The ASEAN digital revolution
Can ASEAN propel a digital revolution—one bold enough to catapult the region into a top five digital economy by 2025? Our latest research sets out five policy imperatives to not only prompt a digital revolution, but also add $1 trillion to the region’s GDP over the next 10 years.

Policy imperatives will help ASEAN “leapfrog” into the vanguard of the digital economy—making the region globally competitive and enriching the lives of citizens. Realizing this opportunity must be a top priority.
The opportunity

Across the world, digital products and services are transforming industries, enriching lives, and propelling progress. The Association of South East Asian Nations (ASEAN) has an opportunity to leapfrog to the forefront of the fast-moving global digital economy. Many of the fundamentals are already in place:

— Robust economy generating GDP of $2.5 trillion and growing at 6 percent per year

— Literate population of more than 600 million people, with 40 percent under 30 years of age

— Smartphone penetration of around 35 percent, and growing rapidly

— Well-developed information and communications technology (ICT) cluster with a track record of innovation and investment in new technology

— Renewed sense of optimism and urgency for economic integration with the implementation of the ASEAN Economic Community, which pledges to promote free movement of goods, services, investment, skilled labor, and free flow of capital

Although ASEAN (as a single community) lags behind its global peers in the digital economy, it has the potential to enter the top five digital economies in the world by 2025.¹ Moreover, implementation of a radical digital agenda could add $1 trillion to the region’s GDP over the next 10 years.

By 2025, a digital revolution could transform daily life in ASEAN, making physical cash increasingly obsolete and cities smarter, safer places to live. With a large and youthful population increasingly equipped with smartphones, ASEAN has an opportunity to pioneer the development of new digital services, especially advanced mobile financial services and e-commerce. These sectors are likely to give rise to digital champions that will lead the way for the broader economy.

A decade from now, ASEAN’s manufacturing sector is likely to have embraced Industry 4.0 technologies that enable machines on assembly lines to interact with the products they are producing, boosting efficiency, increasing flexibility, and enabling greater customization.² Moreover, across ASEAN, citizens will be able to access public services digitally, transforming the way they interact with both national and local governments. By 2025, most of ASEAN’s citizens will be digital natives, fully empowered to use high-tech tools to enhance their personal and professional lives.

¹ No ASEAN country—other than Singapore—features consistently and prominently in global digital indices.

² Industry 4.0 is a term used to represent “smart factories”—that is, intelligent networking of product development and production, logistics, and customers by widely deploying sensors and other IoT technologies.
The roadblocks

There are several major roadblocks standing between ASEAN and an advanced digital economy and society. To bring about a full digital revolution, the following barriers will need to be addressed:

— Weak business case for building out broadband
— Regulations inhibiting innovation in mobile financial services and e-commerce
— Low consumer awareness and trust hindering the uptake of digital services
— No single digital market
— Limited supply of local content, primarily due to a weak local digital ecosystem

In short, ASEAN needs a comprehensive overhaul of both in-country and cross-border (regional) regulations, addressing both supply-side and demand-side objectives. On the supply side, countries within ASEAN should strive to strengthen the business case for investment in digital infrastructure, revisit regulations for key sectors (such as financial services), and boost the local digital ecosystem. On the demand side, ASEAN countries should create a single digital market and take steps to aggressively expand access to broadband.

The solutions

To address both the demand-side and supply-side challenges, policy makers should consider the following five measures or sub-revolutions:

Pursue a broadband revolution

— Increase broadband access by improving the business case for investing in digital infrastructure by, for example, hastening the release of digital dividend by 2017 across ASEAN and allocating at least 20MHz of that digital dividend spectrum for top operators; allocating spectrum more efficiently; adopting technology neutrality; and ensuring healthy operator economics (no more than four operators per country)
— Promote digital literacy and improve awareness of the benefits of a digital society

Accelerate innovation in mobile financial services, e-commerce, and connected cities

— Allow for the creation of digital-only banks and aim to scale up existing mobile payment systems
— Create a single digital payment platform—first in-country, then across ASEAN
— Establish clear and simple regulations around digital payments (for example, cash-in/cash-out points, KYC, and AML), which are harmonized across ASEAN to facilitate cross-border trade and remittances
— Build 35 smart cities by 2025; provide tax incentives for M2M and IoT technologies
ASEAN has an opportunity to leapfrog to the forefront of the fast-moving global digital economy.

Enhance trust and security in ASEAN’s digital economy
— Create a national electronic ID (linked to a mobile number) in each country for delivery of appropriate government services and to ensure interoperability across ASEAN
— Harmonize cybersecurity, data protection, e-signature, and privacy laws across ASEAN
— Create a world-leading ASEAN-wide agency to fight cybercrimes similar to JCAT of Europol

Strengthen local digital economies
— Ensure Internet-only (OTT) players follow the same rules as conventional telecom operators with respect to emergency calls, interoperability, and other areas—same service, same rules
— Realize local economic contributions from international OTTs through fair tax regimes via respective diverted profit and consumption taxes and local employment

Foster digital innovation within ASEAN
— Revamp K-12 and higher education systems to develop the skills required for the 21st century, while digitizing other sectors of the local economy
— Ensure the digital ecosystem is ready to be an active enabler; for example, 100 percent broadband access in all schools (urban, suburban, and rural areas) and colleges in ASEAN by 2020
— Nurture and protect local innovation by ensuring that they are digitally led (and thus ready for the 21st century) and get sufficient protection for intellectual property rights

If ASEAN can implement these policies effectively, the region will be propelled into the vanguard of the digital revolution, making ASEAN’s national economies more competitive and enriching the lives of citizens. Realizing this opportunity should be a top priority for the new ASEAN Economic Community. The first step is for ASEAN to create a Digital Economy Promotion Board to make recommendations on the digital economy, conduct market analysis, and establish and track metrics on ASEAN-wide digital progress to ensure this ASEAN digital revolution becomes a reality.
1. ASEAN today and its digital potential

Key trends shaping the digital economy

The number of Internet users has grown rapidly over the past decade and today two-fifths of the world’s population is online. Increasingly equipped with smartphones, consumers depend on the Internet for a growing range of everyday activities, from connecting with friends and family to shopping and banking. Businesses also harness the Internet extensively across their operations. A complex and dynamic value chain comprising both global and local players has developed to deliver digital services to consumers and businesses. The digital economy’s value chain broadly consists of three elements: devices, networks, and applications (see figure 1 on page 5).

Devices include smartphones, tablets, PCs, game consoles, wearables, sensors, and the growing range of connected machines and vehicles that make up the Internet of Things. Systems and software-enabled devices run applications, while fixed, mobile, and satellite networks connect devices to the Internet.

Applications include online services, content rights, and the enabling technologies to deliver them. Online services are the most visible and most dynamic part of the digital value chain. Video, music, gaming, social media, over-the-top (OTT) communications, e-commerce, local information services, and search are among the applications that are becoming increasingly indispensable to the digital citizen.

A complex and dynamic value chain comprising both global and local players has developed to deliver digital services to consumers and businesses.

3 International Telecommunication Union
The ASEAN digital revolution
The ASEAN digital economy currently generates approximately $150 billion in revenues per year. Connectivity and online services are the biggest components, each accounting for 35 to 40 percent of overall revenues. The user interface (including devices, systems, and software) constitutes the third largest segment, accounting for close to 20 percent of revenues. Content and enabling technologies constitute the remaining 10 percent. However, these elements are growing at very different speeds. For example, connectivity revenues are expected to grow just 3 to 5 percent per year, whereas online services are likely to grow at more than 15 percent CAGR over the next five years (see figure 2).

Major trends in the digital economy—the advent of the multiple screen environment, social networking, growth in big data and augmented reality, personalized advertising, and the rise of the cloud—will result in a CAGR of 50 to 60 percent in data traffic in the future. However, the revenue generated by connectivity providers is stagnating as OTT players cannibalize voice and messaging revenues, while data prices are eroded by growing adoption of flat-rate plans. On the other hand, the revenue generated by online services, enabling technologies, and content rights is growing rapidly.

These dynamics are leading to unsustainable industry economics. Investors are rewarding players that generate and consume traffic, increasing their market capitalization (see figure 3 on page 7). But the players that carry this traffic are required to make significant investments in infrastructure while earning only marginal incremental revenues, meaning they are penalized by investors.

Figure 2
The ASEAN digital economy generates about $150 billion in revenues annually

$billions, revenues 2015

<table>
<thead>
<tr>
<th>Content rights</th>
<th>Online services</th>
<th>Enabling technology and services</th>
<th>Connectivity</th>
<th>User interface</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5–$7</td>
<td>$55–$65</td>
<td>$3–$7</td>
<td>$51–$59</td>
<td>$29–$33</td>
<td></td>
</tr>
</tbody>
</table>

Forecast 15/20 CAGR:

- 10%–15%
- 15%–20%
- 10%–15%
- 3%–5%
- 15%–20%

Sources: Ovum, PwC, Gartner, eMarketer, Buddecom, TechNavio; Kearney analysis
In the past five years, online services have created close to five times the value of connectivity

Indexed market cap

Source: Kearney analysis

ASEAN can be a global digital leader

ASEAN’s strong and vibrant economy, favorable demographics, ICT investments, and ongoing economic integration have laid the foundation for the region to become a global leader in the digital economy.

If ASEAN were a single country, with a combined GDP of $2.5 trillion, it would be among the largest economies in the world, behind only the US, China, Japan, Germany, the UK, and France. The six largest economies in ASEAN (Indonesia, Thailand, Malaysia, Singapore, Philippines, and Vietnam) contribute 99 percent of the total ASEAN GDP. Economists project GDP will grow at about 9 percent from 2015 to 2020, which falls between GDP growth forecasts for China and India (see figure 4 on page 8).

ASEAN is home to more than 628 million people—around 10 percent of the world’s population. The literacy rate is high at 94 percent. Some 40 percent of citizens are under 30 years of age and are digital natives; this generation is learning to champion disruptive thinking and is primed to innovate.

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4 International Monetary Fund
5 Literacy rates among adults (15 years and older)
6 A person born during or after the general introduction of digital technology and has a greater understanding of its concepts through interactions with digital technology from an early age
ASEAN’s ICT sector has evolved at a phenomenal pace in the past few years. ICT investment, which amounted to more than $100 billion in 2014, is now growing at more than 15 percent annually. Indonesia alone has set aside $150 billion for ICT investments over the next three years.

Moreover, the implementation of the ASEAN Economic Community, which pledges to promote free movement of goods, services, investment, skilled labor, and free flow of capital, has created a renewed sense of optimism and urgency for economic integration in the region. Growing integration should help the region’s nascent digital economy realize greater economies of scale.

ASEAN still punches below its weight

In the past 10 years, ASEAN governments have made significant investments in infrastructure to provide access to ICT and increase adoption across the region. Although much has been done, there is considerable room for improvement.

There remains a significant digital divide within ASEAN. Singapore is the only country in the top 10 of the United Nations ICT Index and the top 20 of the Economist Intelligence Unit Digital Economy ranking. It is also the only ASEAN nation that has been considered a “Stand Out Country” in the Digital Evolution Index (see figure 5 on page 9).
### Figure 5

No ASEAN country other than Singapore features consistently and prominently in global digital indices

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Singapore</td>
<td>16</td>
<td>8</td>
<td>I – Stand out</td>
</tr>
<tr>
<td>Brunei</td>
<td>66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>71</td>
<td>36</td>
<td>II – Break out</td>
</tr>
<tr>
<td>Thailand</td>
<td>81</td>
<td>49</td>
<td>II – Break out</td>
</tr>
<tr>
<td>Vietnam</td>
<td>101</td>
<td>62</td>
<td>II – Break out</td>
</tr>
<tr>
<td>Philippines</td>
<td>103</td>
<td>54</td>
<td>II – Break out</td>
</tr>
<tr>
<td>Indonesia</td>
<td>106</td>
<td>65</td>
<td>IV – Watch out</td>
</tr>
<tr>
<td>Cambodia</td>
<td>127</td>
<td></td>
<td></td>
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<tr>
<td>Laos</td>
<td>134</td>
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<tr>
<td>Myanmar</td>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>14</td>
<td>3</td>
<td>I – Stand out</td>
</tr>
<tr>
<td>China</td>
<td>86</td>
<td>56</td>
<td>II – Break out</td>
</tr>
<tr>
<td>India</td>
<td>129</td>
<td>58</td>
<td>II – Break out</td>
</tr>
<tr>
<td>EU</td>
<td>18</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>GCC</td>
<td>38</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>NAFTA</td>
<td>44</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>MERCOSUR</td>
<td>78</td>
<td>48</td>
<td></td>
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<tr>
<td>ASEAN</td>
<td>95</td>
<td>45</td>
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</tbody>
</table>

* Stand out = High digital development; Break out = Strong potential but low score; Watch out = Both opportunities and challenges and low scores

Sources: ITU, EIU, Tufts University; Kearney analysis
To highlight the potential root causes of this underperformance, figure 6 compares ASEAN countries with developed countries (such as the United States, the United Kingdom, and Germany) across various key enablers, such as spectrum availability, number of operators, and digital literacy, spanning the three elements of the digital economy (devices, networks, and applications). It shows that ASEAN is not a monolithic bloc—there are three distinct groups of nations within the region:

ASEAN 1 (Malaysia and Singapore) matches the performance of developed countries but still lags in spectrum availability, innovation environment, regulatory environment, and digital literacy.

ASEAN 2 (Thailand, Indonesia, and Philippines) displays significant gaps in market competitiveness, spectrum availability per operator, and regulatory environment.

ASEAN 3 (Vietnam, Myanmar, and Cambodia) underperforms its ASEAN peers in all categories except regulatory environment.

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7 Average spectrum available per operator in ASEAN is 20-40 percent lower than developed countries, though it is higher in many cases (for example, Telstra has 118MHz and Celcom 67MHz).

8 Indonesia, Malaysia, Thailand, Cambodia, Laos, and Vietnam have five or more operators.
In ASEAN, the policy enablers for a digital economy have not kept pace with those in the EU, as shown in figure 7. Policy enablers have two facets: First, each individual country must have the right regulations in place to support the digital economy. This entails ensuring that vital enablers, such as sustainable market structures, supportive spectrum policies, privacy laws, digital signature laws, data protection, and incentives are in place to support universal broadband access, mobile financial services, e-commerce, and other key areas of the digital economy. Second, these policies need to be extended and harmonized across the economic community to create a single digital market.

Gaps in the policy enablers required to support devices, networks, and applications means that most ASEAN countries lag other nations in “sunrise sectors” associated with the digital economy, such as mobile financial services, e-commerce, and cloud services. For example, figure 8 on page 12 shows that in most ASEAN countries, e-commerce still accounts for a very small percentage of overall retail sales.

Sources: European Commission: Digital Agenda for Europe, press reports; Kearney analysis

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**Figure 7**

**There is minimal policy harmonization across different countries**

<table>
<thead>
<tr>
<th>European Union</th>
<th>ASEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Region-wide digital vision</strong></td>
<td>— Single digital agenda defined by seven growth pillars with 111 action items</td>
</tr>
<tr>
<td></td>
<td>— Digital Economy and Society Index (DESI) ranks EU countries across five segments and metrics</td>
</tr>
<tr>
<td><strong>Consumer protection (privacy, cybersecurity)</strong></td>
<td>— EU-wide common privacy initiatives established by EU Data Protection Directive and ePrivacy Directive</td>
</tr>
<tr>
<td></td>
<td>— Cybersecurity identified as regional priority under Single Digital Agenda (Pillar III), supported by 14 EU-wide action items</td>
</tr>
<tr>
<td><strong>Development of e-commerce and MFS</strong></td>
<td>— Mobile-only banks are operational, including Fidor Bank, Number26 (Germany) and Hello Bank!, BNP Group (France)</td>
</tr>
<tr>
<td></td>
<td>— Efforts underway to have an EU-wide payments platform</td>
</tr>
<tr>
<td><strong>Digital public services</strong></td>
<td>— Large-scale pilots for EU-wide public services</td>
</tr>
<tr>
<td></td>
<td>— e-ID: Access another country’s citizens’ IDs and info</td>
</tr>
<tr>
<td></td>
<td>— eHealth: Interoperability between national health systems to check benefits anywhere in EU</td>
</tr>
<tr>
<td><strong>Industry structure (definition of digital, OTT)</strong></td>
<td>— EC plans to increase telecom regulations with common rules covering OTT players and cable operators</td>
</tr>
</tbody>
</table>

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11 The ASEAN digital revolution

Sources: European Commission: Digital Agenda for Europe, press reports, Kearney analysis
ASEAN member states are still fairly nascent in e-commerce

Evolution of e-commerce % of total retail in select countries

<table>
<thead>
<tr>
<th>Countries</th>
<th>Nascent</th>
<th>Growth</th>
<th>Mature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vietnam</td>
<td>9</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Thailand</td>
<td>12</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Singapore</td>
<td>12</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Philippines</td>
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<td>Indonesia</td>
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<td>Malaysia</td>
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</tr>
<tr>
<td>Thailand</td>
<td>0</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>
| Sources: Euromonitor, Planet Retail, eMarketer, iResearch, Technavio, Kearney analysis

2. The possible future: ASEAN in 2025

ASEAN has the potential to leapfrog other countries and rank as an elite global digital economy. A true digital revolution will transform ASEAN by 2025. Singapore, Malaysia, and Thailand should be in the top 20 of the global digital rankings, while all other ASEAN countries should be ranked in the top 40 worldwide. Achieving this ambition would go hand in hand with delivering a substantial increase in GDP across the 10-nation bloc. Transforming ASEAN into a global digital economy powerhouse could potentially generate an additional $1 trillion in GDP over the next 10 years (see figure 9 on page 13). Realizing this goal will require a joint effort and a shared vision across ASEAN.

The uplift to GDP will be led by three major factors: 1) an increase in broadband penetration, 2) higher worker productivity, and 3) new digital industries, such as e-commerce and mobile financial services.

First, on the supply side, multiple studies across different geographies in the world have shown that a 10 percentage point increase in broadband penetration increases GDP growth by 0.16 to 0.25 percentage points. In addition, studies have shown that doubling the broadband speed can add 0.3 percentage points to annual GDP growth. The immediate impact of an increase in broadband penetration is akin to the impact of any infrastructure project, with a rise in employment and multiplier effect on other industries. Moreover, an increase in broadband access for households and enterprises boosts income and the consumer surplus, further fueling GDP growth.

Koutrompis, Imperial College (2009), Qiang World Bank (2009), Katz (2010, 2012)
Ericsson, Socioeconomic effects of broadband speed
Second, on the demand side, equipping employees with digital tools is likely to increase their productivity by 4 to 8 percent and create a higher-skilled ICT workforce in the long run.\textsuperscript{11}

Finally, digitization will spur the development of new industries, such as e-commerce, mobile financial services, IoT, and cloud computing. Each of these industries will contribute to GDP growth in multiple ways. For instance, e-commerce can boost GDP growth by improving the efficiency of existing sales while also promoting the growth of allied industries, such as logistics, infrastructure, and payments.

Research has also shown that e-commerce increases spending by meeting latent demand more effectively than conventional commerce.\textsuperscript{12}

By 2025, ASEAN could have all the key characteristics of an advanced digital economy (see figure 10 on page 16).

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\textsuperscript{11} GSMA Mobile Money (2013)

\textsuperscript{12} Liu (2013), OECD papers on digital economy

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Daily life goes digital

By 2025, ASEAN could be home to scores of smart cities and be well on its way to becoming a cashless society.

An increasingly cashless society

As cash is gradually replaced by secure, straightforward, and standardized digital payment mechanisms, many more ASEAN citizens will be able to participate in the digital economy. Although the existing digital payment landscape—encompassing proximity payments (as enabled by near field communications and Apple Pay), mobile remittances, and mobile wallets—is very fragmented, there is likely to be a shift toward more standardized and interoperable solutions over the next decade (see sidebar: Recent events in the move toward a cashless society on page 14).
Recent events in the move toward a cashless society

**United States:** The rise of Bitcoin and other new “wallet” services has created new competition for traditional players in the payments space, with Amex’s CEO, Ken Chenault, declaring he does not fear the demise of plastic. Nimbl, a recent start-up, aims to make ATMs obsolete.

**Sweden:** Set to become the world’s first cashless society. Less than 80 billion Swedish crowns are in circulation (about €8 billion), with only 40 to 60 percent in regular circulation.

**France:** Disallowed any cash transactions over €3,000.

**Australia:** With a joint effort toward e-payments and e-banking, Australia has made significant progress toward becoming a cashless society.
Australia is moving toward becoming a cashless society

1830
Pay by check is an everyday experience

1913
First series of Australian bank notes

1974
The first credit card issued by a financial institution in Australia

1977
First ATM in Australia

1980
Credit cards become more prominent

1983
Beginning of electronic point-of-sale debit card system

1990
Beginning of telephone and Internet banking

1997
Introduce paying bills by telephone and Internet banking

2000
Debit cards provided by international card programs become popular

2005
PayPal begins operations in Australia

2010
Chip cards, contactless payments, mobile banking, and online currencies are part of daily lives

2012
Mobile banking for bill paying becomes popular

2013
Australia has the highest contactless transaction per capita of any country

Australia
- Ranks 6th in the world for share of non-cash payments; transactions account for 86% of total payment value
- 99% of population has a bank account
- 79% of population has a debit card
- In 2012, more than 2.3 billion debit card transactions completed
- 780,000 terminals for debit cards (one terminal for 30 people)

From 1994, value of debit card spending increased 20 times; value of credit card spending increased 12 times

Sources: Australian Payments Clearing Association (APCA) research and website, PayPal research; Kearney analysis
Today, most new digital payment solutions lack the scale to be profitable and sustainable, but mobile connectivity can and will gradually change the economics of financial services and ultimately enable countries to finally move beyond cash. With a direct connection to a large subscriber base, a mobile operator can lower the cost structure of a traditional bank, reducing the need for brick-and-mortar branches. Each mobile phone can become a “personal bank in the pocket,” allowing citizens to access a wide range of financial services using a browser or app on their handset.

In some markets, Internet-only banks, which provide all traditional forms of banking services without a branch, are proliferating. Fidor Bank, Charter Savings Bank, Atom, and others are already operational in the EU, while South Korea is in the process of launching its first Internet-only bank. These are branchless banks with consumers accessing services from their smartphones, PCs, and tablets. Not only do these banks add to the productivity of their customers, they also significantly lower the cost of serving their customers. Lower cost of servicing helps these banks reach the unbanked.

Innovations in mobile financial services will increase financial inclusion and help replace inefficient cash payments with digital transactions. As a result, by 2025, it will be easy for the vast majority of ASEAN’s citizens to transact in the digital economy.

**Smart cities**

In ASEAN, 34.5 million people are set to migrate into cities by 2025, increasing the urban population by 25 percent. This influx will intensify existing pollution, traffic levels, and demand for energy.

To address these challenges, ASEAN’s political leaders, like their counterparts elsewhere, will create smart cities, either greenfield or brownfield (see sidebar: “Decongesting” cities with smart technology on page 17). China has allocated more than $300 billion to make 600 cities smarter. India recently announced plans to build 100 smart cities across the country, some in partnership with Singapore. Recent studies have shown that connectedness can add an additional 0.7 percentage points to GDP growth.

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13 Nielsen, The Age of ASEAN Cities
14 DNV Energy and Sustainability
If ASEAN pursues the right approach, it has the potential to create 35 smart cities by 2025 (see figure 11 on page 18). The first cities to become smarter are likely to be the largest metropolitan areas in ASEAN, where the challenges posed by rapid urbanization are at their most intense. ASEAN governments are likely to support the development of smarter cities through policy enablers (typically taxation incentives, both for operators and service providers) that encourage the adoption of the latest connected technologies, such as smart meters and big data analytics for smart policing, monitoring, and regulation of traffic. If key smart city technologies are standardized across ASEAN, implementation will be quicker and more cost-effective.

Local champions lead the way

In ASEAN, a clutch of innovative and entrepreneurial companies is likely to blaze a trail toward digitization, giving the region’s economy real momentum. As early adopters of new digital technologies, business processes, and business models, these champions will showcase the potential of digitization to boost efficiency and effectiveness across the economy.

Some of these champions will be at the forefront of mobile financial services and e-commerce, two closely related sectors at the heart of the digital economy. Both mobile financial services and e-commerce have enormous potential in ASEAN as purchasing power rises, GDP continues to grow at 6 percent per year, the youthful middle class expands, and Internet penetration rises. Between now and 2025, both mobile financial services and e-commerce have scope to grow rapidly: Although ASEAN would be the world’s third most populous “country,” it only accounts for less than 1 percent of the global online retail market. This is low compared to China, which accounts for 5 percent (see figure 12 on page 18).

“Decongesting” cities with smart technology

On a mission to become the smartest city in the world, Amsterdam is quickly turning into a futuristic tech hub as the city promotes partnerships between businesses, authorities, research institutions, and citizens.

Amsterdam’s smart city strategy is the result of an open-source data initiative. The city is one of eight across Europe participating in the CityService Development Kit (CitySDK). It documents and distributes real-time data and provides people and organizations with open application programming interfaces (APIs) to allow them to build products and services that serve the community. Today, the organization has 100 partners who are involved in 70 projects in Amsterdam. To improve traffic flow in and around Amsterdam, an integrated and automatic management system was implemented using CitySDK. The initiative has reduced the time people spend sitting in traffic by 10 percent. The city expects to see further benefits as the system is integrated with drivers’ in-car navigation systems.

Singapore was among the first cities in the world to make use of an electronic road pricing (ERP) system for managing road congestion. Recently, the country installed a number of user-friendly public transport facilities, such as air-conditioned integrated transport hubs and the Intelligent Route Information System (IRIS) to facilitate the use of public transportation.

Jakarta, plagued by extreme traffic gridlock, is also harnessing smart city solutions to serve its residents as it aims to build a smart city by 2018, ahead of hosting the Asian Games. In the first phase of the Jakarta Smart City, a mobile app will integrate the administration’s existing crowdsourcing website Qlue, with traffic info and chat platform Waze and CROP (an app used by officials to respond to drivers’ traffic complaints). Jakarta also plans to install thousands of CCTV devices with 4G Internet connections to the traffic command center.
Figure 11
A plan for ASEAN smart cities

35 smart cities across 10 countries

Source: Kearney analysis

Figure 12
ASEAN makes up less than 1% of the global retail e-commerce market

2014, US$ billion

Global retail e-commerce

Global retail e-commerce

United States
- 319 mn inhabitants
- 269 mn Internet users
- 200 mn digital buyers

China
- 1,368 mn inhabitants
- 626 mn Internet users
- 346 mn digital buyers

Japan
- 127 mn inhabitants
- 110 mn Internet users
- 87 mn digital buyers

ASEAN Six
- 646 mn inhabitants
- 160 mn Internet users
- 88 mn digital buyers

ASEAN makes up less than 1% of the global retail e-commerce market.

Note: Bubble size indicates retail e-commerce market size, US$ billion (share of global market size)
Source: eMarketer, IMF, ITU; Kearney analysis

The ASEAN digital revolution
Widespread adoption of mobile financial services and e-commerce will fuel the growth of local players and international groups. In Kenya, Vodafone runs a hugely successful mobile financial service called M-Pesa. Given the low banking penetration (80 percent of the population is unbanked), high mobile penetration (50 percent+), and favorable regulations, M-Pesa had the perfect conditions in which to grow. Launched in 2007, M-Pesa now has a user base in excess of 20 million (out of a total population of 44 million) and annual transactions in excess of $10 billion.

As global players such as Ebay, Groupon, and Rocket Internet enter ASEAN’s online retail market, innovative new local players are also entering the market. To date, four e-commerce unicorns have emerged from the ASEAN region: Vietnam’s VNG (valued at $1 billion; specializes in digital content, online entertainment, social networking, and e-commerce); Thailand’s Lazada (valued at $1.2 billion; an e-commerce company that was founded by Rocket Internet); Singapore’s Garena (valued at $1 billion; a leading platform provider for online entertainment and communication tools); and Malaysia’s GrabTaxi (valued at $1.5 billion; a mobile taxi-hailing app available in six countries: Malaysia, Singapore, Thailand, Vietnam, Indonesia, and the Philippines) (see sidebar: The darlings of South East Asia).15

The darlings of South East Asia

In three short years, GrabTaxi has become one of four e-commerce unicorns to originate from South East Asia. Starting out as an app connecting users to licensed taxis, it has since expanded to cover Uber-style private cars (GrabCar), motorbikes (GrabBike), and logistics (GrabExpress). It has raised a total of $700 million since inception. The most recent round in August 2015 raised $350 million, reflecting investors’ confidence in GrabTaxi. Valued at $1.5 billion, it is backed by big-name tech firms, including Didi Kuadi, China’s largest taxi-app firm.

Tokopedia is another darling in the region. This e-commerce platform based in Indonesia allows individuals and small and midsize business owners to open and maintain their own online stores. Similar to online marketplaces from Alibaba and Amazon, Tokopedia offers a range of merchandise from clothing to household items. The company recently raised more than $100 million, establishing a new record for the single biggest venture capital investment in a local Indonesian tech company.

15 Private companies valued at more than $1 billion
**Figure 13**

**Digital disruption can happen across different industries**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>News and information</strong></td>
<td><strong>Entertainment</strong></td>
</tr>
<tr>
<td>— Delayed content</td>
<td>— Lean back/lean forward</td>
</tr>
<tr>
<td>— Dedicated professionals</td>
<td>— Real time</td>
</tr>
<tr>
<td>— Editorial control</td>
<td>— Citizen reporting</td>
</tr>
<tr>
<td>— Multichannel</td>
<td>— Social discovery</td>
</tr>
<tr>
<td>— Online, portable health records</td>
<td>— Interaction</td>
</tr>
<tr>
<td>— On-demand access to doctors</td>
<td>— Twitter followers</td>
</tr>
<tr>
<td>— Remote (self-) diagnosis and prescriptions</td>
<td>— Managed usage (smart metering)</td>
</tr>
<tr>
<td>— Bespoke plans and dynamic pricing</td>
<td>— Online working groups</td>
</tr>
<tr>
<td>— Online, portable health records</td>
<td>— Data exchange and mutual sharing</td>
</tr>
<tr>
<td>— On-demand access to doctors</td>
<td>— Editing and instant messaging</td>
</tr>
</tbody>
</table>

| **Education** | **Healthcare** |
| — Learning by listening | — Hard to access, remote medical records |
| — Many local languages | — Appointments and wait times |
| — Learning by doing | — Multiple visits and specialists |
| — Few global languages | — Online, portable health records |
| — Social discovery | — On-demand access to doctors |
| — Twitter followers | — Remote (self-) diagnosis and prescriptions |
| — Online working groups | — Managed usage (smart metering) |
| — Data exchange and mutual sharing | — Bespoke plans and dynamic pricing |
| — Editing and instant messaging | — Online working groups |

| **Energy** | **Collaboration** |
| — Metered usage | — Meetings |
| — À la carte charging | — Whiteboards |
| — Learning by doing | — Teleconferences |
| — Few global languages | — Online working groups |
| — Social discovery | — Data exchange and mutual sharing |
| — Interaction | — Editing and instant messaging |

Source: Kearney analysis

---

**Embracing Industry 4.0**

Digitization isn’t limited to ICT industries; it is also disrupting traditional industries (see figure 13). It involves three key elements: digitizing product and service offerings (for example, remote health monitoring), digitizing customer engagement (for example, digital channel for sales and digital self-serve channels), and digitizing internal operations to increase productivity (for example, digitizing the sales force).

As labor costs rise in the manufacturing and engineering sectors, digitization will help ASEAN move up the economic value chain. Technology sensors and devices are being integrated into equipment and machinery through the Internet of Things, while advances in computational ability are enabling the analysis of huge amounts of information (big data) related to production, logistics, and sales. In the future, factories will be far more flexible than today in terms of producing individual products and achieving higher efficiency. Manufacturing will be faster, lower-cost, and higher-quality (see sidebar on page 21: Industry 4.0 in action).
Over the next decade, Industry 4.0 will emerge in South East Asia, aided by support from far-sighted business and political leaders. Industry 4.0 consists of the intelligent networking of product development and production, logistics, customers, and beyond. We will begin to see intelligent machines and smart factories that will bring about the Fourth Industrial Revolution. The resulting revolution in ASEAN’s manufacturing sector will increase the region’s productivity and competitiveness, while lowering unemployment rates and creating higher-wage jobs.

Discrete manufacturing industries, from automotive to electrical and electronics, will all benefit from the operational efficiencies reaped from the new technologies. In Singapore and Malaysia, high-value product manufacturing, such as printed electronics and miniaturization, could undergo a high degree of automation and optimization. These sectors will be among the first to integrate Industry 4.0 into their production platforms.

In Siemens’ Electronics Works facility in Amberg, Germany, products communicate directly with production equipment and IT systems control and optimize processes to minimize defects. The Amberg factory showcases Siemens’ “digital enterprise” concept where new production methods are transforming manufacturing facilities over the next few years.

Products control their own assembly by communicating directly with manufacturing equipment, using a product code to relay specific requirements and next steps in production. As a result, production equipment and computers are responsible for 75 percent of the value chain. According to Siemens, the only time a human hand touches the basic component—an unpopulated printed circuit board (PCB)—is at the start of production when an employee places it on the production line. From then on, everything is run by machines. Yet, humans are still indispensable in developing products and production processes, planning production, and handling unexpected incidents.
Fast and efficient public services

There has been a sea change in the way consumers expect to use technology. We now regard it as a consumable, similar to a utility that is always on, mobile, and open (works seamlessly with everything). Consequently, citizens now expect to see these same technology benefits realized in public services.

In response, public sector agencies across the world are attempting to transition from a closed, bureaucratic, and paper-based transactional model toward online, integrated, digital offerings that encourage a new kind of interaction between citizens and the state.

In the EU, several efforts are underway to develop cross-border digital public services. The European Commission, for example, is supporting the provision of interoperable systems and key enablers, such as e-signatures and e-identification. There has also been a push to remove barriers to the cross-border use of electronic identification to access public services. This will enable secure and seamless electronic interactions to take place between businesses, citizens, and public authorities across the EU.

Since the 1990s, ASEAN governments have launched multiple initiatives to use information technology to modernize public services. For example, the Malaysian government has undertaken an e-government initiative to focus on increasing efficiencies while reducing operational costs of public services. Singapore set up the Government Electronic Business Centre (GeBiz) in 2000 to simplify government procurement and tender activities. In addition to increasing efficiencies and cost savings, GeBiz has introduced greater consistency in procurement practices and greater transparency in transactions.

A key starting point for digitized public services delivery is the ability to uniquely identify each citizen with a national ID, which serves as a gateway to public services. In ASEAN, there are varying levels of national ID systems across the nations, with Singapore and Malaysia pioneering the development of advanced integrated systems, while the Philippines only recently approved a bill to implement a national ID system.

Over the next decade ASEAN countries could make the transition to integrated and citizen-centric governance. Progress will depend on IT skills, empowerment, and the flow of information across silos, departments, and organizations. By 2025, all public services, both domestically and across borders, should be available digitally within ASEAN.

Consumers now regard technology as a consumable, similar to a utility that is always on, mobile, and open (works seamlessly with everything).
The rise of digital natives

By 2025, citizens across ASEAN should be fully engaged in the digital economy. Empowered to use digital technologies and services in both their professional and personal lives, the majority of ASEAN’s people will become digital natives, entirely comfortable in an online world.

Achieving this kind of empowerment will be a gradual process that will evolve over the next decade. First, awareness of digital technologies and services will rise, building digital literacy and enabling citizens to explore the digital world. These same citizens will then create more local language content, suited to local culture and tastes, further encouraging their friends, colleagues, and compatriots to actively consume and engage in the digital world. If the public and private sectors work together to ensure individuals are protected as they make monetary or data transactions on the Internet, people will feel increasingly safe and comfortable online. Ultimately, consumers will come to rely on digital technologies and services, changing the way they lead their daily lives and leading to more innovation and efficiencies (see figure 14).

Figure 14
Internet users will gradually rely on digital technologies and services

<table>
<thead>
<tr>
<th>Stages of digital reliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
</tr>
<tr>
<td>— First-time users</td>
</tr>
<tr>
<td>— Experiencing Internet through social media</td>
</tr>
<tr>
<td>— Engaging in short messaging</td>
</tr>
<tr>
<td>— No major language barriers</td>
</tr>
<tr>
<td>Interacting with friends</td>
</tr>
<tr>
<td>Stage 2</td>
</tr>
<tr>
<td>— Repeat users, savvy in social media</td>
</tr>
<tr>
<td>— Increasingly searching for content, using apps</td>
</tr>
<tr>
<td>— Consuming video</td>
</tr>
<tr>
<td>— Language barriers emerging</td>
</tr>
<tr>
<td>Consuming content</td>
</tr>
<tr>
<td>Stage 3</td>
</tr>
<tr>
<td>— Experienced Internet users</td>
</tr>
<tr>
<td>— Transacting online and on mobile</td>
</tr>
<tr>
<td>— Significant enabling platform barriers</td>
</tr>
<tr>
<td>Transacting online</td>
</tr>
<tr>
<td>Stage 4</td>
</tr>
<tr>
<td>— Cannot do without Internet</td>
</tr>
<tr>
<td>— Using Internet to connect humans and machines and vice versa</td>
</tr>
<tr>
<td>— Integrating Internet into day-to-day life</td>
</tr>
<tr>
<td>Integrating machines</td>
</tr>
</tbody>
</table>

Source: Kearney analysis
In Kenya, MFS gives citizens a role in the digital economy

**MFS product offerings**

- **Micro savings account** — Facilitates the transfer of money through mobile handsets
- **Micro credit (overdraft)** — Lending amount varies from US$ 1.5 to 70
- **Micro insurance** — Premium varies from US$ 7 to 14, depending on payment terms

**Account penetration (% of total population)**

<table>
<thead>
<tr>
<th>Mobile money account</th>
<th>Financial institution account only</th>
</tr>
</thead>
<tbody>
<tr>
<td>58%</td>
<td>17%</td>
</tr>
</tbody>
</table>

**Everyday digital payments (% of total payment type)**

<table>
<thead>
<tr>
<th>Remittances</th>
<th>Agricultural payments</th>
<th>School fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>90%</td>
<td>37%</td>
<td>58%</td>
</tr>
<tr>
<td>7%</td>
<td>30%</td>
<td>21%</td>
</tr>
</tbody>
</table>

Note: MFS is mobile financial services
Source: Kearney analysis

Kenya’s homegrown mobile payment system M-Pesa has revolutionized mobile technology. It has provided millions with banking access, no matter how isolated they are. Africans now feel as though they can help develop and become players in the global economy. Interestingly, the mobile phone system has become a model for how goods, services, and ideas should be transferred, all the way from simple remittances to eradicating poverty (see figure 15).

The speed of this process will depend on the extent that ASEAN governments provide more education in technology and thereby increase the ICT abilities and skills of the ASEAN population and workforce.
3. Roadblocks to a full digital economy

Several roadblocks stand between ASEAN and a fully digital economy capable of generating the huge socioeconomic benefits at stake. These roadblocks include:

— Weak business case for building out broadband

— Regulations inhibiting innovation in mobile financial services and e-commerce

— Low consumer awareness and trust hindering the uptake of digital services

— No single digital market

— Limited supply of local content

### Weak business case for building out broadband

ASEAN telecom operators are investing heavily to accommodate exploding data traffic, implement technology upgrades (for example, 4G/LTE and fiber backhaul), and connect communities that do not have access to the Internet, especially in less developed countries such as Myanmar, Cambodia, and Laos. Up to $46 billion of capital expenditure will be required over the next four years in the ASEAN Major Six economies to meet consumer demand for data traffic, in the face of stagnating or declining revenues (see figure 16).\(^{16,17}\) Even in the relatively small economy of Myanmar, the last frontier in telecoms, Telenor expects to spend as much as $1 billion over the next year to provide connectivity, while Japan’s KDDI and Sumitomo Corporation are partnering with Myanmar Posts and Telecommunications (MPT) to invest $2 billion to jointly operate a new converged telecommunications business.

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\(^{16}\) Includes all expenses that are capitalized in an accounting sense, and can include purchases of hardware, software, services, real estate, motor vehicles, office equipment, and other items

\(^{17}\) Indonesia, Thailand, Malaysia, Philippines, Singapore, and Vietnam
In the past, ASEAN suffered from a lack of efficient and sufficient allocation of spectrum. For example, Cambodia awarded spectrum concessions to operators, but some licensees are not operating on them. The unused spectrum can be reassigned to operators willing to utilize them for operation. In Malaysia, eight operators were awarded spectrum in the 2.6GHz band, assigning insufficient spectrum to operators. Allocating a finite resource such as spectrum to too many operators will result in spectrum block fragmentation and limit throughput speeds.

Operators are having to make large investments in infrastructure without a commensurate revenue uplift. Revenues are under pressure from competition from OTT players and an unfavorable pricing structure (for example, flat-rate price plans brought about by hyper-competition). To improve the business case for investment in telecom infrastructure, policy makers need to optimize the allocation of spectrum and address hyper-competition.

The suboptimal allocation of scarce spectrum makes it more expensive for operators to connect end users and can result in their return on invested capital (ROIC) falling below the cost of capital. In ASEAN countries, spectrum allocation is typically 20 to 30 percent lower than in developed economies.

Licensing delays and ambiguous rules are further increasing operators’ costs. For instance, at the time of writing this report, proposed spectrum auctions in Thailand have been delayed, prompting some operators to move ahead with initial deployments of 4G within spectrum that has been re-farmed for 3G use. In the coming auction in Thailand, only two 12.5MHz lots of spectrum in the 1800MHz band are available, while operators say they need at least 20MHz to offer 4G services effectively. In some countries, players that lack the resources and the will to deploy networks have obtained spectrum at the expense of larger established players. For example, in Cambodia, awarded spectrum concessions are currently not being fully utilized by some operators, leading to inefficiencies in the utilization of spectrum. And in Malaysia, nine companies have been awarded licenses, resulting in insufficient spectrum per operator for optimal operations. Moreover, different countries have different approaches to infrastructure (or to setting up tower companies), spectrum sharing, and spectrum trading.

Empirically, four to five operators per geography is the optimal number for a healthy market structure. Our analysis suggests that only the top four players in any geography are able to earn positive returns. More importantly, only the top two players in a geography seem to consistently make returns in excess of their cost of capital (see figure 17 on page 27).

To improve the business case for investment in telecom infrastructure, policy makers need to optimize the allocation of spectrum and address hyper-competition.
As discussed earlier, ASEAN needs to reduce its reliance on physical cash to enable wider and deeper participation in the digital economy. To that end, the region's regulatory frameworks should be revamped to enable greater innovation in financial services and transactions, taking advantage of the widespread use of smartphones in the region.

**Mobile financial services**

In many ASEAN countries, the debate between bank-led versus operator-led models is still prevalent, though other forward-looking countries are moving toward fully digital banks. Two sets of regulations are vital to foster mobile financial services: 1) more industry-friendly and practical, sector-specific regulations to help nurture vibrant mobile financial services, and 2) horizontal regulations relating to cybersecurity, privacy, data protection, and e-signatures that are valid across sectors.

In Europe—the fastest growing region in the world in terms of financial technology (fintech)—the market for such services expanded 215 percent in 2014 to $1.5 billion, aided by rules permitting the establishment of Internet-only banks. The EU is now laying the legal foundations for a single EU-wide payments platform, essentially making cross-border payments as easy, efficient, and secure as payments within a member state.

---

**Figure 17**

Top four operators generate positive returns; top two consistently generate returns over their cost of capital

<table>
<thead>
<tr>
<th>Market leader</th>
<th>Operator #2</th>
<th>Operator #3</th>
<th>Operator #4</th>
<th>Operator #5</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.7%</td>
<td>11.9%</td>
<td>4.7%</td>
<td>5.3%</td>
<td>-4.7%</td>
</tr>
</tbody>
</table>

Average cost of capital band

Note: Based on study of 54 operators worldwide; return on invested capital (ROIC) metrics include last three-year average.

Sources: Bloomberg, GSMA wireless intelligence, operator websites; Kearney analysis.

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18 ETNO report on EU regulatory framework
In ASEAN, there still appears to be barriers for all three main stakeholders—payment service providers, users, and merchants. Extensive research with global payment providers suggests that an open system (that makes it easy to take value out) and bank-style flexibility (ability to deploy the float on loans and investments) are essential to scale up payment systems and make them commercially viable for service providers. Similarly, ease of enrollment and use (ease of KYC, AML, and CDD norms) are crucial for adoption by all three stakeholders; however, most sectorial policies that govern these issues are rather strict and may inhibit mobile financial services from reaching their full potential.

**E-commerce**

Inconsistent and convoluted customs procedures are key barriers to cross-border e-commerce. Import duties vary widely among countries, hampering region-wide e-commerce and consumer adoption. For example, in Singapore, goods valued at less than $300 are shipped duty free, while in Malaysia the limit is around $110. Tax, VAT, and duties also differ for different product types (see figure 18).

For a $100 dress purchased from an ASEAN country, a digital buyer would have to pay an additional 33 percent in duties and taxes in Thailand, Indonesia, Vietnam, and the Philippines. If the dress has to be returned, reclaiming import duties would either be impossible or overly expensive, and in some countries, importing certain product categories also requires import permits. Indonesians are subjected to one of the highest import tariffs for manufactured goods in the region; in July 2015, import duties were raised.

Furthermore, regulations are not harmonized between local and international players. For example, GST is not imposed on international transactions due to enforcement issues or complicated mechanisms; this puts local players at a disadvantage and prevents the innovation ecosystem from booming.

---

**Figure 18**

The total customs value on a $100 dress varies from country to country

<table>
<thead>
<tr>
<th>Country</th>
<th>Value-added tax</th>
<th>Duty</th>
<th>Other tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>$44</td>
<td>$39</td>
<td>$0</td>
</tr>
<tr>
<td>Thailand</td>
<td>$39</td>
<td>$32</td>
<td>$6</td>
</tr>
<tr>
<td>Vietnam</td>
<td>$32</td>
<td>$29</td>
<td>$0</td>
</tr>
<tr>
<td>Philippines</td>
<td>$29</td>
<td>$6</td>
<td>$0</td>
</tr>
<tr>
<td>Malaysia</td>
<td>$6</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Singapore</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

Note: The amount of value-added tax is calculated as a percentage of customs value plus the duty paid.

Sources: Duty calculator; Kearney analysis

The ASEAN digital revolution
Low consumer awareness and trust hindering the uptake of digital services

Low consumer awareness and trust can significantly impede the uptake of digital services and effective participation of citizens in the digital economy.

Consumer awareness

Consumer awareness of digital services is still limited in ASEAN. In a study by Financial Inclusion Insights, only 3 percent of Indonesians are aware of the concept of mobile money and the majority of those who are have only heard of one type of mobile service. In Vietnam, many people are still only using basic mobile services. The majority of smartphone users do not download their own apps and rely on local smartphone stores to preload new phones with apps prior to purchase.

Trust

Eight of the 10 countries most at risk of cyber-attacks are in Asia, and include Indonesia, Thailand, Philippines, and Malaysia; Indonesia has overtaken China as a source of cyber-attack traffic. Thus, it’s not surprising that Internet users in ASEAN are worried when a website requires personal information. Excluding Singaporeans, consumers are also less inclined to share their financial information for an online purchase compared to the global average (see figure 19).

A survey by UM, a division of IPG Mediabrands, finds that more than three-quarters of Filipinos say they are reluctant to share their personal data online. Ninety-one percent of Singaporeans, 89 percent of Malaysians, and 79 percent of Indonesians surveyed by GSMA have concerns about sharing personal information on the Internet and applications via mobile.

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19 Wall Street Journal, July 2015
20 Tech in Asia, March 2013
21 Security Threat Report, 2013 Sophos; Akamai
22 GMA News, 30 June 2014
Lack of a single digital market

A true single digital market requires member states to align their digital visions and strategies to create a single, borderless digital market and harmonized digital regulations.

ASEAN is quite far from realizing this ideal. Only three countries—Singapore, Malaysia, and Philippines—have a mature and comprehensive digital strategy. Indonesia has an ICT master plan focused primarily on connectivity until 2016, with a subsequent focus on creating Indonesia Digital. Thailand’s and Vietnam’s digital strategies are works in progress as of September 2015, with only high-level information available at the time of writing. Cambodia’s and Brunei’s digital strategies are quite nascent, with Brunei focusing mostly on digital government. No information is available on Laos’s digital strategy (see figure 20 on page 31).

Even more importantly, regulations that affect industry structure, such as a cap on foreign ownership, are preventing ASEAN from building a single digital economy. Such caps are commonplace in ASEAN (see figure 21 on page 32). Although there are multiple forums for coordination of spectrum allocation between different countries, there is no single body that has an end-to-end view of all digital economy-related issues.

Harmonization of regulations needs to begin from the top down. This does not mean creating the same laws in different countries. But there is a need for a common standard that applies to digital services in ASEAN, similar to the EU’s privacy directive or the streamlined sales tax system in the United States for cross-state e-commerce transactions. Today, different ASEAN countries are taking very different approaches to infrastructure, spectrum sharing, and spectrum trading, while the maturity of cybersecurity and data protection policies varies significantly from country to country.

Only three countries—Singapore, Malaysia, and Philippines—have a mature and comprehensive digital strategy.

The ASEAN digital revolution
Figure 20
Development of digital strategies varies across ASEAN member states

Only three countries have comprehensive and mature digital strategies

**Singapore**
iN2015 10-year plan with four pillars:
- Ultra-high-speed broadband
- Globally competitive ICT industry
- Infocomm-savvy workforce
- Transform key sectors and government

**Philippines**
Focus on:
- Internet connectivity
- E-government
- ICT industries
- ICT-enabled workforce

**Malaysia**
Objectives:
- Increase digital economy’s GDP contribution to 17%
- Be in top 20 in global IT rankings
- 354 strategy: 3 enablers focus on 5 ICT sectors for 4 communities (for example, youth)

---

**Indonesia**
- Four-phase ICT road map in place (2012 to 2020)
- Focus on broadband connectivity; few details on new digital economy initiatives

**Cambodia**
- Launch ICT master plan (2014), with three pillars: connectivity, capability, and e-services
- No details on actions available online

**Brunei**
- Digital government strategy 2015-2020 in place, but no comprehensive digital economy plan

**Thailand**
- Recently unveiled key themes of digital economy plan revolving around six pillars
- Implementation details not yet clear

**Vietnam**
- Digital strategy 2020 is work in progress; focused on government investment in ICT sector

---

Nascent digital strategies, with Brunei only focusing on digital government and Indonesia on connectivity

Digital strategies still a work in progress with only high-level details available

Source: Kearney analysis
### Key regulations are not harmonized across ASEAN

<table>
<thead>
<tr>
<th>Industry structure</th>
<th>Cap on foreign ownership of operators</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>70% - 65% 49% 20% 49%</td>
<td>SG has no restriction; varying restrictions in other countries</td>
</tr>
<tr>
<td>MVNO allowed</td>
<td>✓ ✓ X ✓ ✓ ✓</td>
<td>ID disallows MVNO, though might change in future</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spectrum and infrastructure</th>
<th>Spectrum sharing allowed</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓ ✓ X X ✓ ✓ ✓</td>
<td>ID and TH explicitly prohibit sharing; spectrum sharing and trading in MY only allowed on a case-by-case basis</td>
</tr>
</tbody>
</table>

| Spectral trading allowed    | ✓ ✓ X X ✓ ✓ ✓            | ID and TH prohibit trading; PH spectrum trading needs prior approval from NTC |

<table>
<thead>
<tr>
<th>Cybersecurity, privacy, and data protection</th>
<th>Government initiatives or agencies to protect cybersecurity</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓ ✓ X ✓ ✓ ✓</td>
<td>MY, SG, TH, and PH have both national cybersecurity agencies and plans; ID no cybersecurity agency; VN has fragmented rulings under different acts</td>
</tr>
</tbody>
</table>

| Specific act on data privacy or protection | ✓ ✓ X ✓ ✓ ✓                                             | SG, MY, and PH have detailed acts; ID privacy regulation underway; TH has passed only data protection bill; VN has fragmented privacy-related rulings |

Sources: ITU, government websites, Ovum, GSMA, Kearney analysis
Limited supply of local content

Many ASEAN countries are trying to build their own start-up ecosystems. Singapore, for example, has a multitude of programs to help local start-ups gain access to funding and expertise to turn their business ideas into reality—government-aided equity financing, cash grants, business incubators, debt financing, and tax incentive schemes are all in the mix. In particular, its equity financing schemes co-invest along with independent third-party investors, promising to match dollar for dollar up to a maximum of S$1 million (known as Spring Seeds) to S$10 million (Early-Stage Venture Funding Scheme).

Similarly, Malaysia has multiple programs in place to help promising start-ups run by Digital Malaysia, MDeC, MAGIC accelerator program, Axiata-MAVCAP venture capital, and many others.

However, the number of Internet start-ups per capita in ASEAN, as a region, lags behind the other tech hubs of the world (see figure 22).

Figure 22
The number of Internet start-ups is low in ASEAN, except for Singapore

Sources: World Startup Report; Kearney analysis
Entrepreneurship is being hindered by an educational system that doesn’t foster an innovation spirit and the heterogeneous nature of ASEAN where most markets, other than Indonesia, lack scale. For more on this, see the section on the lack of a single digital market.

Several international education measurement tables are used to measure a country’s ability to develop individuals within two paradigms: traditional education-oriented and entrepreneurial skills-oriented. The former measures the efficiencies of the traditional curriculum in mathematics, science, and reading while the latter focuses on human elements such as creativity, personality, perceived opportunities, and emotional development (see figure 23). Interestingly, research has shown that in countries that perform well in traditional education, fewer citizens are confident in their entrepreneurial capabilities.23

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23 Creative, Entrepreneurial, and Global: 21st Century Education

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4. Five policy imperatives—and five solutions—to accelerate the digital revolution

There are five steps policy makers can take to eliminate the roadblocks described in the previous section. These steps are:

— Pursue universal mobile broadband access

— Accelerate innovation in mobile financial services, e-commerce, and connected cities

— Enhance trust and security in ASEAN’s digital economy

— Strengthen the local digital economy

— Foster digital innovation within ASEAN

Pursue universal mobile broadband access

The pursuit of universal broadband access should be a top priority. According to the International Telecommunication Union (ITU), more than half the world’s people are still not connected to the Internet. It reveals that only 3.2 billion people would have connected to the Internet at some point during 2015, meaning a further four billion people were incapable of accessing it at all.

In ASEAN, about 67 percent of the population—close to 417 million people—are living without access to basic Internet services. This should be unacceptable for any national government in South East Asia and the implementation of specific and measurable policy actions is needed to ensure no ASEAN countries are left behind. There are many reasons why universal Internet access is not a reality yet in ASEAN, ranging from the high cost of deploying broadband in rural areas to a lack of understanding of the benefits of the Internet. To address these issues, ASEAN member states should seek to:

— Free up and allocate additional spectrum, especially the 700MHz digital dividend, and implement technology neutrality

— Ensure healthy economics for telecom operators

— Support digital literacy initiatives

Free up and allocate additional spectrum

Telecom operators need sufficient spectrum to enable effective provision of region-wide mobile broadband infrastructure and services. A major source of new spectrum is available from the digital dividend as countries switch from analog to digital terrestrial television broadcast. Although ASEAN countries have made a commitment to migrate fully to digital broadcasting by 2020, ASEAN has been slow to allocate spectrum to International Mobile Telecommunications (IMT) (see figure 24 on page 36).
50+ countries have assigned digital dividend spectrum

ASEAN has been slow in allocating IMT

<table>
<thead>
<tr>
<th>Year analog switch-off is complete</th>
<th>Allocation plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>Consultation in progress</td>
</tr>
<tr>
<td>Malaysia</td>
<td>No available information</td>
</tr>
<tr>
<td>Thailand</td>
<td>No available information</td>
</tr>
<tr>
<td>Philippines</td>
<td>No available information</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Possible reallocation for radio communication services</td>
</tr>
<tr>
<td>Vietnam</td>
<td>16 MHz (790 to 806 MHz) announced, rest to be determined</td>
</tr>
<tr>
<td>Brunei</td>
<td>No available information</td>
</tr>
<tr>
<td>Cambodia</td>
<td>No available information</td>
</tr>
<tr>
<td>Laos</td>
<td>No available information</td>
</tr>
<tr>
<td>Myanmar</td>
<td>No available information</td>
</tr>
</tbody>
</table>

Sources: GSMA (worldwide data as of 2014), individual country regulator websites, Kearney analysis
Release of the 700MHz band to be used for mobile broadband would improve operators’ data capacity and indoor coverage, and thus the consumer experience. Moreover, if each ASEAN country were to release this spectrum using a harmonized band plan, the mobile industry would benefit from economies of scale and keep prices low for end users. Four ASEAN member states—Brunei, Indonesia, Malaysia, and Singapore—have committed to align with the APT 700MHz band plan and other member states should follow their example. However, spectrum allocation is still unclear.

Allocating at least 20MHz of digital dividend spectrum to top operators in each country would be a major step in the right direction to deliver a transformative experience for mobile broadband. This would support the development of the new digital ecosystem in the coming years. However, it is important that a regulator independent of the government implement the spectrum assignment and that the spectrum rules be created to ensure that operators have access to:

- The right type of spectrum and the right combination of frequency bands (for example, contiguous 700MHz band)
- Sufficient spectrum (for example, at least 20MHz per operator, per country)
- Affordable spectrum (for example, price per operator does not negatively impact retail pricing or result in a negative ROCE for operators)
- An efficient, fair, and transparent spectrum allocation process (for example, full disclosure of the rules for spectrum allocation, which lots will be auctioned, and a firm commitment to a timeline)

**Ensure healthy economics for telecom operators**

Governments in ASEAN should strive to improve the business case for investment in mobile broadband by ensuring there are no more than four operators per market.

The economics of telecom operators throughout the world are deteriorating. The trend is more pronounced in ASEAN (see figure 25 on page 38). The GSM Association maintains its view that ASEAN markets should support a degree of consolidation or control the number of players, believing that the market functions better with fewer stronger operators that are financially capable of capex investment, rather than multiple weaker ones. According to international research and historical trends, the existence of three to five operators is said to be the magic number to sustain an efficient mobile market.²⁴

A similar situation is occurring in Europe right now. EU’s competition regulators are looking at approving a series of merger and acquisition deals that will consolidate Europe’s mobile market. EU’s position has changed since it last attempted to use managed or “open-access” policies, creating low prices and superficial competition. While hyper-competition has given consumers cheap prices, it has left telecom operators weak at a time when the US is overtaking Europe to become the global pacesetter in the new digital world. Verizon’s 4G/LTE reaches 90 percent of the US population, while its European peer is at 26 percent. Another cause for concern is Europe’s slow pace in its mobile broadband rollout.

²⁴ HSBC Global Research, Telecoms, Media & Technology, Supercollider (February 2014)
Based on a sample of 140 operators worldwide

Sources: Bloomberg, GSMA wireless intelligence, operator websites; Kearney analysis

<table>
<thead>
<tr>
<th>Capex/sales ratio (%)</th>
<th>Global</th>
<th>EU</th>
<th>United States</th>
<th>APAC (excluding ASEAN)</th>
<th>ASEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16</td>
<td>14</td>
<td>14</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>+17%</td>
<td>19</td>
<td>18</td>
<td>18</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>+27%</td>
<td></td>
<td></td>
<td>+3%</td>
<td>+35%</td>
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<td>+3%</td>
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<td>+35%</td>
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<tr>
<td>+27%</td>
<td></td>
<td></td>
<td>+3%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Based on a sample of 140 operators worldwide

Industry consolidation would ensure larger players can invest in new infrastructure and gain access to the necessary spectrum resources required to extend broadband access.

Regulators in ASEAN have established Universal Service Funds (USF) to subsidize deployment in rural areas, using levies collected from operators. Malaysia, Indonesia, Thailand, and Vietnam have USF operator levies in place. Malaysia’s is the highest at 6 percent, while Indonesia levies 1.25 percent of revenue. However, these contributions are imposed on select operators and there is a poor record of spending monies raised due to a combination of non-market approaches, a tendency to favor historic incumbents, and technologies and administrative approaches that have proven to be cumbersome.

Policy makers should reexamine this and consider reducing other sector-related taxes such as license and annual spectrum fees at a time when operators are facing considerable market pressures. Alternatives to encourage universal access include: incorporate coverage obligations, encourage network sharing (including in remote and rural areas to reduce network rollout costs), use transparent service tenders, and provide incentives such as 100 percent claw back of USFs for rural development and implementation of the Last Mile Broadband Incentive that proved to be successful in Malaysia.
Legislation should be structured in a way that supports and incentivizes further investment in mobile networks, encourages infrastructure sharing, and lowers barriers (for example, amending out-of-date property and planning laws) for new radio masts and sites. New regulations should be thoroughly reviewed to sustain the financial ability of operators to develop and invest in innovative network management solutions. Governments could also provide greater access to public land and buildings to deploy mobile infrastructure. Policy makers should aim to promote a vibrant and competitive broadband market to reinvigorate investments.

**Support digital literacy initiatives**

Digital literacy will ensure the community knows the value of the Internet and how it can improve their lives. Three core groups should be targeted in ASEAN—students, the workforce, and senior citizens. Educational curriculum should be continuously updated and schools should also provide sufficient basic equipment such as computers in the classroom to not only teach students the basics, but also to equip them with the right tools. This should provide the young with a working knowledge of computers and the Internet to perform basic functions.

Both white-collar and blue-collar workers should be trained to use ICT to increase their productivity and encourage innovation. The digital economy will transform current work practices, and the workforce should be well equipped to perform both basic and advanced tasks as required. Digital literacy targeted at adults and senior citizens will help diminish the digital skill gaps of the senior age group. It is important that no one be left out.

**Accelerate mobile financial services, e-commerce, and connected cities**

ASEAN needs a single digital regulatory framework that provides guidelines and direction for member countries to streamline, modernize, and harmonize their regulations. The framework should define general guiding principles, supported by transparent processes and outcomes. In particular, ASEAN needs to establish clear regulations around electronic and mobile payments, encompassing cross-border transactions, governance of electronic money, consumer protection, and other issues.

Moreover, ASEAN should encourage a new breed of bank—an Internet-only bank where all forms of transactions are done online (see sidebar on page 40: The progress of Internet-only banks). By leveraging the high mobile penetration in the region, such banks could extend financial inclusion across rural areas. Without any branches and with substantially lower fixed costs than a traditional bank, an Internet-only bank is able to offer the unbanked population continuous and low-cost access to financial services, including loans at much better rates than those offered by non-traditional, predatory lenders.

In order to turn this into a successful reality, a pan-ASEAN approach is required, necessitated by ongoing AEC implementation and huge cross-border flow of remittances. The process of setting up an Internet-only bank needs to be much simpler than a traditional brick-and-mortar bank. For example, lowering the amount of capital that Internet-only banks should hold will spur private investment. There is also a need to simplify regulations surrounding processes such as KYC and AML, so they can be conducted remotely without compromising security. To further sustain the supply side of the business model, regulations around the sale of remote wealth management products also need to be lenient.
In return, and to facilitate financial inclusion, the Internet-only bank could be required to lend a certain amount to lower-income groups. This will ensure the already banked and urban groups aren’t the only beneficiaries.

In terms of incentives, the Malaysian government has committed more than $240 million to the Domestic Investment Strategic Fund for the development of new financial products, while the Monetary Authority of Singapore allotted some $160 million to grow the country’s fintech industry. More should be done to ensure growth is balanced across ASEAN.

Policy makers in ASEAN also need to accelerate the deployment of smart cities. ASEAN should seek to provide guidance on the implementation of interoperable smart cities across the region in line with its objectives of achieving a borderless market. A common strategy framework to implement integrated smart city planning and operation will nurture smart city standards and economies of scale as cities develop.

Also, policy makers should allow for the creation of innovation zones that, for a short period of time, are free from the constraints of legacy regulations in order to act as test grounds for new ideas. Positive tax incentives for technologies such as M2M, covering all 10 ASEAN countries, will go a long way in promoting digital-led urbanization.

By 2025, ASEAN is primed to have three megacities with more than 10 million residents, four high-density cities (5 million to 10 million residents), and 28 mid-density cities (1 million to 5 million residents). According to the Institute for Sustainable Communities, these 35 cities will generate approximately 80 percent of the bloc’s total GDP. As these cities grow exponentially, they will need to be “smart” to solve the problems associated with rapid urbanization.

The progress of Internet-only banks

Outside of ASEAN, new kinds of banks are already emerging. China, for example, granted banking licenses to six new players in 2014, enabling online giants Tencent and Alibaba to launch their own Internet-only banks called WeBank and Mybank respectively. China’s plan is to force existing banks to change by injecting new competition into the market. Its other aim is to lift its decelerating economy by supporting financing of new innovative start-ups and small businesses that have been unable to tap into the money markets through traditional banks.

In August 2015, India approved, in principle, 11 applications for payment bank licenses. The licensees are able to accept deposits, provide payments and remittances services, and distribute third-party financial products; they are not allowed to lend or issue credit cards. The objective is to use these new banks to increase financial inclusion. In Europe, new licenses are also being granted, but so far these aspiring Internet-only banks have had to contend with a difficult payments infrastructure (Barclays, HSBC, Lloyds, and RBS do not allow Fidor direct access to payment systems) and a convoluted approval process.
Enhance trust and security in ASEAN’s digital economy

All ASEAN countries need to implement a national e-ID system to govern access to appropriate online government services. This system should be tied to the mobile ID/number. Currently, Malaysia, Singapore, Indonesia, Cambodia, Brunei, Thailand, and Laos have mandated compulsory national IDs. Citizens must own a national ID from a certain age to access certain public services. Once national ID systems are in place, the next step is to digitize the data, ideally as part of the implementation plan. Lastly, these national systems should allow for cross-border identification within ASEAN, resembling the European Economic Area’s adoption of national ID cards as a travel document entitling the bearer to the right of free movement.

As ASEAN aims to become a borderless digital community and everyday services move online, the risk of a security or data privacy breach is high. For businesses, data privacy compliance is a crucial issue. Failure to comply can have reputational consequences, as well as financial. Few other issues affect everyone, from individuals to companies to entire nations.

A resilient cybersecurity regime encompassing regional-level efforts is needed to control cross-border incidents. Such a framework will encourage public confidence in e-commerce and cross-border data transfers. ASEAN should also consider creating a world-leading agency to fight cybercrimes, similar to J-CAT of Europol. However, regulations need to be balanced and proportional to avoid deterring businesses from developing electronic and mobile commerce platforms.

Strengthen the local digital economy

In the digital economy, value creation will slowly shift from national to international markets, but the underlying infrastructure will remain local. Today, regulation tends to inadvertently punish network operators that invest in local infrastructure, even though they are an important source of local jobs and tax revenues.

For example, telecom network operators are subject to strict regulatory requirements, such as licensing, interconnection charges, universal service levies, consumer protection, national tax regimes, and more. However, big international OTT players, which tend to erode revenues for both operators and governments as a result of their business models, are usually free of such requirements. To encourage investment in this local infrastructure, ASEAN members need to consider how to level the playing field between services that are direct substitutes. In particular, the tax and regulatory obligations imposed on new entrants, domiciled outside the national markets, should be consistent with those imposed on local players.

In Malaysia, both domestic online purchases and domestic shipping are subjected to GST. However, goods from international companies such as Amazon, Taobao, and eBay are zero rated, with no GST levied on purchases or on the international shipping fee. This puts local players such as Lazada, MyDeal.com, and Mudah.com at a disadvantage on their own home turf.

Another example that illustrates how international players are potentially impeding the growth of local digital businesses is Android smartphones. All come preinstalled with Google, which is an obstacle for local search engines to improve adoption.
In order to realize local economic contributions from international OTTs and operators alike through a fair tax regime, policy makers should consider these two potential options:

1 **Tax the provider:** Profit tax on global MNCs without a permanent establishment or that appear to use connected entities to avoid taxes

2 **Tax the consumer:** Consumption tax when a consumer buys OTT services, similar to how local services are taxed; countries across the world are engaged in ongoing debates around the taxation policy surrounding these players (see figure 26)

ASEAN leaders need to work together to establish fair regulations that encourage greater deployment of local and national infrastructure, without jeopardizing future business cases through excessive interventionist actions. Policy stakeholders need to strike the right regulatory balance, coupled with fair and appropriate regimes that will encourage innovation but not at the expense of local developers or providers.

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**Foster digital innovation within ASEAN**

Innovation does not happen accidentally. It has to be nurtured and encouraged in the right ecosystem. Just as every forward-thinking organization would take a pragmatic and structured approach to identify and support innovation, the ASEAN region should create an environment where innovation can flourish. This will require the right culture and leadership, workforce development, and adequate funding, among other factors.

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**Figure 26**

**Multiple initiatives are underway to create a fair taxation regime**

- **Content providers**
  - **UK and Australia:** Profit tax on MNCs with no base in home country or that use connected entities to avoid taxes (UK’s is 25%)
  - **France:** 2% tax on VOD for foreign operators; and tax on international video streaming services
  - **Japan:** Consumption tax (October 2015) for digital goods from overseas suppliers
  - **Brazil:** 3% income tax on foreign online subscription services (video, music, and games); credit card companies act as withholding agents

- **E-commerce**
  - **United States:** Streamlined sales tax project; 45 states require e-merchants to collect sales tax
  - **OECD:** Calls on governments to collect taxes from cross-border e-commerce transactions
  - **Multiple jurisdictions:** Regulate online sharing services such as Uber and Airbnb to ensure consumer safety and bring them into tax net (includes France, Philippines, Brazil, Australia)

- **Digital advertising**
  - **ASEAN:** Economic source of income is difficult to determine: An advertiser in Singapore publishes an ad on a US server and a consumer in Malaysia clicks on it
  - **Policy makers:** No consensus on how to tax the category fairly; conceptually unclear

Sources: Press reports, GSMA; Kearney analysis
In ASEAN, stakeholders should explore policies in the following areas:

**Invest in “21st-century skills” education**
Stuck in the industrial age, ASEAN schools continue to teach content that is no longer relevant, using pedagogical methods that no longer benefit young people’s evolved minds. Many K-12 institutions have attempted to adapt their curriculum over the years, adding courses pertaining to 21st-century skills, such as entrepreneurship and computer studies. Others have incorporated technology into the classroom, creating course websites or giving students laptops. However, this is not enough. Governments will need to radically transform the current K-12 education ecosystem, balancing the tried-and-tested methods of education with the new, technology-enabled curriculum to ensure children are better prepared for the digital economy.

Students will need to learn new skills, such as critical thinking, problem solving, creativity, and digital literacy, and more holistically develop social and emotional skills. They need to become familiar with new technologies and have the ability to cope with rapidly evolving workplaces. Fundamentally, investments into forward-thinking education policies will positively encourage the highest levels of creativity, innovation, and success in the 21st century across the science and technology sectors in ASEAN. One hundred percent broadband access to all schools (urban, suburban, and rural) and all colleges in ASEAN is key to access these initiatives.

**Establish rules that protect innovation**
Infamous as a home for “fast-imitating followers” of products, ASEAN needs strict regulations to protect the intellectual property of those who develop innovative products and services from those who seek to produce inferior imitations. Recent OECD studies have found empirical support that strengthening intellectual property rights increases the propensity to innovate and file patents.

**Plug the brain drain**
Even as ASEAN builds its future through education, there is an immediate opportunity to boost the existing talent pool. With a shortfall in skilled graduates in the region, governments should use financial inducements, preferential taxes, or other incentives to encourage highly skilled overseas workers to return either to their home country or to another country in the ASEAN bloc.

**Encourage digitally led R&D**
Advanced economies, including innovation leaders such as the United States and Japan, make extensive use of R&D tax incentives. ASEAN could take a similar approach to cultivate innovation within the region. Similarly, tax concessions for new companies in the start-up phase can help innovative enterprises get off the ground. Such concessions need to be non-discriminatory, applying to start-ups in all industry sectors, not just high-tech.
5. Conclusions and next steps

A call to action

The ASEAN region is both complex and diverse—political and cultural differences and variations in economic behavior can make it one of the most challenging regions for businesses to operate in. But ASEAN countries are moving in the right direction, striving to sharpen overall competitiveness through closer international collaboration. This integration will begin to encourage positive change.

In order to modernize and digitize, the region needs to implement policy changes in a practical and timely manner. The very first step is to establish an independent ASEAN advisory board—the ASEAN Digital Economy Promotion Board—to consist of country representatives, industry experts, and key opinion leaders. This board will provide strategic direction, guidance, and advice to the AEC and its member governments.

The independent advisory board should be responsible for oversight of the future state of digital and communications in ASEAN. The role and responsibilities of the board should reflect ASEAN’s vision of the digital economy, while ensuring economic policies within ASEAN support the development of digital products and services. Its area of focus should include the fixed and mobile telecoms landscape, spectrum, and the sunrise sectors (such as e-commerce, smart cities, and mobile financial services). The board should be heavily aligned with country-specific markets in order to provide market analysis and direction.

The board should also periodically track and measure ASEAN’s and its members’ performance to make sure they are on course to make the necessary changes. The European Union has a Digital Economy and Society Index (DESI) that summarizes relevant indicators on Europe’s digital performance and tracks the evolution of EU member states’ digital competitiveness. ASEAN should establish a similar index.

Pursue a broadband revolution
- Increase access:
  - Expedite release of digital dividend (700 MHz) by 2017 across ASEAN; allocate additional 20 MHz spectrum for top operators
  - Adopt technology neutrality
  - Ensure no more than four operators per country

Accelerate innovation in mobile financial services, e-commerce, and connected cities
- Encourage operator-led non banks to scale up payment solutions; aim for 100% financial participation
- Establish clear digital payment regulations (for example, cash in/cash out points) harmonized across ASEAN to facilitate cross-border trade and remittances
- Build 35 connected smart cities across ASEAN; offer tax incentives to propel digital-led urbanization

Enhance trust and security in ASEAN’s digital economy
- Create a national e-ID in each country based on mobile ID/numbers for delivery of public services
- Ensure national IDs are interoperable across ASEAN for seamless delivery of public services and movement of talent
- Harmonize cybersecurity, data protection, and privacy laws across ASEAN

Strengthen local digital economies
- Ensure OTT players follow the “same service, same rules” principle
- Use fair tax regime to drive local economic contributions from international OTTs and operators
  - Policy makers should consider two options:
    - Tax the provider: divert profit tax on MNCs that use connected entities to avoid taxes
    - Tax the consumer: put consumption tax on consumers who buy OTT services (for example, Japan and France)

Foster digital innovation within ASEAN
- Revamp education systems to prepare an innovative, digital economy workforce:
  - Provide access: 100% broadband in all ASEAN schools and colleges by 2020
  - Teach in new ways: blended learning, MOOCs, out-of-class
  - Measure performance: focus on ICT skills, emotional and social skills needed for entrepreneurship
  - Promote digitization in sectors beyond ICT (for example, favorable taxation on SMEs)
The board should also enable easy sharing and exchanging of best practices, learnings, and information across countries, governments, and operators on all things digital. Moreover, the board should monitor public opinion—the development of the digital economy depends on uptake and adoption by citizens.

The board should be given sufficient impetus within AEC to influence the actions that ASEAN member states need to take (as discussed in “Five policy imperatives—and five solutions—to accelerate the digital revolution” on page 35). These are summarized in figure 27 on page 44.

A time for change

It took more than two decades to connect the world’s first three billion people to the Internet; the next billion will come online in a matter of years. Whereas the first two billion used a PC to get online, the next wave of users will make digital decisions on a mobile device. This new generation of Internet users is predominantly young and living in emerging markets, such as countries in ASEAN.

Just as businesses around the world have to innovate to adapt to a digital economy, governments need to ensure that existing and new regulations are fit for purpose in an increasingly online world. To play a significant role in this new era, ASEAN has to keep pace with technology.

Rome was not built in a day and neither is a digital economy. Once ASEAN is committed to developing the necessary environment, the individual regulatory challenges outlined in section 3 should be addressed in a cohesive manner, working closely with new partners and stakeholders. An ASEAN-wide integrated road map is key for this (see figure 28). A “do nothing” approach by policy makers will result in the region missing a chance to turn a $1 trillion opportunity into a reality, while paving the way for a more integrated ASEAN community.

Figure 28

Five-year integrated road map is key to overcoming the challenges

<table>
<thead>
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<tbody>
<tr>
<td>Policy enablers</td>
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</tr>
<tr>
<td>— Expedite 700 MHz, and allocate at least 20 MHz from digital dividend to the top operator in each country</td>
<td>— Harmonize spectrum allocation guiding principles across ASEAN</td>
<td>— Regulate and mandate optimal usage of spectrum allocated</td>
</tr>
<tr>
<td>— Establish clear and simple regulations around digital payments to facilitate digital banks and issue required licenses</td>
<td>— Scale up the new operator-led non-banks by providing them the right incentives, without compromising on security</td>
<td>— Further develop MFS, e-commerce, and “same service, same rules” regulatory framework as the sectors advance</td>
</tr>
<tr>
<td>— Review taxation on global OTTs</td>
<td>— Develop and implement fair taxation regime based on “same service, same rules” principles</td>
<td>— Use e-IDs to establish cross-border access to public services in other ASEAN countries</td>
</tr>
<tr>
<td>— Harmonize regulations horizontally (cybersecurity)</td>
<td>— Link e-ID access to public services</td>
<td>— Continually monitor the digital literacy blueprint and update as necessary</td>
</tr>
<tr>
<td>— Ensure each nation provides citizens with national e-IDs</td>
<td>— Begin work on smart cities and provide positive taxation for connectedness (for example, M2M)</td>
<td></td>
</tr>
<tr>
<td>— Create blueprint for smart cities</td>
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</table>

Institutional mechanisms

| Establish a Digital Economy Promotion Board | Develop ASEAN-wide metrics to track progress of digital strategy and growth of digital economy similar to EU DESI | Continually monitor and track performance to ensure ASEAN is headed in the right direction |
| Align individual governments | — Share best practices and increase collaboration across countries | |
| Appoint key office bearers | Create charter, governance, and forums | |

Source: Kearney analysis
Contributors to this report

Soon Ghee Chua and Nikolai Dobberstein

For more information or additional perspectives on ASEAN’s digital revolution, please contact: Chee Keong Foong: ckfoong@axiata.com
As a global consulting partnership in more than 40 countries, our people make us who we are. We’re individuals who take as much joy from those we work with as the work itself. Driven to be the difference between a big idea and making it happen, we help our clients break through.

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