement in most cases, they are significantly disadvantaged in the process. The Buy Brazilian Act, Decree 7174, and Indonesia's Presidential instruction No. 2/2009 stipulate that domestic bidders are to be given preferential treatment in public procurement. Nigeria's approach is by enforcing local content requirements. For instance, the Nigerian Oil and Gas Industry Content Development Act 2010 No. 2 sets local content requirements for various ICT services procured by oil and gas companies. Furthermore, the Guidelines for Nigerian Content Development in the ICT sector require the design, procurement, testing, deployment, maintenance and support of ICT to be completed by Nigerian indigenous ICT Companies, Nigerian subsidiaries of international ICT OEMs, or Nigerian partners of international ICT OEMs.

Market Factors

Although some market specific barriers are difficult to or will take long period of time to be addressed, it does not mean that they can be taken for granted. These factors usually do not influence decision making in isolation, but they can command high influence on the demand side of the matter. Five major market factors identified by the study to have inhibited the adoption of cross-border ICT services include a lack of trust on cross-border IT vendors, communication barriers, a lack of awareness concerning ICT, cost and quality considerations, and a lack of supporting infrastructure.

Market Factors - Lack of Trust

In general, end users from each of the studied countries showed a lack of trust in cross-border IT vendors. An important contributing factor to this issue is the 2013 global surveillance revelation alleged by Edward Snowden. The U.S. National

Security Agency (NSA) was allegedly tapping into the servers of major U.S.-based internet firms under a surveillance programme called PRISM. Since then, people have adopted the idea that foreign governments may gain access to their data if it is stored with the respective foreign service providers. With this fear came the belief that it is safer to keep data onsite or onshore. Hence, for fear of exposing confidential information, cross-border IT vendors are seldom engaged, or they are engaged for services that do not involve sensitive information or data.

Market Factors – Communication Barriers

The study also found that communication barriers exist in most cases. Differences in language, time zone, and culture are often found to have contributed to communication barriers which inhibit the adoption of cross-border ICT services. Native languages are almost always preferred to foreign languages, as companies wish to prevent any possible miscommunication and to ensure the smoothness of the engagement. For instance, if a company engages a vendor without native language proficiency, resources would have to be put into translating and communicating the service requirements to the vendors. The language barrier would cause problems not only in the initial negotiation, but also at the delivery stage, as inspections and corrections are normally needed. Miscommunications between both parties can cause the end user to incur extra costs, so much so that the initial estimated cost savings are eroded. Furthermore, cross-border IT vendors that do not have a physical presence in the country are perceived to have slower response time compared to local IT vendors as they are likely to be based in different time zones. This perception, coupled with language differences and culture gaps resulted in a lower perceived control over the services that are outsourced to cross-border IT service vendors.

Market Factors – Lack of Awareness

The overall awareness and understanding of ICT in SMEs of the examined economies have proven to be low. Even in developed economies such as those of the EU, Japan, and South Korea, the majority of SMEs still have not adopted enterprise grade software or cloud services. Out of these economies, only one country in the EU has a recorded enterprise cloud adoption rate of more than 50%. The limited understanding of the benefits of cutting-edge ICT services has

led to a relatively low adoption rate of cross-border ICT services. A factor that contributes to such low adoption is the limited IT proficiency of SME employees and the lack of a dedicated IT team. IT related matters tend not to be the core focus of SMEs. As employees are occupied with their daily duties, initiatives to adopt efficient ICT services are rare. Even when these SMEs are interested in adopting new technologies, they may not have the sufficient knowledge to do so.

Market Factors - Price and Service Quality Considerations

In lower income countries such as Indonesia, Vietnam, and Nigeria, there exists the perception that fees charged by local service providers are lower than those charged by cross-border service providers. Furthermore, the capabilities of local service providers have improved over time. While traditionally ICT services are procured from more developed economies, local service providers are increasingly becoming viable alternatives. A similar trend can be observed in middle-income countries such as Brazil and Turkey. These countries have developed niche expertise in the ICT sector and are serving as international IT outsourcing hubs.

Market Factors - Infrastructure

Access to broadband internet is an important requirement for businesses to even consider adopting more advanced ICT services. Countries like Nigeria, Indonesia, Vietnam, and Brazil were found to have limited availability of broadband internet access with reliable speed. While these countries may have quite capable submarine cables laid, telecommunication service providers have been targeting the more developed cities in these countries, resulting in a dearth of last-mile connectivity. Consequently, many people and businesses still do not have access to reliable broadband internet, presenting a major barrier to adopt efficient ICT services. Furthermore, the affordability of broadband internet is still relatively low in these countries, which not only presents a significant barrier to ICT adoption, but also to the growth of small businesses.

Another infrastructure barrier to cross-border ICT service adoption found is the unavailability of reliable and cost efficient power supply. Nigeria currently suffers from insufficient electricity production, and frequent power outages occur

throughout the year even in its largest cities such as Lagos and Abuja. Recently, Brazil is showing side effects of a lack of diversification in its power mix. Facing one of its worst draughts in 2015, the issue of power outages started to surface. Moreover, cost of electricity is expected to rise as Brazil intends to remove its energy subsidy program (CDE), while Nigeria introduces its new electricity tariff in 2016. Without reliable and cost efficient power supply, advanced ICT services adoption would be technically and financially implausible to the vast majority who are affected.

Economic Impact Findings

The study finds that all eight economies stand to reap multiple benefits if they take action on creating an open, competitive marketplace for cross-border ICT services by removing a number of identified barriers.

Cost Savings

Taking comparative advantage of nations in the world, cost savings can be derived by subscribing to solutions offered by both domestic and cross-border IT service providers. Regardless of the source, all economies in this study stand to realize cost savings post liberalisation. Countries that have high labour costs such as the EU, Japan, and Korea, would tend to benefit most from adopting efficient cross-border ICT services, especially IT services that are of the medium to lower realm of the value chain, and that can be performed or delivered from another jurisdictions.

In the case of cloud services, costs vary across countries. However, countries with poor supporting infrastructure such as Nigeria, Vietnam, Indonesia, and Brazil could gain access to potentially more cost efficient cloud services hosted across borders. These economies tend to have a lower cloud user base compared to more developed economies and are therefore unable to reap the full benefits of economies of scale. Furthermore, for smaller companies or even some larger enterprises that are using private data centres or servers, subscribing to public cloud services could help them save on total cost of ownership of cloud.

Post liberalisation, previously regulated industries such as financial services, oil and gas, and the public sector would gain access to efficient IT service providers.

Companies could outsource more IT functions which were previously performed in-house to cross-border vendors. As some IT functions are more cost effective when outsourced or automated, potential cost savings could be realised if the allocation of IT functions was optimised.

To maximise the benefit of a global open market for ICT service, the study assumes that governments around the world would undertake necessary efforts to raise the awareness of local companies, especially the SMEs, about the benefits of ICT and the various market offerings (both domestic and cross-border) available. Once local companies are made aware of the benefits of adopting various ICT services as well as all sorts of market offerings, they would be able to make more informed decisions and benefit from cost saving gains. Raised user awareness and removed regulatory barriers would result in enhanced competition in the global ICT industry. Market competition tends to drive down prices and spur innovation among market players. Domestic IT service vendors would have to innovate to sustain their market share as local end users realise more sophisticated IT needs. On the other hand, cross-border vendors would need to innovate and find ways to compete with local vendors not just in terms of price, but also in the service or product aspects. Hence, end users around the world could expect good quality services at competitive prices.

As demonstrated by the information provided and conclusions drawn above, various factors came into play when the cost savings impact for each economy was estimated.

Table 1: Estimated Cost Savings Impact (in USD billion)

| EU | Japan | South Korea | Brazil | Turkey | Indonesia | Vietnam | Nigeria |
|-------|-------|-------------|--------|--------|-----------|---------|---------|
| 68.17 | 17.84 | 7.42 | 5.62 | 1.75 | 3.04 | 0.22 | 1.15 |

New Business Creation

Global liberalisation impacts new business creation in multiple ways. Firstly, global liberalisation creates new demand for ICT services which would lead to the establishment of new IT companies. Secondly, global liberalisation ensures the access to efficient IT tools. In the context of an app economy, aspiring application developers could leverage efficient cloud-based platform for

application development. Thirdly, global liberalisation raises awareness and understanding of ICT, allowing cloud based services to lower barriers of entry for new businesses. The upfront cost of enterprise IT can be lowered with the pay-as-you-go model. Moreover, business processes which require plenty of resources can also be sourced with cloud technologies. Customer service, HR functions, procurement, and even sales operations can be obtained in the form of business process as a service (BPaaS). Potential business founders can have access to external resources at an affordable price, freeing up vital resources for their core business focus to increase chances of successful ventures. Hence, new businesses are expected to be formed with the realisation of the possibilities that cloud computing can offer.

The new businesses created as estimated in this study are expected to be largely SMEs. Applying the rate of new business creation to the global level, it is estimated that global liberalisation will lead to the creation of 2.89 million companies in the long run.

Table 2: Estimated Number of New Business Creation

| EU | Japan | South Korea | Brazil | Turkey | Indonesia | Vietnam | Nigeria | World |
|---------|--------|-------------|--------|--------|-----------|---------|---------|-----------|
| 342,845 | 27,099 | 44,551 | 33,304 | 14,854 | 285,526 | 3,882 | 185,332 | 2,893,255 |

Net Job Creation

As explained above, end users may expect a significant amount of cost saving gains post-liberalisation. As a result of benefits emitted from global liberalisation, end users are likely to increasingly hire staff at the company level, not limited to IT. However, it is plausible that jobs may be cut as they are rendered redundant. IT service vendors are another source of new jobs as the ICT industry expands. In addition, some hiring activities can be expected from intermediaries that benefited from the induced spending of the end users as well as from IT vendors who have realised cost savings and additional income.

This study found that the impact of job creation outweighs that of job loss as a result of global liberalisation. Interviewed respondents expressed that a certain number of in-house IT local companies would still be required to manage service vendors. Moreover, instead of cutting jobs, countries such as South Korea and

Japan showed intentions of assigning the relevant employees to other high value creation functions such as research and development (R&D), internal software development, or even strategic planning and management. Global liberalisation is not expected to cause permanent job loss as the study found that job cuts from end users will likely be absorbed by the IT service vendors or new businesses. Overall, it is estimated that global liberalisation will lead to a net job creation of 23.04 million jobs around the world in the long run.

Table 3: Estimated Net Job Creation ('000 jobs)

| | EU | Japan | South Korea | Brazil | Turkey | Indonesia | Vietnam | Nigeria | World |
|------------|---------|-------|-------------|--------|--------|-----------|---------|---------|----------|
| Short-Run | 759.8 | 143.2 | 127.1 | 27.1 | 31.6 | 1,012.7 | 51.4 | 336.2 | 5,759.4 |
| Medium-Run | 1,823.0 | 337.3 | 316.5 | 52.8 | 77.5 | 1,377.8 | 62.2 | 796.5 | 14,398.5 |
| Long-Run | 2,886.2 | 531.4 | 505.8 | 78.4 | 123.4 | 1,742.9 | 72.9 | 1,256.8 | 23,037.7 |

Total Contribution to Local Economy

The expenditure approach to calculate gross domestic production (GDP) was adopted to quantify the expected economic benefits from liberalisation of cross-border ICT services provision. The formula is as the following:

$$GDP = C + I + G + (X - M)$$

In this study, only the first three components were being taken into consideration. They are namely, consumption (C), investment (I), and government spending (G). Net export (X - M) is assumed to be reflected in the change in IT service vendors' income. Hence, at the aggregated level, the net export amount will not be added on top of the former three components as it has been factored into the other three components by the model.

The study found that global liberalisation of cross-border ICT services provision would bring about a significant amount of cost savings and would benefit IT service vendors as a whole. Furthermore, new businesses and new jobs are expected to be created. Consequently, there will be additional consumption, investments, savings, and taxes payable from both individuals and corporations post liberalisation. It was found that global liberalisation can potentially increase

1.87% of the GDP of the eight economies covered in this study. On average, emerging economies such as Indonesia, Vietnam, and Nigeria stand to benefit most from global liberalisation. Interestingly, developed economies such as the EU, Japan, and South Korea came in second. The projected impact on the global GDP is USD \$1.72 trillion.

Table 4: Estimated Long Run Contribution to GDP (in USD billion)

| | EU | Japan | South Korea | Brazil | Turkey | Indonesia | Vietnam | Nigeria | World |
|------------|--------|-------|-------------|--------|--------|-----------|---------|---------|----------|
| Short-Run | 91.98 | 28.43 | 8.33 | 9.16 | 1.92 | 14.24 | 1.78 | 7.99 | 430.11 |
| Medium-Run | 184.35 | 56.19 | 20.76 | 17.37 | 4.60 | 22.05 | 2.64 | 15.74 | 1,075.27 |
| Long-Run | 275.57 | 83.64 | 33.01 | 25.44 | 7.15 | 29.38 | 3.46 | 23.43 | 1,720.43 |

Productivity and Innovation

Global liberalisation entails a seamless experience in cross-border data transfer, storage, and processing. Companies around the world should expect lower compliance costs when globally recognised data protection frameworks, security standards, and best practices are introduced and adopted. Consequently, valuable resources such as time, human capital, and money could be saved and put to more productive uses. For instance, companies in the EU are using copious amounts of resources when preparing model clauses, or applying for binding corporate rule (BCR) in order to transfer personal data to other countries that are deemed to not have adequate data protection standards.

There is a positive correlation between ICT adoption and the productivity level of companies. However, several barriers have hindered the adoption of ICT services, especially those that are provided by cross-border vendors. Uncertainty in data protection rules is one of them. A number of countries such as the EU, Japan, Turkey, Brazil, and Indonesia are either in the midst of enforcing or finalising their data protection laws. Critics and experts are commenting on the lack of clarity, adequacy, and practicality of these laws. As these countries move towards global liberalisation, it is assumed that the compliance procedures and requirements will be refined, clarified, and communicated to companies around the world. Thus, companies that previously hesitated to adopt cross-border ICT

services or cloud services due to uncertainties in data protection rules could start to adopt the respective services and enjoy benefits such as enhanced productivity levels post-liberalisation. For example, with the adoption of cloud based business analytic tools, companies can now analyse large amounts of data in a shorter period of time without having to own and maintain physical computing hardware.

SMEs across all economies also stand to benefit much in terms of productivity gain. Manual, paper-based processing of information is prevalent in SMEs. These companies lack the necessary IT knowledge to adopt advanced solutions, and a number of them still do not have a dedicated IT department. Through global liberalisation, these companies could procure the necessary ICT services from competent vendors, freeing valuable resources for more productive uses. Local companies could channel these resources into core activities such as R&D, or training for employees to develop expertise in a desired field. Furthermore, higher adoption of cloud services and a substantial boost in productivity could be expected. For instance, utilising software-as-a-service's (SaaS) subscription model, SMEs could afford enterprise software that were previously unaffordable, such as enterprise resource planning (ERM), customer relationship management (CRM), supply chain management (SCM), enterprise content management (ECM), etc. SMEs would be able to decrease redundancies while increasing operating efficiencies if such software was fully utilised. Another advantage that cloud computing offers is employee access to applications, data, and files virtually anywhere with an internet connection.

In addition, the raised awareness of various ICT services and solutions, particularly in SMEs, could generate innovative business models, service deliveries, or customer engagement. For instance, SMEs in rural or less developed areas could realize that using mobile applications or having their own social media page would be an effective and easy way to reach new customers, conduct sales, carry out marketing campaign, or receive feedback. Adoption of ICT is often hindered by a lack of understanding and confidence in ICT and the benefits that it can bring. Hence, under the assumption of global liberalisation, companies would be empowered with a multitude of tools to explore the endless number of innovative and creative possibilities. The availability of a large pool of global IT service providers would also enrich the innovative process.

Empowered companies (both large enterprises and SMEs) could also leverage the additional computing power to capitalise on data analytics to boost companies' competitiveness in the global arena. By subscribing to business intelligence (BI) or data visualisation cloud solutions, companies could forecast sales volumes more accurately, understand customer behaviour, identify potential new product ideas, evaluate the efficacy of marketing activities, identify areas for improvement in businesses processes, etc.

Overall, having an open ICT industry would allow companies to operate more productively and empower them with the insights and tools to innovate. Ensuring that no restrictive regulations on the procurement of cross-border ICT services are established would widen the variety of IT services available to help achieve said productivity and innovation gains.

Research Overview

This section outlines the research scope of this study.

Research Scope and Methodology

The cross-border ICT services⁴ that are under the scope of this study include:

- i) Services that can be provided from outside a jurisdiction and used globally, with examples including website design, hosting and maintenance services, data analytics, data processing, software development and maintenance, helpdesk and support, application and data migration, call centre services, and mobile application/system development.
- ii) Cloud-based services (SaaS, IaaS, PaaS, BPaaS, etc.) that involve cross-border data flows or where the hosting servers are located in jurisdictions other than those of the users.

To fulfil the objective of this study, 8 geographical areas are being examined. The 8 geographical areas are categorised based on the nation's income level.

- i) High-Income Economies: **European Union, Japan, South Korea;**
- ii) Upper Middle-Income Economies: **Brazil, Turkey;**
- iii) Emerging Economies: **Indonesia, Vietnam and Nigeria**

A total of 46 in-depth interviews were carried out with 6 global ICT industry experts as well as 5 respondents from each of the 8 geographical areas covered in this study. The profiles of respondents include the following:

1. Large and medium sized corporations that currently utilise cross-border ICT services
2. International ICT services vendors

⁴ Note to readers: For more accuracy, the report will sometimes refer to IT as opposed to ICT as the cited source may not reference the telecommunications component of ICT (the 'C'). The use of 'IT' or 'ICT' in the rest of the report is based on this distinction.

3. Global experts in the ICT sector, such as academics, writers, senior members of IT communities or associations.
4. This study aggregates the findings from these in-depth interviews together with insights gleaned from public information and in-house analysis.

Economic Impact Model and Assumptions

The economic model used in this study aims to quantify the economic impact of full global liberalisation of cross-border ICT services rules to create an open, competitive marketplace. The main areas of economic impact under the scope of this model include contribution to GDP, net employment, and new business creation.

Due to the limitation of data availability in some of the geographical areas under this study, the dynamic stochastic general equilibrium (DSGE) model was not adopted to quantify economic impacts. Instead, the expenditure approach to calculate GDP was adopted to quantify the net expected economic benefits from liberalisation of cross-border ICT services provision, with key inputs to the model being generated from analysis of both primary and secondary data. The formula is as per the following:

$$GDP = C + I + G + (X - M)$$

In this study, only the first three components were being taken into consideration. They are namely, consumption (C), investment (I), and government spending (G). Net export (X - M) is assumed to be reflected in the change in IT service vendors' income. Hence, at the aggregated level, the net export amount will not be added on top of the former three components as it has been factored into the other three components by the model. The economic model takes into consideration five main stakeholders in the economy. This includes the end users of ICT services, ICT service vendors in the country, new businesses created from liberalisation, intermediaries serving the end users and providers of ICT services, and the local government.

End users are defined in this study as business users of ICT services. We believe that current barriers such as forced localisation regulations and restrictions on cross-border data flows introduce inefficiencies, thus liberalisation would lead to

a certain amount of cost savings for the end users. As regulatory barriers are removed, it is hypothesised that competitive ICT service vendors would benefit, while the less competitive ones would lose market share. The model assumes that ICT service vendors who are adversely affected by liberalisation would cut jobs, should the situation persist.

The realised cost savings or increase in earnings of end users and ICT service vendors post-liberalisation is then assumed to be channelled into company re-investments, payment to stakeholders, and company savings respectively. With this mechanism, the model is able to quantify consumption, investment, and government spending contributions to the GDP.

i) Company Re-investments

Funds allocated for re-investments are assumed to be spent in three areas namely, hiring of staff, fixed asset investments, and general company spending. Funds that are allocated for hiring would create new jobs and in turn spur consumption, personal savings/investments and increase personal income tax revenue. The concept of marginal propensity to consume (MPC) and the multiplier effect are adopted to quantify the impact of consumption and savings from the additional disposable income.

Fixed asset investments are assumed to contribute to the investment component of the GDP equation under the expenditure approach. The amount allocated to general company spending is assumed to benefit intermediaries, resulting in an increase in income. The allocation of this increase in income among intermediaries is assumed to follow the same pattern as the end users and ICT service vendors as mentioned above. Hence, the second order effects of liberalising cross-border ICT service provision are taken into account by the model.

ii) Payment to Stakeholders

Payment to stakeholders refers to wage increase, bonus, or dividend payout to company employees and shareholders. This increase in personal income is assumed to be another source of tax income for the local government. Similarly, the MPC and the multiplier are applied to quantify consumption and investment contributions to the GDP.

iii) Company Savings

The amount of cost savings or increase in income that is not re-invested or paid out is assumed to be saved. Furthermore, it is assumed that the amount saved would be taxed at the prevailing corporate tax rate of the country. All additional tax income (personal and corporate) is assumed to be spent by the local government, thereby contributing directly to the government spending component of the GDP equation.

It is assumed that current barriers to cross-border ICT services provision resulted in higher cost of ICT and limited access to ICT services or infrastructure.

Liberalisation would increase the rate of new businesses formation due to the lowering of barriers to entry, as aspiring entrepreneurs could gain access to effective and efficient ICT services. This is especially so in the context of cloud based services which are often hosted across borders. The newly formed businesses are assumed to be of the micro, small and medium enterprises category. With the establishment of new businesses, new jobs are expected to be created. Hence, an increase in personal income tax revenue, personal spending and personal savings/investments can be expected.

When new businesses become profitable, it is assumed that the profits would be used for re-investments and retained as company savings. Hence, new businesses contribute to the consumption, investment and government spending components of the GDP equation under the expenditure approach.

Quantifying Global Impact of Liberalisation

This section of the report explains the approach used to quantify the global impact of liberalising cross-border ICT Services provision. The study explores eight different geographical areas, namely the EU, Japan, South Korea, Brazil, Turkey, Indonesia, Vietnam, and Nigeria. It is assumed that countries of the same income category share similarities in terms of market conditions, spending patterns, organisational behaviour, etc., to a certain extent. Hence, the study quantifies the global impact figures using the income level approach. As shown in the table below, the eight geographical areas are classified into three income brackets: high income economies, upper-middle income economies, and emerging economies. The same is also done to the other countries in the world.

Table 5: Classification of Geographical Areas

| Geographical Areas | Category | Threshold |
|--------------------|---------------------|--|
| EU | High Income | GNI per capita of USD \$12,736 and above |
| Japan | High Income | |
| South Korea | High Income | |
| Brazil | Upper-Middle Income | GNI per capita of more than USD \$4,125 but less than USD \$12,736 |
| Turkey | Upper-Middle Income | |
| Indonesia | Emerging Economies | GNI per capita of USD \$4,125 and below |
| Vietnam | Emerging Economies | |
| Nigeria | Emerging Economies | |

The World Bank’s method of classifying countries into different income groups has been adopted. The World Bank calculates the gross national income (GNI) per capita of all countries in USD using the Atlas method. Based on the predetermined GNI per capita threshold, countries are classified within various categories⁵. For this study, the lower-middle income economies are grouped with low-income economies under the emerging economies category.

The economic impacts that are calculated at the global level include contribution to GDP, job creation, and new business creation. The ratios applied to derive the above impacts are GDP impact to latest GDP, job creation impact to total labour force, and the number of new businesses created to the total number of SMEs. A simple average of the economic impact ratios can be derived from each income bracket, and these ratios can then be applied to the other countries grouped under the same income bracket to arrive at the global impact figures. Due to the lack of available data on the number of SMEs in many countries, a different approach was adopted to derive the global impact figure. It was found that the new business creation rates of all eight economies vary marginally. Hence, a single ratio of new business creation to total number of SMEs is used to estimate the global new business creation impact instead of the income group approach.

⁵ The World Bank Group. (2015, February 7). *New Country Classifications*. Retrieved from The World Bank Website: <http://data.worldbank.org/news/new-country-classifications-2015>

Limitations of the Study

The methodology for this study was an exhaustive literature review coupled with secondary research on cross-border ICT followed by in-depth interviews with industry participants. Information contained in this report is based on interviews conducted in good faith with respondents. The views expressed in relation to attitudes towards outsourcing herein may not be completely representative of the entire population of stakeholders in the eight geographical areas given that a large scale survey of ICT end users was not undertaken as a part of this study. However the study predicts the behaviour of companies toward cross-border ICT services based on the analysis of previous studies as well as assumptions grounded in established economic theory.

GLOBALLY CONNECTED, LOCALLY DELIVERED

ANNEX

Annex 1: Additional Information on Data Points Used in Economic Model

| S/N | Data Points | Derivation |
|-----|------------------------------------|--|
| 1 | Company ICT spending | <p>i) ICT spending rates (as a percentage of company revenue) are derived from experts input, and industry database on ICT spending. <i>*Depending on the availability of data, industry specific figures may apply.</i></p> <p>ii) With the consideration of the availability and consistency of industry revenue data across all studied geographies, a conservative approach in estimating the total ICT spending was applied:</p> <p>ICT spending rates x Respective industries' contribution to GDP</p> <p>iii) GDP figures were from national statistics offices' publication</p> |
| 2 | Cost Savings Estimation | <p>i) Cost savings rates were gathered from experts and industry participants surveys as a percentage of company ICT spending.</p> <p><i>*Depending on the availability of data, industry specific figures may apply.</i></p> <p>ii) The formula used is as follows:</p> <p>Cost savings rates x ICT spending</p> |
| 3 | Allocation of Company ICT Spending | <p>The allocation of company ICT budget (in percentages) in the following areas are gathered from experts and industry participants surveys:</p> |

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|---|---------------------------------|--|
| | | <p>i) In-house IT department</p> <p>ii) Local ICT vendors</p> <p>iii) Offshore ICT vendors.</p> |
| 4 | ICT Vendors' Increase in Income | <p>i) Interviewed ICT vendors were asked to estimate the percentage increase in income in the long run, under the assumption that all the existing regulatory barriers are removed and soft barriers are addressed.</p> <p>ii) The ICT service sector's total revenue was adopted from industry reports through secondary research. Whenever ICT service industry value estimations were not found for a particular country, the contribution to GDP value of the ICT services and software sub-sectors were adopted. The contribution to GDP value is used as a conservative proxy of the industry revenue.</p> <p>iii) The ICT industry is assumed to be made of three sub-sectors, namely, computer hardware, software, and services. For the purpose of this study, the hardware component of the industry value is excluded from our estimation.</p> <p>iv) The formula used is as follows:</p> <p>$\Delta\%$ ICT vendor income x ICT industry value (excluding hardware)</p> |

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| 5 | Estimated Rate of New Business Creation | <p>i) Regarding the impact of new business creation, a study of Centre for Economics & Business Research (Cebr) was referenced ⁶. This is because the study assessed the economic benefits of cloud computing to businesses and the economy of EMEA, and since cloud computing is an important sub-segment of cross-border ICT services, the study findings were highly relevant to ours.</p> <p>ii) The new business creation rate in the studied EU countries was used as a benchmark for this study. The new business creation rate was derived from dividing the number of new businesses with the total number of SMEs.</p> <p>iii) We assume that most, if not all of the new businesses created would be SMEs.</p> <p>iv) The rate of new business creation are adjusted for the individual geographies covered in this study after referring to the World Bank’s Doing Business reports. It is controlled that individual rates would not have a variation of more than 0.5%.</p> |
| 6 | Number of New Business Creation | <p>i) The total number of SMEs was extracted from data published by national statistics offices, studies published by the respective country’s SME associations, academics research, etc.</p> |

⁶ Centre for Economics and Business Research Ltd. (2010, December). *THE CLOUD DIVIDEND: Part One; The economic benefits of cloud computing to business and the wider EMEA economy*. Retrieved November 2015, from EMC Corporation Website: <http://uk.emc.com/collateral/microsites/2010/cloud-dividend/cloud-dividend-report.pdf>

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|---|--|--|
| | | <p><i>*Depending on the availability of data, industry specific figures may apply.</i></p> <p>ii) The formula used for this estimation is:</p> <p>Total number of SME x Rate of new business creation</p> |
| 7 | Allocation of Cost Savings by End Users | <p>The allocation of cost savings realised from global liberalisation in the following areas are gathered from experts and industry participants surveys:</p> <p>i) Re-investment (%)</p> <p>ii) Payment to Shareholders & Employees (%)</p> <p>iii) Company Long Term Savings (%)</p> |
| 8 | Allocation of Additional Income by ICT Vendors | <p>The allocation of additional income gained from global liberalisation in the following areas are gathered from experts and participants surveys:</p> <p>i) Re-investment (%)</p> <p>ii) Payment to Shareholders & Employees (%)</p> <p>iii) Company Long Term Savings (%)</p> |
| 9 | Uses of Re-investment Fund by Companies | <p>Respondents were asked to estimate the breakdown of their companies' re-investment fund in the following areas:</p> <p>i) Hiring (%)</p> <p>ii) Fixed Asset Investment (%)</p> <p>iii) Goods & Services from Local Intermediaries (%)</p> |

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| 10 | Average Wage by Industry | To estimate the number of new jobs created in the long run, average wage (per annum) data was gathered from job aggregation websites and relevant ministry of labour and welfare databases. |
| 11 | Number of New Jobs Created (By End Users and ICT Vendors) | <p>To calculate the number of new jobs created, the formula used is as follows:</p> <p>i) End Users: (Cost Savings x Hiring %)/Average Wage</p> <p><i>*Depending on the availability of data, industry specific figures may apply.</i></p> <p>ii) ICT Vendors: [Additional Income x Hiring%]/Average Wage</p> |
| 12 | Average Employment of SME | <p>i) Average employment data for SMEs are used to estimate new jobs created by new businesses.</p> <p>ii) SME employment data are either extracted from national statistics offices, academic publications, publications of respective countries' SME associations, or they are derived from the following formula, depending on data availability:</p> <p>Employment Level_{Industry A} x % of SME employment_{country y}</p> <p><i>*Depending on the availability of data, industry specific figures may apply.</i></p> |
| 13 | Number of New Jobs Created (By New Businesses) | i) New businesses also contribute to job creation. We assume that in the long run, new businesses created as a result of global liberalisation will be having the average employment level as other SMEs in the |

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| | | <p>respective economies.</p> <p>ii) The number of new jobs created is derived from the following formula:</p> <p>No. of New Business Creation x Average Employment of SME</p> |
| 14 | Employment Level (Number of Employed Person) | <p>i) The employment level for each industry is used to derive the number of expected jobs lost as a result of global liberalisation of ICT service provision.</p> <p><i>*Depending on the availability of data, industry specific figures may apply.</i></p> <p>ii) Employment data are generally extracted from national statistics offices, academic publications, and industry reports.</p> |
| 15 | Average Jobs Lost (%) | <p>Respondents were asked to estimate the magnitude of job losses in their organisation under the assumption of global liberalisation. The estimates were expressed as a percentage of total company headcount.</p> <p><i>*Depending on the availability of data, industry specific figures may apply.</i></p> |
| 16 | Number of Jobs Lost | <p>The total number of job losses was derived from the following formula:</p> <p>Average Job Loss (%) x Employment Level</p> <p><i>*Depending on the availability of data, industry specific figures may apply.</i></p> |

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| 17 | Marginal Propensity to Consume (MPC) | <p>i) As consumers gain additional disposable income, a portion of it would be spent or consumed. MPC aims to quantify this propensity to spend.</p> <p>ii) Gross national savings were used as a proxy for marginal propensity to save (MPS).</p> <p>iii) Applying the assumption of what is not consumed will be saved, MPC was derived using the following formula:</p> <p>MPC = 1 - MPS</p> |
| 18 | Personal Income Tax Rate (%) | <p>i) An average personal income tax rate was determined for the calculation of the multiplier as well as personal tax income for national government.</p> <p>ii) For this purpose, the average wage for each country was determined and the corresponding personal income tax rate was applied.</p> <p>iii) Tax guides from major accounting firms in the respective countries were referred to for this purpose.</p> |
| 19 | Multiplier | <p>i) The multiplier is used to quantify the impact of consumption and savings from the additional disposable income</p> <p>ii) The formula used to derive the multiplier is as follows:</p> <p>Multiplier = 1 / [1 - MPC (1-t*)] <i>*t refers to personal income tax rate</i></p> |

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|----|------------------------|--|
| 20 | Corporate Tax Rate (%) | <p>i) The corporate tax rate is used in the model to calculate the corporate tax income for national governments.</p> <p>ii) The corporate tax rates of the respective countries are generally derived from the same tax guides that were referenced to determine personal income tax rates.</p> |
|----|------------------------|--|

Annex 2: Experts and Industry Participants Survey Methodology

The interview methodology is of face to face or telephonic in-depth interviewing. Experts interviewed for this study include academics, writers, senior members of IT communities or associations. They were selected based on their qualifications. These experts have more than ten years of experience in the ICT service sector and have held prominent positions in renowned private and public organisations. Industry stakeholders interviewed in the eight respective markets are at least manager or director level personnel of IT departments in medium to large-sized corporations that currently utilise cross-border ICT services. These respondents were pre-screened before the actual interview to ensure that their organisations are end users of cross-border ICT services. Personnel from the ICT vendor community were interviewed in each of the studied markets as well. The organisations that these individuals belong in were ensured to have significant presence and exposure in the ICT sector. Potential respondents were pre-screened to ensure that they are knowledgeable in cross-border ICT services.

During the pre-screening process, the definition of cross-border ICT services used in this study was shared with the potential respondents. This is to ensure that both parties have the same understanding of the term in order to facilitate later discussions as well as to determine their suitability for the interview. During the actual interview, the definition of cross-border ICT services was repeated at the start of the interview.

The experts provided overall guidance as well as further research areas for the study. The interview was largely in an open-ended format. In the first section of the interview, experts were asked to share insights on the current state of ICT spending in various industries as well as recent trends in cross-border ICT services provision to the best of their knowledge. The next topic of discussion was the barriers to liberalising cross-border ICT services. Experts shared about the various regulatory as well as soft barriers currently present in the markets that they are knowledgeable in. Experts were then told to answer the following questions based on a hypothetical environment of a global open market where all of the regulatory barriers discussed previously were removed and soft barriers were addressed accordingly. Experts were asked to estimate the amount of cost savings that liberalisation would entail. The figures were estimated as a percentage of company ICT spending. Next, the experts were asked to share their

views on job loss, new business creation, global innovation as impacts of liberalisation.

The ICT service vendors mainly shared about their understanding on their clients' IT needs, considerations in choosing service providers for relevant services, and the various barriers for providing cross-border ICT services in their respective markets. In the first section, ICT service vendors were asked to share the cross-border ICT services that their organisations offer in the market. Subsequently there was a discussion on how the various forms of IT needs are met in the market. Other than estimating the breakdown of their clients' allocation of IT spending budget, they were asked to share examples of IT services that are commonly retained in-house and those that are commonly outsourced. Next, ICT service vendors were asked to share about the current regulatory barriers present in the market and to describe how they were affected. ICT service vendors were then asked to answer the following questions based on a hypothetical environment of a global open market for ICT services, where all of the regulatory barriers discussed previously were removed and soft barriers were addressed accordingly. They were asked to forecast the change in their clients' behaviour in procuring IT services, the cost savings potential, the change in their organisations' income, and the possibility of job destruction in their organisations. Finally, the respondents would share about the ways in which their organisations would deploy the amount of addition income derived from global liberalisation.

The end users interviews were largely identical to the ICT vendors. While some questions in the ICT vendors interview were based on their understanding of their clients, these questions are now directed to the end users themselves. As IT managers and directors, the respondents were asked to share about the current IT spending behaviour of their organisations and the rationale behind their decisions. Next, the current regulatory barriers that are inhibiting the respondents' organisations from taking advantage of cross-border ICT services were discussed. The end users were then asked to answer the following questions based on a hypothetical environment of a global open market for ICT services, where all of the regulatory barriers discussed previously were removed and soft barriers were addressed accordingly. They were asked to forecast the change in their organisations' behaviour in procuring IT services, the cost savings

potential, and the possibility of job destruction in their organisations. Finally, the respondents would share about the ways in which their organisations would deploy the amount of cost savings derived from global liberalisation.

This study aggregates the findings from these in-depth interviews together with insights gleaned from public information and in-house analysis.

Annex 4: Net Job Creation and Contribution to GDP Impact Summary

| | | Short Run | Medium Run | Long Run |
|-----------------------------------|-----------------|-------------------|-------------------|-----------------|
| Employment (No. of Jobs) | EU | 759,815 | 1,823,029 | 2,886,243 |
| | Japan | 143,241 | 337,311 | 531,381 |
| | South Korea | 127,120 | 316,487 | 505,853 |
| | Brazil | 27,112 | 52,766 | 78,420 |
| | Turkey | 31,579 | 77,500 | 123,420 |
| | Indonesia | 1,012,674 | 1,377,806 | 1,742,938 |
| | Vietnam | 51,406 | 62,177 | 72,949 |
| | Nigeria | 336,234 | 796,541 | 1,256,848 |
| | World | 5,759,422 | 14,398,554 | 23,037,686 |
| Consumption (In USD) | EU | 19,218,198,475 | 40,920,447,988 | 61,544,880,040 |
| | Japan | 14,942,799,088 | 30,938,278,534 | 46,663,372,710 |
| | South Korea | 5,567,005,073 | 14,096,037,094 | 22,452,592,232 |
| | Brazil | 6,632,733,425 | 12,750,734,657 | 18,741,689,443 |
| | Turkey | 1,236,958,404 | 3,153,834,660 | 4,946,502,768 |
| | Indonesia | 10,771,897,039 | 16,329,348,532 | 21,477,101,506 |
| | Vietnam | 1,236,572,820 | 1,837,089,620 | 2,398,441,487 |
| | Nigeria | 6,003,921,338 | 12,286,120,725 | 18,516,263,793 |
| Investment (In USD) | EU | 47,865,060,712 | 90,904,974,633 | 133,944,806,244 |
| | Japan | 9,528,413,392 | 17,570,623,545 | 25,612,767,949 |
| | South Korea | 2,025,748,984 | 4,839,576,597 | 7,653,371,937 |
| | Brazil | 2,102,716,696 | 3,807,722,347 | 5,512,690,131 |
| | Turkey | 509,229,954 | 1,052,725,490 | 1,596,143,790 |
| | Indonesia | 2,937,461,552 | 4,706,421,168 | 6,475,360,269 |
| | Vietnam | 476,335,934 | 700,481,008 | 924,594,358 |
| | Nigeria | 1,456,601,802 | 2,512,913,216 | 3,569,213,526 |
| Government Revenue (In USD) | EU | 24,899,857,674 | 52,530,450,378 | 80,079,411,646 |
| | Japan | 3,961,830,431 | 7,679,593,250 | 11,368,395,081 |
| | South Korea | 742,742,296 | 1,825,211,897 | 2,902,435,721 |
| | Brazil | 424,550,010 | 809,778,211 | 1,190,611,137 |
| | Turkey | 172,252,772 | 394,500,491 | 612,693,170 |
| | Indonesia | 533,949,779 | 1,012,794,677 | 1,424,528,631 |
| | Vietnam | 66,653,764 | 101,699,666 | 134,703,092 |
| | Nigeria | 527,571,119 | 940,769,508 | 1,350,053,170 |
| Total GDP Impact (In USD) | EU | 91,983,116,860 | 184,355,872,999 | 275,569,097,930 |
| | Japan | 28,433,042,912 | 56,188,495,329 | 83,644,535,741 |
| | South Korea | 8,335,496,353 | 20,760,825,588 | 33,008,399,890 |
| | Brazil | 9,160,000,131 | 17,368,235,215 | 25,444,990,711 |
| | Turkey | 1,918,441,130 | 4,601,060,641 | 7,155,339,728 |
| | Indonesia | 14,243,308,369 | 22,048,564,377 | 29,376,990,405 |
| | Vietnam | 1,779,562,517 | 2,639,270,294 | 3,457,738,937 |
| | Nigeria | 7,988,094,259 | 15,739,803,450 | 23,435,530,489 |
| World | 430,107,438,724 | 1,075,268,596,811 | 1,720,429,754,897 | |

| Jurisdictions | Regulatory Barriers |
|---------------|--|
| EU | <p><u>General Data Protection Regulation (GDPR)</u></p> <p>Certain parts of the regulation such as consent, data transfers, and requirements for a data protection officer remained ambiguous, which could inhibit cross-border flow of data.</p> <p><u>Invalidation of the Safe Harbour</u></p> <p>U.S. and EU companies can no longer self-certify under this data-transfer agreement to transfer personal data freely across the Atlantic.</p> |
| Japan | <p><u>Act on the Protection of Personal Information (APPI)</u></p> <p>Data subjects' consents are required for cross-border data transfers and the receiving jurisdictions must have adequate level of data protection.</p> |
| South Korea | <p><u>Personal Information Protection Act (PIPA)</u></p> <p>i) Data handlers must designate a data protection officer. This regulation burdens cross-border ICT service vendors if data protection officers are not allowed to be appointed from internal staff.</p> <p>ii) Opt-in consent of data subjects is required in order for data handlers to transfer personal data to a third party.</p> <p><u>Act on Promotion of Information and Communication Network Utilisation and Information Protection (IT Network Act)</u></p> <p>Opt-in consent of data subjects is required for the collection and use</p> |

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| | <p>of personal information by IT service providers.</p> <p><u>Act on Real Name Financial Transactions and Guarantee of Secrecy (ARNFTGS)</u></p> <p>Written consent of data subjects is required for the transfer of transaction information to a third party by financial institutions.</p> |
| Brazil | <p><u>Interpretative Act 7/2014</u></p> <p>Local companies are to bear extremely high taxes should they procure offshore data centre services.</p> <p><u>Buy Brazilian Act</u></p> <p>In public bidding, a preference margin of 25% is given to goods or services that are produced domestically.</p> <p><u>Decree 7174</u></p> <p>Government bodies are to provide preferential treatment to locally produced ICT goods and services based on a non-transparent price/technology matrix.</p> |
| Turkey | <p><u>Article 11 of the Regulation on Internal Systems of Banks</u></p> <p>Primary and secondary data systems of banks in Turkey must be maintained within national borders</p> <p><u>Article 23 of the Law on Payment Systems</u></p> |

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| | <p>Primary and secondary data systems of payment system operators in Turkey must be maintained within national borders</p> <p><u>Article 15 of the Regulation Concerning the Processing of Personal Data and the Protection of Privacy in the Electronic Communications Sector</u></p> <p>Electronic communications operators are required to retain customer data in Turkey for a year</p> |
| <p>Indonesia</p> | <p><u>Presidential Regulation no.54/2010 Article 104</u></p> <p>Foreign companies are only allowed to bid for a government procurement project if the bids exceed the stipulated thresholds.</p> <p><u>Presidential instruction No. 2/2009</u></p> <p>Government entities are to give preferential treatment in the form of price preferences to domestic goods and services providers during public procurement.</p> <p><u>Decree of Special Task Force for Upstream Oil and Gas Business Activities No. KEP-0008/SKO0000/2013/S0</u></p> <p>Data centres (including disaster recovery centres) serving this industry to be located within the territory of Indonesia</p> <p><u>Regulation of Bank Indonesia No. 9/15/PBI/2007</u></p> <p>Data centres (including disaster recovery centres) used by</p> |

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| | <p>commercial banks to be situated in Indonesia.</p> <p><u>Government Regulation No. 82/2012</u></p> <p>Electronic system operators who provide public services are obliged to establish data centres and disaster recovery centres within Indonesia.</p> |
| Vietnam | <p><u>Decree 72/2013/ND-CP</u></p> <p>Information service providers on mobile telecommunication networks, news or general information websites, game service providers, and social networks are required to locate one server system in Vietnam</p> |
| Nigeria | <p><u>Nigerian Oil and Gas Industry Content Development Act 2010 No. 2</u></p> <p>ICT service providers are subjected to Nigerian content requirement when their services are procured by oil and gas companies.</p> <p><u>Guidelines for Nigerian Content Development in the ICT sector</u></p> <p>i) The design, procurement, testing, deployment, maintenance and support shall be executed by Nigerian indigenous ICT Companies, Nigerian subsidiaries of international ICT OEMs, or Nigerian partners of international ICT OEMs.</p> <p>ii) Government data is mandated to be hosted in Nigeria</p> |

[INSIDE COVER]

Research Authorship

This study was independently executed by Spire Research and Consulting. It was commissioned by the U.S. Chamber of Commerce.

Spire Research and Consulting is Asia's leading strategic market intelligence consultancy focusing on growth and entry studies. We provide expert analysis across 18 Asia-Pacific countries as well as all other global emerging market regions of Latin America, Russia/CIS/Eastern Europe, the Middle East and Africa.

Spire Research and Consulting was established in 2000 to address a gap in the research and consulting industry in global emerging markets. Unlike most agencies that focus on traditional consumer research, our founders saw a profound need for holistic research projects.

These projects integrate traditional customer research with knowledge of the broader business eco-system; for instance, competitors, channels, legal and regulatory factors. They support strategic decision-making for market growth and entry. Our studies provide indispensable tools for creating business plans, setting sales quotas, quantifying budgets and investment as well as making product launch decisions.

To date, the company has delivered over 2000 market research and consulting projects for over 50 Global Fortune 1000 companies and numerous Government agencies across a wide range of industries.





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