

Key Issue:

- *Connectivity is the cornerstone of e-commerce development*
- *E-commerce supporting connectivity aims to facilitate (i) information flow, (ii) logistics, (iii) cash flow, and (iv) seamless links between the virtual and physical parts of e-commerce network*
- *In addition, it has direct impacts on physical infrastructure; it also calls for policy effect on services, rule setting, and region-wide E-commerce supporting environment*
- *Smartphone economy and Internet financial innovation provide new solutions to improve regional connectivity*

Fukunari Kimura
Economic Research Institute
for ASEAN and East Asia
(ERIA) and Keio University

Lurong Chen
Economic Research Institute
for ASEAN and East Asia
(ERIA)

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To Enhance E-Commerce Enabling Connectivity in Asia

By FUKUNARI KIMURA and LURONG CHEN

Cross-border e-commerce has been a major development trend of international trade and globalization. In the next 5-10 years, the top three fastest growing markets in the world—India, Indonesia, and Malaysia—will all come from Asia. Connectivity is the cornerstone of e-commerce development. E-commerce supporting connectivity aims to ease free information flow, logistics, free cash flow, and seamless links between the virtual and physical parts of e-commerce network. Accordingly, policy efforts include

- increasing the supply of public goods to improve connectivity infrastructure in both physical world and cyberspace,
- establishing rules and regulations to ensure dynamics and competition of online market place,
- improving connectivity-driven services to generate more value added,
- prioritizing smartphone economy and Internet financial innovation, and
- collaboration in the region-wide e-commerce enabling environment

Asia in the global trend of e-commerce development

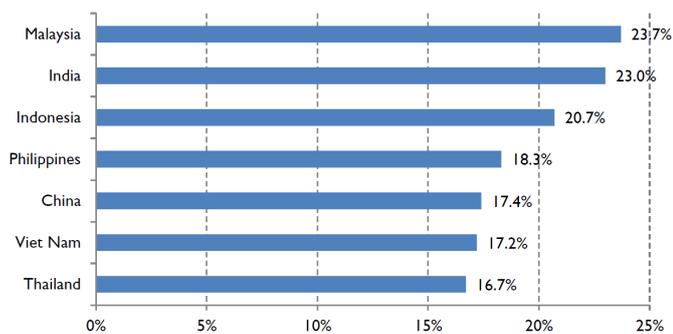
Economic activities using tools of the Internet or new information and communications technology (ICT) to purchase goods or services or do business online are rapidly expanding. Cross-border e-commerce typically involves less intermediate links between sellers and buyers, but has higher demand on services, especially information, payment, and logistics. Cross-border business-to-business (B2B) e-commerce has been steadily growing since the 1990s. The growth has accelerated with the outspread and deepening of global value chains in the twenty-first century. Since 2014 or 2015, the radical growth of business-to-consumer (B2C) and customer-to-customer (C2C) has attracted increasing public attention to global e-commerce.

Global revenue from cross-border e-commerce was projected to reach US\$600 billion in 2018, twice as much as that in 2012. The e-commerce market in the Asia-Pacific is growing faster than that in any other region. From 2015 to 2021, regional total market revenue will increase from around US\$320 billion to over US\$900 billion.

In particular, the markets of B2C e-commerce in China and India, two most populous Asian countries, are booming rapidly. China is among the front runners of cross-border e-commerce. It has been a main engine of e-commerce growth. In 2016, China's annual B2C e-commerce turnover reached US\$975 billion, equivalent to the combined market size of the United States (the second largest) and the United Kingdom (the third largest). Its gross market value of cross-border e-commerce represented about one-eighth of its total trade in 2013. Between 2015 and 2020, the e-commerce penetration into Chinese foreign trade is estimated to increase at 20%–40% per year, higher than the annual growth rate of international trade in goods. In the case of India, the market size of e-commerce has already surpassed

that of Canada since 2016. ASEAN will experience high-speed growth as well. The overall scale of digital economy in ASEAN is projected to increase by 5.5 times by 2025 (Think with Google, 2017). In the next 5–10 years, the top three fastest-growing retail e-commerce markets in the world will be Malaysia, India, and Indonesia all with a growth rate of over 20% per year (Figure 1).

Figure 1. Compound Annual Growth Rate of E-commerce, 2015–2021



Source: Statista (2016).

Asia's needs in improving connectivity to grasp development opportunities

Opportunities and challenges are two sides of a coin in digital economy. The benchmark between them will be determined by the country's conditions in economy, geography, politics, society, culture, and market reactions to new trend of economic digitalization. Among all determinants, connectivity is the cornerstone of e-commerce development.

E-commerce supporting connectivity is fourfold: (i) smooth exchange of data and information (connectivity for information flow), (ii) delivery of goods and services (logistics connectivity), (iii) payment (connectivity for cash flow), and (iv) seamless links between the virtual and physical parts of e-commerce network (integrating connectivity).

Connectivity for information flow

The development of e-commerce demands more stable and affordable Internet connection with higher speed. There are wide gaps in development despite emerging Asian countries' efforts in pushing ICT infrastructure. This is evident in the difference in Internet speeds across countries, as well as that within the country. According to Akamai (2017) survey, the quality of regional Internet infrastructure looks satisfactory compared with the world average level from the aspect of either the average or the peak speed of Internet connection. At the country level, the average Internet connection speeds in the region ranged from 20.3 mega bits per second (Mbps) in Singapore, ranked 7th globally, to 5.5 Mbps in the Philippines, ranked 100th. The peak Internet connection speeds in the region

ranged from over 180 Mbps in Singapore, the world's number 1, to 42 Mbps in the Philippines, number 97¹.

The picture is less optimistic when looking at the indicator of broadband adoption. Not so many emerging Asian countries met the world average level. The gaps between the region and the world frontier seem to get wider at higher tiers of broadband speeds, showing that emerging Asian countries are still in the catch-up process in pushing ICT infrastructure. Within the country, the problems of uneven development of ICT infrastructure are quite significant.

From the aspect of technology, fibre-optic cables are the most efficient media to 'carry' data despite the rise of satellite use. Even when using mobile phone, connection is only wireless between the device and the nearest cell phone towers. Data are carried over terrestrial or subsea fibre-optic cables or both. Fundamentally, fibre network building is a crucial part of the needed infrastructure of digital economy. Compared with traditional fields of infrastructure, fibre technology is progressing rapidly. Building, maintenance, and upgrade of fibre networks require sustained input capital, technology, and managerial efforts. This matter poses some common challenges to all countries in the world. But emerging Asian countries face some extra difficulties due to highly dispersed geography and large population. Additionally, there is always a 'budget problem' to solve, especially among capital-scarce countries.

Economically, factors like broadband penetration, utilization of broadband infrastructure, and applications are likely to enhance national aggregate outputs. The development of ICT-related infrastructure in emerging Asian countries is uneven. For instance, the entry-level broadband connection in Singapore is much faster than that in CLMV countries – Cambodia, Lao PDR, Myanmar, and Viet Nam. Relatively speaking, the gaps in wireless broadband are narrower than those in fixed-wired broadband, but the differences across countries are still quite significant. Region-wide development gaps in ICT infrastructure building may also imply high cost to connect the networks among countries.

Logistics connectivity

While e-commerce allows people to do business online, it still needs logistics to deliver the traded products. It is about not only trade cost but also safety, security, reliability, transparency, flexibility, and efficiency. Indeed, e-commerce has higher demands on speed and transparency, posing additional challenge to storage, parcel delivery, and express postal services. This means additional efforts from both physical connectivity and trade-supporting services. For developing countries in Asia, there are still obstacles from poor quality of roads, incomplete road and railway networks, inadequate port, and problems in energy supply (Table 1).

¹ Data for Brunei Darussalam, Cambodia, the Lao PDR, and Myanmar were not included in the original report. N.A. = not applicable

Table I. Asia's Uneven Development in Logistics Infrastructure

Country	Quality of roads	Quality of railroad infrastructure	Quality of air transport infrastructure	Quality of port infrastructure	Quality of overall infrastructure
Brunei Darussalam	4.70 (41)	2.07 (88)	4.08 (84)	3.67 (87)	4.14 (67)
Cambodia	3.38 (93)	1.62 (98)	3.85 (99)	3.85 (76)	3.43 (95)
Indonesia	3.86 (75)	3.82 (39)	4.52 (62)	3.91 (75)	3.79 (80)
Lao PDR	3.42 (91)	N.A	3.77 (100)	2.01 (132)	3.74 (81)
Malaysia	5.46 (20)	5.06 (15)	5.70 (20)	5.44 (17)	5.48 (19)
Myanmar	2.33 (136)	1.79 (96)	2.62 (132)	2.62 (123)	2.42 (135)
Philippines	3.07 (107)	1.97 (89)	3.25 (116)	2.92 (113)	3.04 (112)
Singapore	6.28 (2)	5.74 (5)	6.85 (1)	6.66 (2)	6.39 (2)
Thailand	4.21 (60)	2.52 (77)	4.95 (42)	4.18 (65)	4.03 (72)
Viet Nam	3.47 (89)	3.15 (52)	4.06 (86)	3.84 (77)	3.63 (85)
China	4.77 (39)	5.07 (14)	4.81 (49)	4.59 (43)	4.55 (43)
India	4.43 (51)	4.48 (23)	4.49 (63)	4.53 (48)	4.45 (51)
World	4.05	3.38	4.41	4.04	4.06

Note: 1) value range from 1 to 7

2) ranking in parentheses

Source: The author. Raw data was retrieved from WEF (2017) Executive Opinion Survey 2016.

Connectivity for cash flow

E-payment is the vital bridge between the virtual and the physical part of e-commerce. Its basic function is to provide technical solutions for buyers to pay for goods and services bought online although the money transaction could be either online or offline. Currently, various solutions are available in the market, including cash on delivery, prepaid, credit cards, debit cards, e-banking, mobile payment, smartcard, e-wallets, etc. The existing various payment modes are positive factors in promoting the growth of e-commerce since diversity gives consumers space to choose their preferred ways to pay for online business.

Ideally, e-commerce development looks for an e-payment system that can accommodate existing market solutions cited earlier and keep open for new approaches in the future. Rather than simply a network of payment, it should be a service platform that can ensure transaction security, trace credit records, and offer consumer protection. Security, privacy, creditability, reliability, and efficiency are among the factors to be considered. Building and maintaining the e-payment system is a resource-intensive (i.e. capital, technology, human capital) project. This will be a big challenge to those emerging Asian countries whose domestic banking and financial sectors are still at the early stages of development.

Integrating connectivity

E-commerce supporting connectivity needs extra effort to smooth connections between networks of different countries and coordinate the interactions among the three functioning networks (information, logistics, and cash flows) cited earlier. Seamless links between the virtual and physical parts are

vital to the functioning of the whole network. This calls for services sector development through multilayer cooperation, including public-private partnership, inter-institutional cooperation, subregional cooperation, and coordination among different duty departments of the government.

From a regional perspective, a common challenge in all the four aspects of connectivity comes from development gaps existing across different parts of the region, especially between metropolitan areas and remote rural areas. Therefore, overall regional connectivity is to some extent limited by those 'short slabs'.

Policy Suggestions

First, the public sector should lead in building infrastructure. Although it is less likely that improving connectivity can totally eliminate digital divide, either among or within countries, it will contribute to reduce such divide by increasing the supply of public goods, in both quantity and quality. The private sector's involvement will be equally important to make the development sustainable. For ASEAN and East Asia, the improvement of infrastructure and connectivity has been widely discussed. Basically, all related policy suggestions will apply to e-commerce supporting connectivity, from public-private partnerships to intergovernmental cooperation to foreign investment, and so on.

Second, in addition to physical infrastructure that enables data and capital flow, the online marketplace needs rules and regulations to ensure the free movement and accuracy of information; the fairness to access to information; the protection of consumers and producers; the security of payment, free trade, and investment; and therefore, the market dynamics and competition.

The related regulations will cover traditional trade issues (i.e. tariffs and non-tariff measures, trade facilitation, consumer protection, intellectual property rights, etc.) as well as new issues (i.e. cross-border information flow, privacy protection, data localization, source codes disclosure, etc.).

The current progress in multilateral trade negotiation can hardly catch up with the radical growth of e-commerce. It is reasonable to expect the twenty-first century free trade agreements (FTAs)—FTAs containing World Trade Organization (WTO)-Plus and WTO extra provisions – to be pilots in new rule making, and the related global standards may be later established based on the related provisions existing in these agreements.

However, reaching agreements on some core issues about e-commerce will never be an easy task. It will be hard to balance the interests in economy, society, national security, as well as the long-term gains and short-term costs. This again calls for collaboration among governments,

as well as the private sector's participation in rule setting. Third, improving services is equally important as building physical infrastructure in every aspect of connectivity—from speed and accuracy to transparency and reliability. For instance, service is a key determinant of the overall efficiency of distribution networks. Online consumers could be more demanding, particularly on information. For instance, they would like to be updated on shipment preparation and on tracking delivery. They would want to know when anything unexpected occurs and the corresponding solution. Such users' demand motivates supply chain operations to create a greater focus on near-sourcing, omnichannel, and faster transport solutions (Inbound Logistics, 2014).

Meanwhile, connectivity-derived service can generate extra value added. It tends to have extensive implications on regional development because of its externality to the economy. First, development of the services sector can create more jobs to absorb labour. Second, service efficiency will save trade cost, increase reliability, and therefore promote e-commerce activities. Third, the resulting increase in government revenue will then provide additional resources to further improve connectivity. This could make the development of e-commerce supporting services a self-enforcing ecosystem.

Fourth, Asian countries should focus on new technologies that can provide new solutions to improve regional connectivity. Typically, two areas are worth highlighting, (i) smartphone economy and (ii) Internet financial innovation. Smartphones and mobile applications (apps) provide a powerful new platform for e-commerce growth. A smartphone today can replace many other devices and integrate their functions by simply adding apps to its memory chip. More people now use it as their daily companion, not just as phone but as 'personal assistant in the pocket'. More than half of smartphone owners have already turned to their phone to shop (Think with Google, 2016). In short, e-commerce based on smartphone and related mobile devices is cheaper, more convenient, more user-friendly, more global in scope, and more open and promising to sustainable growth.

On the other hand, e-commerce deriving financial innovations can provide better solutions to the market, either complementary or independent to the

traditional banking and financial architecture. Indeed, they are very efficient that even traditional financial service providers are eager to adopt these new models.

These two areas deserve some priorities of development since they could be the breakthroughs for developing countries to achieve leap-forward development.

Finally, from a broader picture, the development of e-commerce needs a suitable environment that covers both the physical world and the virtual cyberspace. When e-commerce goes international, it is subjected to almost all issues that apply to other forms of trade. Particularly, restrictions on data flows may damage cross-border e-commerce since trade protectionism harms international trade. Emerging Asian countries will have to eliminate this potential threat to free trade and collaborate in the region-wide E-commerce supporting environment.

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Headquarters:
The ASEAN Secretariat
Mezzanine Floor
70A Jalan Sisingamangaraja
Jakarta 12110,
Indonesia

Annex Office (mailing address):
Sentral Senayan II 5th & 6th Floors
Jalan Asia Afrika No. 8,
Gelora Bung Karno, Senayan,
Jakarta Pusat 10270,
Indonesia

Tel: (62-21) 5797-4460
Fax: (62-21) 5797-4464
E-mail: contactus@eria.org

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