Voice of Asia

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Our *Voice of Asia* series brings to life the challenges and opportunities facing the region today and tomorrow. *Voice of Asia* is the result of significant collaboration across the Deloitte Asia Pacific and Global Network.

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Asia winning the race on innovation, growth and connectivity—***powered*** **by digital engagement**

The global economic centre of gravity has shifted towards Asia. The Asian region is the fastest growing in the world and has been a significant driver of global economic growth.

In another decade the Asian region is expected to account for nearly half of the world's economic output. Harnessing the benefits of rapidly changing technologies will be a central element powering the region into the next wave of growth.

Just over ten years ago, smartphones did not exist. Three decades before that, no one owned a personal computer. Nowadays, many of us have personal devices that fit on our wrists that are just as powerful as a wardrobe-sized supercomputer from the 1980s.

The pace of technological change has been on a scale that has often felt revolutionary. Rapid mass market adoption of these technologies has enabled individuals, businesses, and governments to do things differently, and often, more efficiently. Digital drives increased productivity and innovation in more developed economies while allowing developing economies to circumvent existing practices and technologies. In fact, digital investment is not just a technology story, it is a story about economic growth as well.

Asian economies and societies are at the vanguard of this revolution. Many Asian governments have recognised the importance of technological development for their economic agenda. Japan has been a pioneer in technological innovation over many decades, and continues to invest heavily in its development. Countries like Singapore and South Korea are global leaders. Their governments continue to actively explore how to embrace the latest waves of technological advances so that they remain at the forefront.

It is clear that the race is on to harness these technologies and power the next wave of growth. But it all starts with getting people involved and *engaged.*

Digital technologies: From *engagement* to *enabler*

We're seeing through our digital engagement indices for government, business, and consumers that Asian countries are more digitally engaged relative to global peers with similar levels of economic development—and Singapore and Hong Kong are clearly world leaders.

Once engagement is achieved, digital technologies can support countries in leapfrogging development hurdles as well as harnessing the power of digital opportunities. We've seen that technological change has enabled the delivery of cheaper and more reliable solutions to address some of the key impediments to economic development. And every country has something to gain from digital.

In developing economies where informal marketplaces have been more prevalent, access to the Internet has provided consumers with greater information, such as through online reviews and price comparison websites, and has helped lift the quality of goods and services being provided. In countries with large unbanked populations such as India or Indonesia, individuals have turned to using the credit in their mobile telephone accounts as both a store of value and a means of payment. Digital has enabled individuals to participate in an otherwise inaccessible financial system.

In more developed economies such as China or Malaysia, sharing economy platforms are also disrupting the traditional concept of flexible work arrangements by providing individuals greater choice in when and where they earn their income. The use of online marketplaces, such as the platforms offered by Taobao, Rakuten, eBay, and Alibaba, have opened up additional markets for local businesses, and have been a boon for many small businesses.

Beyond these opportunities for individuals and businesses, digital government initiatives can also help improve efficiency, transparency, and inclusiveness of government.

The digital appetite is there, and the potential for growth is significant.

Building on the momentum of 2017

Our *Voice of Asia Edition One* themes are continued, extended, and enhanced through a focus on digital engagement. In our previous commentary, we outlined the ways in which *2017 will be better than you think*. This edition continues to support that view.

Our prior report on *Four things you need to know about Asia in 2017* explained why global growth may well be about to surprise on the upside, and it is Asia's economies that are in the box seat for the coming year. Indeed, the first quarter of 2017 has shown promising signs, with strong domestic data coming from the United States and Southeast Asia recording strong macroeconomic data.

When it comes to the new US administration, trade, and tariffs, in our previous commentary on *Trade to trump protectionists and boost global growth*, we put a spotlight on trade recovery and the fact that trade has been part of the engine driving the emergence of Asia on the world stage. Certainly, there has been greater uncertainty around trade with the change in the US administration and Brexit in 2016, but strong growth and pro-trade policies in Asia mean this region continues to record positive trade data. Technology and digital are changing the way we trade, with online platforms being the fastest-growing means to reach international customers over the next five years.

Shifting from trade to commerce, our third report, *Asia's weapons of mass consumption* showed how consumer booms are increasingly powering Asia's mega-economies, China and India. While services are generally less trade-intensive than goods, technology and digital will power an increase in the value of trade in services. Digital takes this opportunity to another level, opening up accessibility and opportunities to a range of consumers across the Asian landscape.

Digital drives *what's possible*

What is clear is that the technology-related changes that have taken place have often been on a scale that at times can feel revolutionary and game-changing, with significant benefits to our daily lives.

When applied on a global scale, we can see that Asian economies and societies are at the forefront of this revolution. Many Asian governments have recognised the importance and role of technological development for their ongoing economic agendas and prosperity. Countries like Singapore and South Korea are positioning themselves as digital global leaders, with their governments continuing to actively explore how to embrace the latest waves of technological advances.

As the power of digital continues to emerge, Asia is uniquely positioned to drive this world of digital opportunity.

Diving even deeper into the digital sphere, regions will need to consider how they can harness the power of the data being collected through digital as a way to inform themselves of trends, insights, and analysis. While digital can also spell risks around cyber-crime, the positives overall are far greater.

As Asia runs the digital race, there are clear opportunities for countries to accelerate their growth and develop by learning from each other's experiences.

It might be that there is no specific finish line—the possibilities for enhancement, innovation, and growth are endless and continuing.

This is our *voice*, the *Voice of Asia*.

As the power of digital continues to emerge, Asia is uniquely positioned to drive this world of digital opportunity.

Digitally engaged? Asia leads the world

Embracing digital technologies is central to Asian countries' development strategies. Indeed, Joseph Schumpeter, one of the 20th century's most influential economists, observed that innovation is the determinant of economic development. But it all starts with *engagement*.

Economic takeaways

- Asian countries are winning the race for digital engagement against global peers with similar levels of economic development.
- This will underpin Asia as the focus of global economic growth over the coming decade.
- Government and business engagement is high relative to the rest of the world, but individual engagement is about average.

We take a look at digital engagement indices for government, business, and consumers. These indices show how Asian economies are more digitally engaged relative to global peers at similar stages of development.

Firstly, the indices present Asia relative to the rest of the world, and secondly, we drill down within Asia to consider the digital intensities of different countries and the likely changes over time.

Engagement indices

Digital technology has the potential to change economies and societies dramatically, but engagement is critical to reap the benefits that technology offers. Governments, businesses, and individuals need to actively participate in the digital world, and this happens to varying degrees globally.

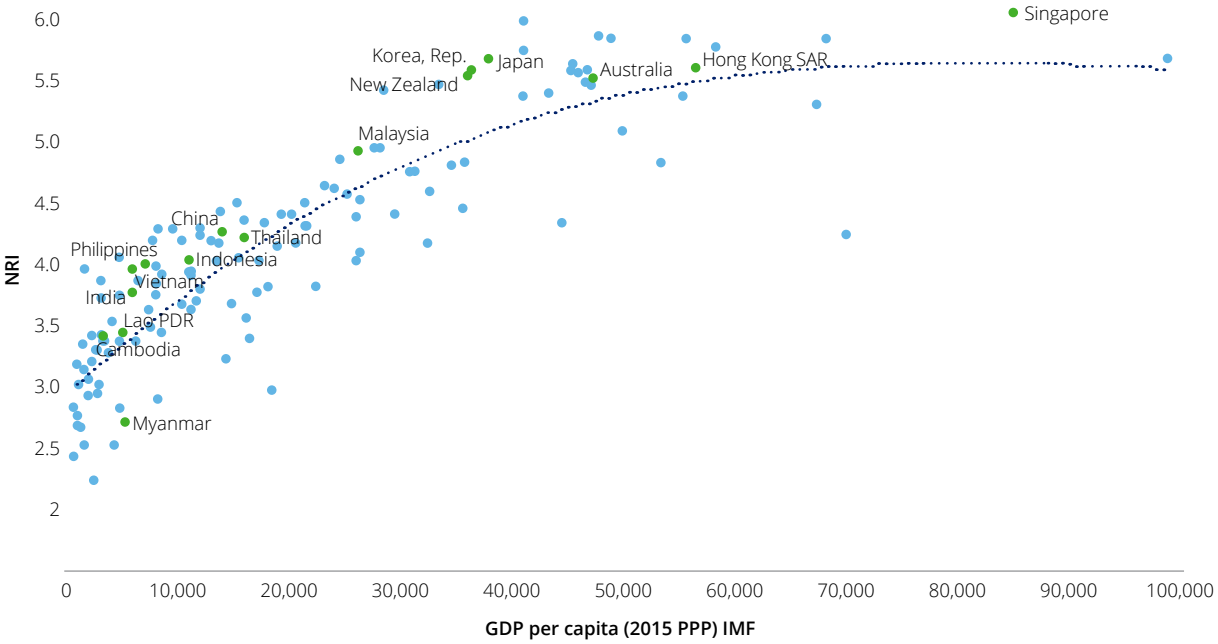
There are many indices which measure different aspects of digital engagement; however, given the vast number of factors that comprise engagement, there is no widely agreed upon definition or global ranking.

Two of the most comprehensive indices are:

- The World Economic Forum's Networked Readiness Index (NRI), which measures the performance of 139 economies in leveraging information and communications technologies (ICT) to boost competitiveness, innovation, and well-being
- The United Nations' ITU Development Index, which is based on access, use, and skills sub-indices in relation to ICT

While country rankings may vary between the two indices, it is clear that Asian economies are performing well. The indices prioritise different measures, but Asian economies are consistently highly ranked. For example, Singapore is ranked 1st on the NRI and South Korea is 1st on the ITU Development Index.

Figure 1.1 – Asian countries are digitally engaged



Source: Deloitte Access Economics based on World Economic Forum and International Monetary Fund
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Figure 1.1 graphs each country's NRI score against GDP per capita. Every country in Asia, apart from Myanmar, lies above the line of best fit, indicating above-average levels of digital engagement for the level of their economic development (as reflected by GDP per capita).

The graph clearly shows that Asian economies are ahead in terms of digital engagement, with almost all Asian countries above the world average. Singapore and Hong Kong are world leaders, while Japan lies in a group that has advanced network readiness, showing that higher use of digital technologies can lead to immediate gains. The large population bases in countries such as China, India, Indonesia, and Vietnam have considerable opportunities waiting to be embraced.

Indeed, countries that have a high NRI score and low GDP per capita are poised to take advantage of the economic benefits that digital will bring. Countries in this group are well positioned to use increasing adoption of digital as an enabler for development. Countries with high per capita GDP, like Japan, can also benefit from the innovative use of digital technologies to increase productivity and generate the surplus needed to sustain the economy. This shows that the move to digital is for everyone across the region, as innovation via digital means the region can provide new sources of competitive advantage, create new jobs, and help alleviate socio-economic challenges.

Deeper insight and analysis

Economic takeaways

- In middle-income Asian countries, governments have been able to maintain strong growth agendas based on policies in areas such as trade, infrastructure, and savings. Today, these countries are pursuing growth agendas, with digital playing a leading role.

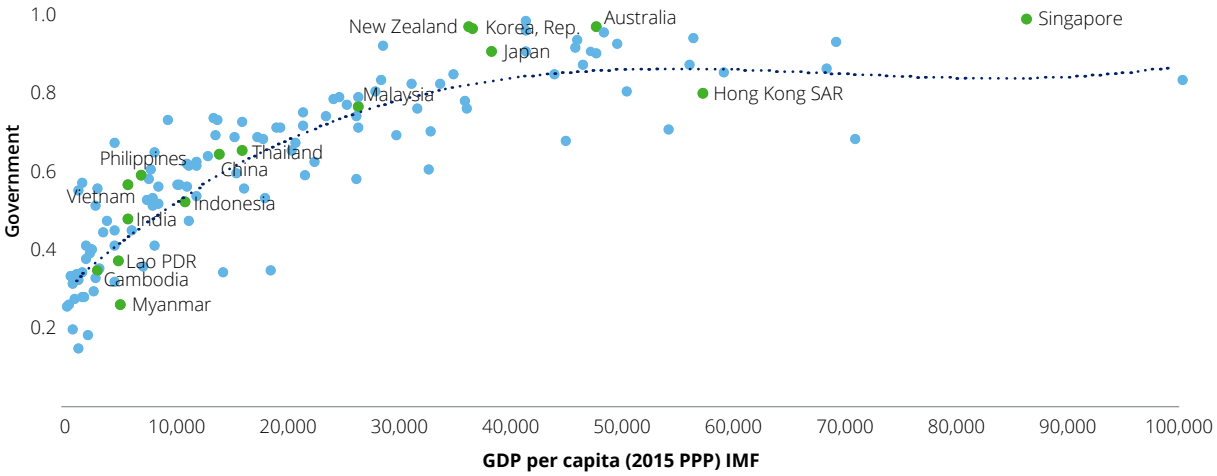
To better understand what is driving these results, Deloitte has created engagement indices specific to government, business, and individuals in a country. These indices give deeper insight and analysis into where economies are utilising the potential of digital, and where they could improve.

Figures 1.2, 1.3, and 1.4 graph government, business, and individual digital readiness against GDP per capita. The appendix provides details on how these indices were constructed.

When it comes to the roles government is playing, some broad trends can be observed across all countries:

- There is a relatively low level of engagement in the least developed economies because of constraints on public finances

Figure 1.2 – Deloitte Government Engagement Index (DGEI)



Source: Deloitte Access Economics based on World Economic Forum and International Monetary Fund
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- As economies develop, governments tend to adopt a proactive approach in many areas of economic development (including trade, infrastructure, and encouragement of saving), and their approach to digital is no different

- As the economies develop further, consumers and market forces come more to the fore in driving innovation and economic growth, with governments facilitating these forces through policy and regulation rather than direct active involvement

Do Asian economies follow these trends? Broadly speaking, they do appear to do so, albeit with some twists.

Figure 1.2 shows that in the least developed of the economies, Cambodia and Lao PDR, the governments have less engagement with digital technolgies than their global peers. On the other hand, the active agendas of the DGEIs for India, Malaysia, and South Korea reflect above-average government rankings. Asian economies tend to perform well in terms of government engagement, relative to other countries with similar GDP per capita.

The situation in the most developed economies is nuanced. Singapore performs particularly well in terms of government engagement on this index, both within Asia and also compared to the rest of the world.

It achieves this through government action that actively invests in and promotes digital innovation. This is also the approach of others in the region—especially Malaysia—which see a vibrant digital economy as a key to unlocking greater productivity and lifting living standards.

Countries such as Japan have been pushing government-wide use of IT for more than a decade, and have created plans accordingly. At present, there is work going on for the promotion of initiatives such as the online use of administrative procedures, electronic provision of government information, optimisation of work and systems, improvement of government procurement related to information systems, and information security measures.[1]

In contrast, the approach of the Australian and New Zealand governments centres on supporting digital innovation mainly by keeping out of the way of market forces and avoiding over-regulation.

Like their governments, businesses in Asia have also generally embraced digital technologies more than their global counterparts for a given level of economic development (see figure 1.3). This observation, obviously, is not independent of the role being played by their governments as, for example, the broader environment in terms of regulation and the provision of infrastructure is crucial for businesses to be able to effectively use these technologies.

Nevertheless, the extent of business engagement depicted in figure 1.3 points to a competitive dynamic at play, with businesses considering it to be in their own interest to be leading edge if they are to survive in continually evolving and rapidly changing markets.

Success is breeding success.

Figure 1.3 – Deloitte Business Engagement Index (DBEI)

Source: Deloitte Access Economics based on World Economic Forum and International Monetary Fund
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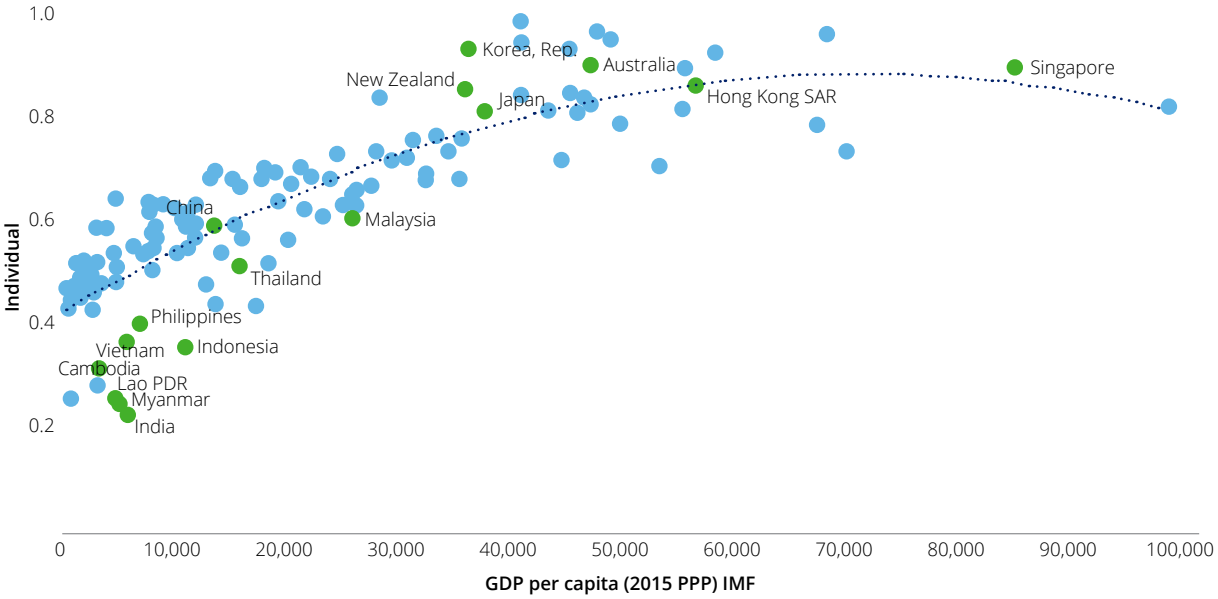
Figure 1.4 – Deloitte Individual Engagement Index



Source: Deloitte Access Economics based on World Economic Forum and International Monetary Fund
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In contrast to the results for government and business, consumers in Asia tend to be closer to the middle of the pack or even a little behind global counterparts (figure 1.4). In part, this is driven by a relative lack of access. Governments in the region are also conscious of this, specifically that the digital economy will need to develop in a way that is inclusive overall.

So the question to ask is: *How is digital driving economic development?*

Digital as a driver of economic advancement in Asia

Economic takeaways

- Asian countries are poised for development. Powered by digital, these countries have the opportunity to leapfrog development hurdles and make significant progress.
- Telephony and text are good platforms for consumers to drive change, but improved access and reduced device costs are inherent requirements for this to occur.
- Digital will have a greater impact on economies focused on services relative to resource-intensive economies.
- China is transitioning away from manufacturing and construction towards services, which will have an impact on its digital intensity.

As widely anticipated, Asia has assumed the mantle of being the centre of much of global economic growth in the 21st century. Countries have learned from each other and the momentum achieved across virtually all of eastern and southern Asia is set to continue. This would see the region account for a majority of the growth in the global economy over the coming decade.

Two core elements of the success of Asia's economies over recent decades have been the opening of the traded goods sectors of their economies to market forces and the encouragement of the adoption of cutting edge technology wherever possible. These elements are related and have meant that these economies have been able to overcome hurdles to their development, bypassing old or second-best technologies and practices along the way.

Further, investment in digital infrastructure contributes to productivity in the same way as other forms of infrastructure. By boosting productivity and opening new channels of commerce, digital engagement ought to enhance economic growth beyond what would otherwise be the case.

Looking ahead, Asia's engagement with digital technologies opens up even more opportunities to adopt best practices and technologies. For example, advances mean that:

- A fixed, copper-based telephony system will never need to be rolled out through many parts of India or Cambodia, or that
- Banking networks with physical outlets will not be needed to service the majority of Indonesia's society that is currently unbanked.

In March 2017, Taiwan announced plans as part of its "Forward-Looking Infrastructure Construction Project" to invest US$1.5 billion over eight years to upgrade the country's digital infrastructure. The investment includes improved access to broadband in regional areas, with a target of 90 percent broadband coverage nationwide.

The plans also include the development of a 5G mobile service network and an Internet of Things (IoT) network. These developments will help bridge the rural-urban divide and promote equal access.

Just how each country might embrace digital technologies to further its development goals will depend on the particular circumstances each country faces. The Deloitte engagement indices provide an indication of areas where different countries may focus their efforts.

Figure 1.5 shows how each of the countries ranks internationally across the three categories. In the less developed economies, there are opportunities for governments to take a stronger lead. In particular, Myanmar, Lao PDR, and Cambodia rank towards the bottom in all categories, and government action both in its own right and in support of business and consumers will be needed if they are to move up the rankings.

This situation contrasts with, say, Indonesia where the government ranking is high relative to its income. The chart does point to where there may be the greatest scope for improvement, namely individuals. And given the widespread use of mobile already in Indonesia for social interaction and basic commerce, there is a strong platform on which to build. This suggests greater opportunities as access to, and the price of, digital services improve.

Among the middle income economies, the contrast between Malaysia and Thailand is interesting. The Malaysian government has adopted a very proactive approach to the development of the digital economy. It has identified the technology sector as a driver of innovation and creativity. Through the Malaysia Digital Economy Corporation, the government seeks to promote inward investment in the technology sector and to support local technology businesses to compete in global markets. At the same time, the Malaysian government has also introduced initiatives designed to help individuals engaged as digital workers and entrepreneurs. The eRezeki and eUsahawan programmes were introduced in 2015 to provide both training and work opportunities to those interested in participating in the digital economy.

In contrast, government in Thailand has not been as aggressive in its adoption of digital in its own right, with business and consumers playing a relatively larger role. In Australia, the government has seen its role in the sharing economy as "getting out of the way," that is, reduce regulatory barriers to innovation by business, rather than being actively involved in the development of the digital economy.

The Indian case is somewhat different; it's a mixed approach, with the government and private players both pushing the digital agenda. One of the major initiatives by the Indian government has been to provide all residents with a unique identification code based on biometric data.

The government is now using this vast digital identity library to significantly enhance the scope of e-government. This program is managed by UIDAI (Unique Identification Authority of India), which was established in 2009. This body has issued "Aadhar" cards to more than 1.1 billion people in India.

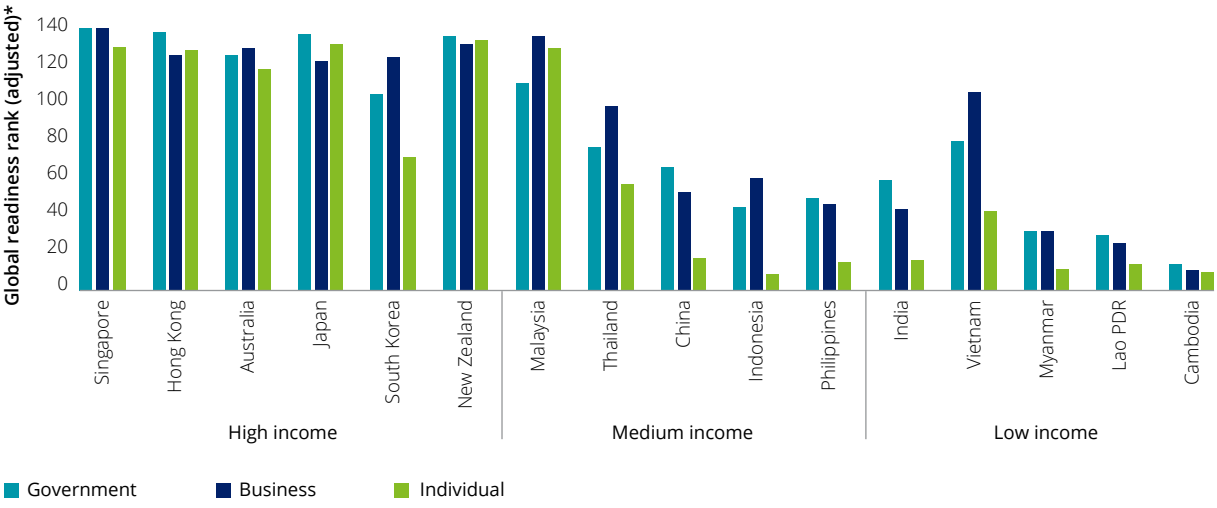
The usage of these cards has since evolved and increased, with benefits including greater efficiency in subsidy disbursals and helping targeting mechanisms for the government. Furthermore, the government has also recently unveiled a mobile phone-based payment system using the UID database of biometric identification.

While the government is keenly pushing the agenda of "digital India," there have been notable successes in the e-commerce and fintech space, with at least 10 unicorns (billion US dollar valuation start-ups) as of the end of 2016 in India. These unicorns are encouraging integration across markets within the country as well as generating employment.

In drawing on some of these lessons, it is important to note that the composition of economies will have an impact on the potential role that digital technologies may play. In particular, digital technologies tend to be more important (relative to the total value-added of a sector) for sectors such as media, professional services, and finance, and relatively less important for parts of agriculture, mining, manufacturing, or trade.

To explore how important digital technologies may become for the different economies in Asia, we have developed an intensity map that reflects the existing industry composition of each economy.

Figure 1.5 – Asian countries readiness rankings



*Note: Height of columns = 140 – rank, that is higher ranking (for example, No.1) is represented by a higher column in the chart.

Source: Deloitte Access Economics, World Economic Forum

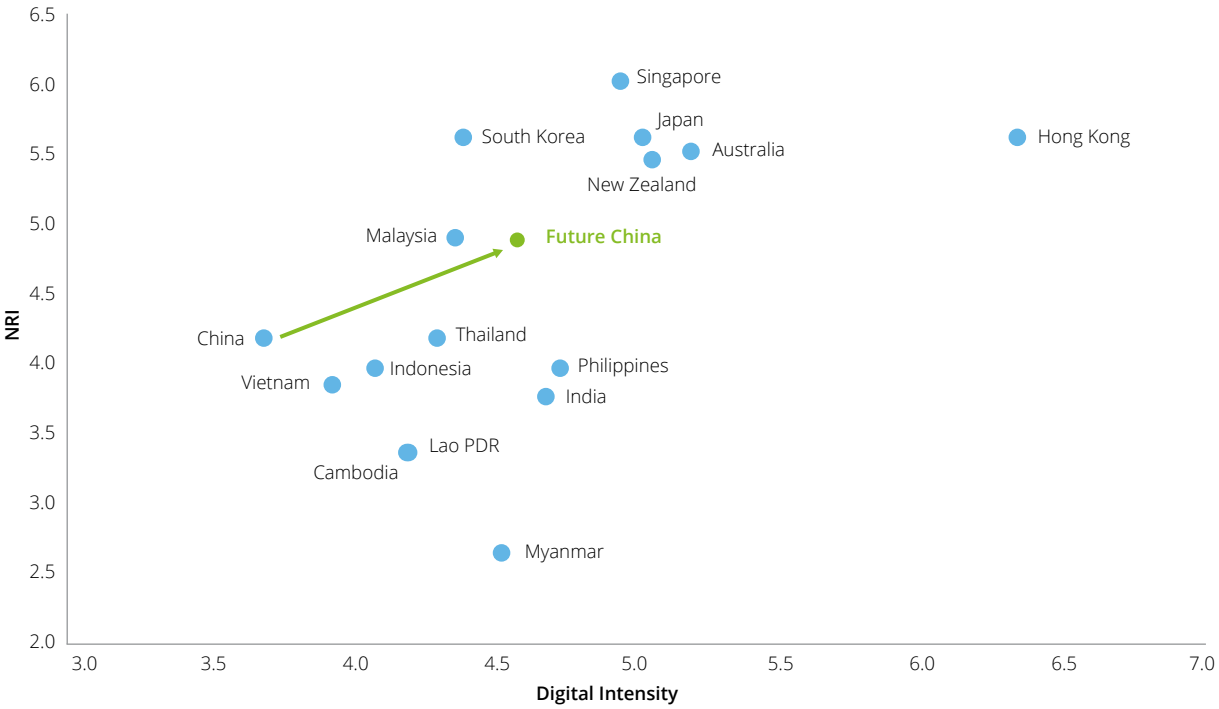
Figure 1.6 maps the digital intensity of Asian economies against their NRI scores, based on their industry structure and the impact of digital on these industries. For countries such as Singapore, Japan, Australia, and, especially, Hong Kong, a large portion of the GDP comes from industries such as finance and information and communication. Therefore, the potential impact of digital is substantial.

By contrast, the economies of developed countries such as Vietnam, Cambodia, and Lao PDR are far more focused on industries such as agriculture, and as such, do not experience such an intense effect from digital disruption.

However, this means that as the less developed nations advance, digital may allow them to move through the stages of development more quickly. As they move to industries where digital has more of an impact, they will be able to benefit from the advances made by other countries and jump to the most up-to-date technology.

Of course, the economies in question are evolving rapidly. Figure 1.6 illustrates this for China, showing the path that China may take as its economy transitions to one relying more on the services sector.[2] The economy is currently transitioning away from manufacturing and agriculture to services, with over half of GDP in China now coming from the services sector.[3] As the impact of digital on the services sector is expected to be greater than that on resources, this transition will lead to an increase in the digital intensity of the Chinese economy.

Figure 1.6 – Deloitte digital intensity map



Source: Deloitte Access Economics, World Economic Forum

Looking ahead: Keeping engagement front and centre

The Deloitte digital engagement indices highlight that Asian economies are leading the race. Across government, business, and consumers, Asian countries are more digitally engaged relative to global peers with similar levels of economic development. Singapore and Hong Kong are clearly the global leaders, but digital gives all economies the ability to overcome development hurdles. From online marketplaces to increasing participation in labour and financial markets, the digital world is their oyster.

This is all dependent on being digitally engaged. So, how engaged are you and how can you leverage digital as a government, a business, or a consumer?

1. E-Gov, "Japan's e-government initiatives," https://www.e-gov.go.jp/en/e-government.html
2. In this chart, we have estimated "Future China" where the services share is 10 percentage points higher than current, coming equally from the agriculture, manufacturing, and construction sectors.
3. TD Economics, "Tracking China's re-balancing to services-based economy," 2016, https://www.td.com/document/PDF/economics/special/Tracking_China_Services.pdf

Economic growth and development in Asia: What is the role of digital?

Asian economies are digitally engaged, and this can be leveraged to support the economic growth and development trajectories of emerging economies.

Digital technologies, done right, can be a powerful enabler for Asian economies and economic growth. Investment in digital infrastructure contributes to productivity in the same way as other forms of infrastructure, and by boosting productivity and opening up new channels of commerce, economic growth can be enhanced beyond what would otherwise be the case. As such, digital tools can support policy agendas and facilitate the achievement of opportunities for businesses, consumers, and government.

How?

For business, digital can help encourage trade in the region by helping businesses, particularly small businesses, access global markets.

For consumers, digital can provide opportunities in terms of connectivity, mobility, and social networks.

For government, digital can drive the development of public infrastructure, particularly around smart cities, which can help them overcome infrastructure development hurdles.

It is acknowledged that there are many other applications of digital technology in the business, consumer, and government spheres. These include the benefits of digital for multinational corporations, analysis of big data, and wide-ranging policy agendas, including privacy and cyber-crime. These are all important issues, but are not the focus of this paper.

Business engagement—supporting SMEs and facilitating trade

Economic takeaways

- Digital technology has a role to play in helping business, particularly small business, in the Asian region.
- Benefits include connecting buyers and sellers, increasing competition and choice, and facilitating trust between parties.

The use of Internet and digital technologies makes businesses more efficient, innovative, nimble, and agile. While all organisations, from very small businesses through to multinational corporations, can benefit from digital technologies, this section focuses on small to medium-sized enterprises (SMEs), which make up the vast majority of businesses and are a dynamic part of economies in Asia.

SMEs are more likely to innovate than larger firms, as they tend to have a greater appetite for risk and, hence, are better placed to pioneer and use new technologies.

Technology lowers barriers to entry, offers new business models, and supports SMEs in responding to consumer-driven change. By enabling SMEs, digital technologies can support the region's economic growth and development.

Trade agendas

While the global economy is moving towards more protectionist policies (coming out of Brexit and US policies), the push for trade liberalisation in Asia continues.

As noted in the *Voice of Asia Edition One* paper *Trade to trump protectionists and boost global growth*, the rising Asian economic giants have been shifting their trade policies towards greater openness and global engagement. Their rise will underpin further trade gains through Asia and the world in the decades ahead. Digital has a role in supporting trade in the region.

For 2017, perhaps the most important trade agenda will be the Regional Comprehensive Economic Partnership (RCEP) that is being negotiated for a stronger partnership between ASEAN and the six states with which ASEAN has existing free trade agreements (FTAs): India, China, Australia, South Korea, Japan, and New Zealand.

A central element of the RCEP is the creation of a safe and efficient transaction environment, avoiding cumbersome regulatory barriers that will affect SMEs playing a part in the digital economy. Online payments via platforms like AliPay, Apple Pay, and PayPal ensure that trade can occur across borders.

In addition, an important feature of the trade agreements being negotiated in Asia, including RCEP, is the emphasis on SMEs, which was not usually the case in the previous generation of trade agreements. This signals a clear shift in focus towards supporting SMEs as part of economic growth in the region.

Digital facilitates the breakdown of distance as a barrier and can support these trade agendas in the region. On the other hand, it is important that digital considerations are part of the negotiations to ensure that emerging digital economies do not suffer.

Breaking down barriers

Digital technologies bring together more options for business, increasing competition and choice. This has benefits for consumers and sellers in the form of a broader, more competitive marketplace.

However, basing economic development in the growth of SMEs is not without its challenges. To be effective in the marketplace, a business has to be able to attract consumers by providing its products in a manner that is convenient, attractive from a cost perspective, and instils customer confidence in the quality of the product and ease of transaction.

Digital technologies address each of these elements. It means that businesses, even small ones, are able to engage with customers, both within and across borders.

Trust is a key element. And for SMEs, it can be hard to develop direct relationships.

But, again, the architecture surrounding digital helps solve these challenges.

For example, digital platforms such as Alibaba, Taobao, and eBay allow SMEs to compete where otherwise they would face disadvantages of scale.

Also, e-payment systems can allow people to transact online, knowing their money is safe and being transferred via a third party. This can allow people to transact without cash or a physical meeting.

For many goods traded at distance or for services such as accommodation or transport in the sharing economy, rating systems support the trade by codifying trust. Reviews allow people to know that the seller/buyer will be genuine. Dispute-resolution processes also mean people have a backup if things go wrong. This can make buyers feel safer online and allow for trade across countries.

In this way, digital tools can assist trade even if there is limited regulation. The tools include platforms and client relationship management software.

Benefits of digital in connecting buyers and sellers can mean goods and services can be sold more broadly within a producer's own, often large, domestic market. A boost in intra-country trade can involve import substitution and potentially reduce costs.

The economy-wide benefits of digitally engaged small businesses

The nature of the potential benefits that can be derived from successfully getting SMEs to embrace digital technologies has been explored in two extensive reports prepared by Deloitte for Google in India and Indonesia.[1]

In Indonesia, fewer than 1 in 10 small businesses considered themselves as having advanced online capabilities, while 73 percent are offline or have only very basic online capabilities. The potential benefits of digital technology for Indonesian SMEs include:

1. Up to 80 percent higher growth in revenue
2. One-and-a-half times the present likelihood of increasing employment
3. Seventeen times the current potential for innovation
4. Greater international competitiveness.[2]

Indeed, the study found that boosting SMEs' digital engagement could increase Indonesia's annual economic growth by 2 percent, the jump it needs to become a middle-income country by 2025.

In India's case, the digital agenda recently received significant support, as the government decided to demonetise large-denomination currency in an effort to promote "less cash" (see the sidebar "Demonetisaton—a push towards further digitisation?"). Initial anecdotal evidence points towards greater adoption of digital modes of payment by consumers and businesses even after remonetisation is almost complete in the Indian economy.

Digital technologies bring together more options for business, increasing competition and choice.

Figure 1.1 – Digital engagement benefits for Indian SMEs

In India, SMEs with higher digital engagement

Source: Deloitte Access Economics
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Demonetisation—a push towards further digitisation?

The Indian government has arguably pulled off one of the most significant reform measures in the recent past by demonetising high-value currency notes. This caused a sudden shortage in currency in circulation, as approximately 86 percent of the currency had to be exchanged. While the move had some negative impact, there were some long-term positives too. A push toward digitisation in the payment stream was one such phenomenon. The decision, in late 2016, to recall banknotes from circulation has essentially been a shot in the arm for fintech and other banking services in the country.

The shortage of currency made it necessary for all segments of society to use electronic money. The result was a massive increase in digital payment mechanisms even after the economy was completely remonetised. In fact, the economy has witnessed a 59 percent increase in transactions through digital channels in March compared to the first month after demonetisation was announced. It is important to note that while some of this increase would be an initial reaction, long-term structural factors show that India is ready for a digital revolution and this event will lead to permanent shifts in digital. By 2021, the Indian Internet user base is forecast to reach 555.3 million—44 percent of the population.

Over the longer term, payment gateways, cards, mobile wallets, online retail, payment banks, and e-marketplace industries are likely to see net gains.[3]

Consumer engagement

Economic takeaways

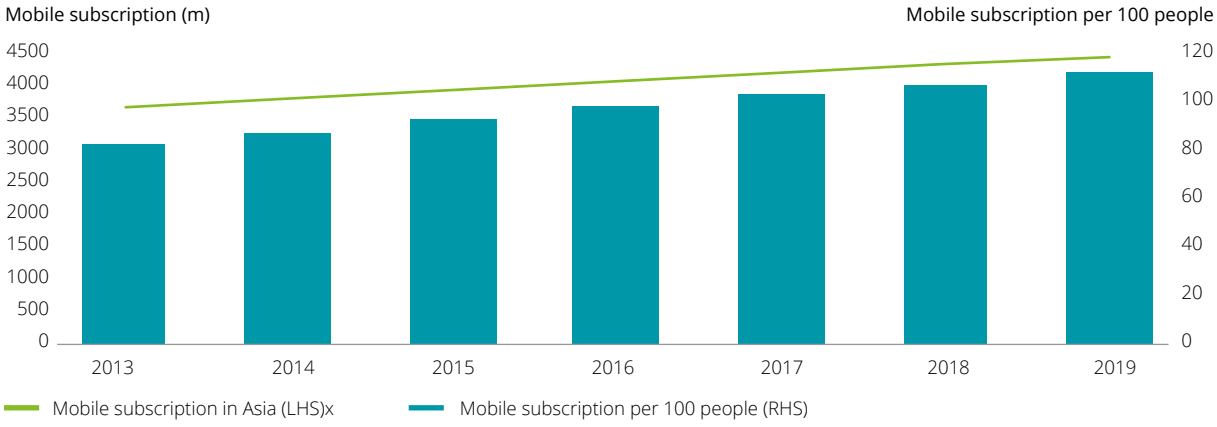
- Digital is driving connectivity in Asian countries, particularly via mobile Internet.
- This ranges from mobiles connecting consumers, to the rise of social media and opportunities presented by digital banking, particularly in countries where there are large unbanked and rural populations.

Individuals around the globe are embracing and driving change, at least where the technology is available and affordable. Digital has the potential to open up a range of opportunities for consumers, from connectivity and mobility to access to social media and digital banking, and this can support economic growth and development.

Digital is driving connectivity in Asian countries, from mobiles connecting consumers in rural areas to improving liveability and convenience in urban areas, particularly as urbanisation throughout Asia results in congestion and environmental challenges.

Asian consumers are either already embracing digital or showing that they will when access improves and costs ease, as evidenced by the strong adoption of mobile.

Figure 1.2 – Mobile phone subscriptions in Asia (millions) and per 100 people



Source: Economist Intelligence Unit
Deloitte University Press | dupress.deloitte.com

Mobile and Internet

Mobile penetration rates are rising rapidly in the region, driving widespread Internet adoption and transforming consumer behaviour.

In Indonesia, for example, consumers have embraced mobile Internet in a country where difficult terrain has inhibited investment in fixed-line communication. There are over 1.3 mobiles per capita in Indonesia, and the trend has been away from 2G phones towards phones that can access the Internet. A survey by Nielsen in 2011 found that Indonesians who do use the Internet were more likely to access it on their mobile phones than in any of the other major countries in Southeast Asia. There has been strong take-up of social media; in May 2016, Indonesia was ranked 4th in the world in terms of number of Facebook users (78 million), behind India, the United States, and Brazil.[4]

Internet penetration in India has also grown rapidly over the last few years, with around 432 million users in December 2016, and a potential 750 million additional potential users. Also, 77 percent of urban and 92 percent of rural users consider mobile the primary device for accessing the Internet.[5]

But price and access remain a hurdle—users are ready but the Internet remains expensive.

In Indonesia, the cost of Internet (measured as 10 mbps, unlimited data, cable/ADSL in 2016) is US$26, the 81st most expensive in the world. It is US$42 in the Philippines, US$37 in Malaysia and US$30 in Singapore.[6]

When GDP per capita is taken into consideration, the relative costs of Internet access for Asian countries remain relatively high.

For mobile broadband services, the cost of 500 mb of prepaid mobile data as a share of income is the highest in the world, other than in Africa, as shown in Figure 1.3.

Figure 1.3 – Price of mobile broadband services by region, percentage of GNI per capita

	Europe	Arab states	CIS	Americas	Asia & the Pacific	Africa
Pre-paid handset-based	1.1	5.7	5.7	5.9	5.9	38.8
Post-paid handset-based	1.1	2.2	5.6	5.0	3.5	36.2

Source: ITU 2013, https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2013-e.pdf
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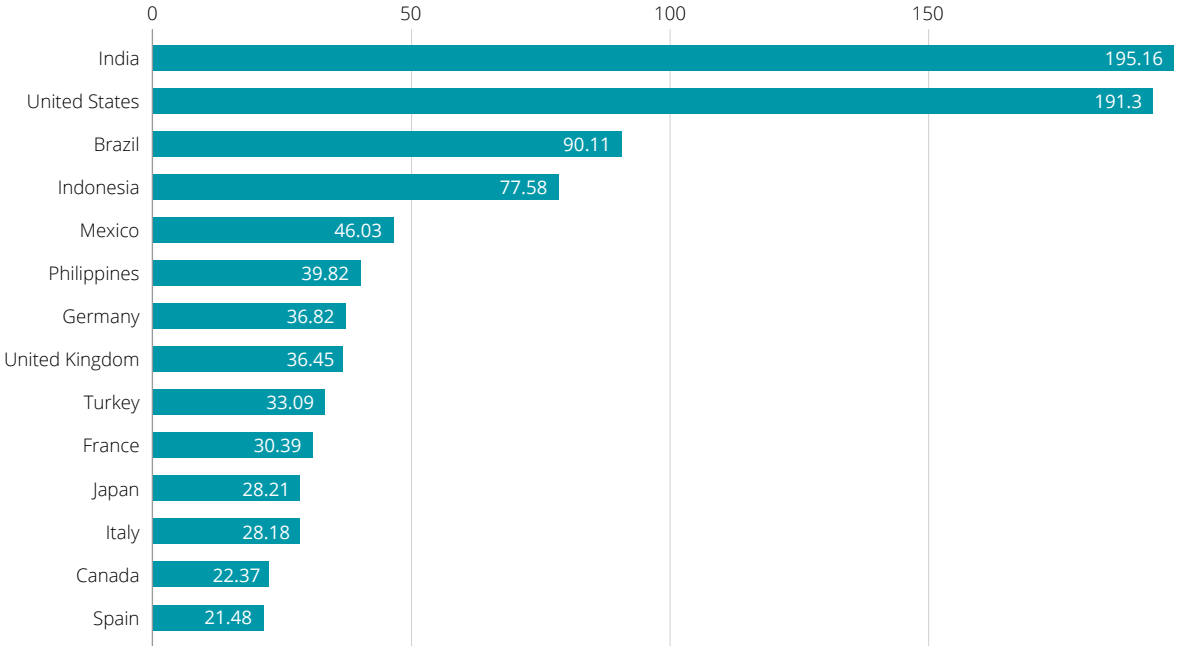
Social media

There is high participation in social networks, with India leading the way with the highest number of Facebook users in the world (195 million in May 2016). Indonesia ranks 4th, with 78 million users.[7] Facebook has been banned in China, though there are alternative social networks including the Renren network and WeChat.

When considering all forms of social media, over 1 billion individuals across Asia were active users of social media in 2016, with 806 million in China alone and a further 130 million in India and 76 million in Indonesia.[8] In China, Weibo, the country's most popular blogging platform, reported that monthly active users grew 33 percent year over year to 313 million in December 2016, and that 90 percent of these were mobile users.[9]

Figure 1.4 – Leading countries based on number of Facebook users as of May 2016 (millions)



Source: Statista https://www.statista.com/statistics/268136/top-15-countries-based-on-number-of-facebook-users
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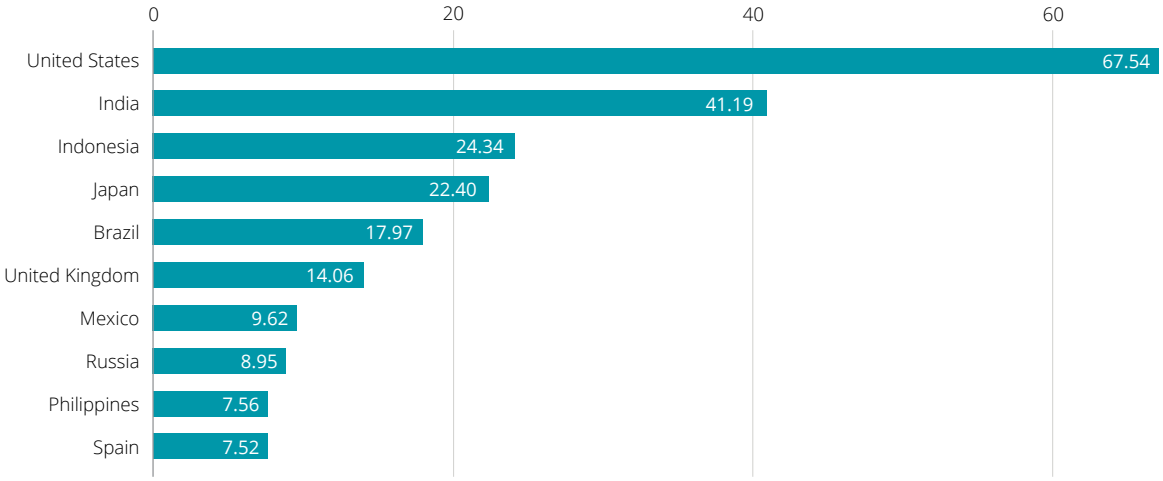
Figure 1.5 – Number of active Twitter users in leading markets as of May 2016 (in millions)



Source: Statista, https://www.statista.com/statistics/242606/number-of-active-twitter-users-in-selected-countries
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In Japan, LINE is the most popular mobile messaging app, allowing users to send messages, share picture, movies, and music. LINE has 50 million active monthly users, representing 40 percent of the country's population.[10] As shown in figure 1.5, Japan has the fourth-highest number of Twitter users in the world, and is the only market in which Twitter is more popular than Facebook. Its appeal to the Japanese includes the ability to post anonymously and the greater detail possible in 140 characters relative to English. Japan also holds the world record for the most number of tweets per second (143,199) during a television broadcast of a local movie classic.[11]

E-commerce is also expanding in China, now the world's largest e-commerce market. Online shopping is emerging as a strong competitor to shopping in physical stores, with its success underpinned by sophisticated payment systems and efficient logistics networks. Some of the major online marketplaces allow users to create accounts with value on the platform itself, so that payments are not delayed while waiting for bank clearance, allowing goods to be delivered faster.

The Taobao Marketplace (launched in 2003) is the Alibaba Group's consumer-to-consumer e-commerce platform. The Alibaba Group also operates the Tmall website (launched in 2008), which is its business-to-consumer e-commerce platform. While Taobao Marketplace facilities the transaction of goods between private buyers and sellers, including small businesses, Tmall sellers are typically larger registered businesses. These two platforms had 443 million active buyers as of the end of 2016,[12] which roughly represents 60 percent of all Internet users in China. Tmall.com and Taobao.com are currently the third-and fifth-most visited websites in China[13], respectively, and ninth and tenth globally.[14]

In the year ended 31 March 2016, the Alibaba Group reported annual revenue of around RMB 101.1 billion, with over 80 percent of this coming from its e-commerce operations in China.[15] In 2016, the gross merchandise volume (GMV) of the Chinese e-commerce market was RMB 20.2 trillion, with 23.3 percent, or around RMB 4.7 trillion, comprising of online shopping.[16] Alibaba's annual GMV in the year to 31 March 2016 was around RMB 3.1 trillion.[17] Over 60 percent of this activity was transacted on the Taobao Marketplace.

These activity and market share numbers suggest that Alibaba's e-commerce platforms are pervasive in China and have grown rapidly in just over a decade. These numbers also imply that online retailing has had extensive reach in the country. A media report indicates that the number of stores on the Taobao Marketplace with annual sales under $15,000 increased by 60 percent between 2011 and 2013.[18]

Over the same period, the number of stores with sales between $15,000 and $150,000 increased by 30 percent, and the number of stores with sales over $150,000 increased by 33 percent.[19] Furthermore, there is activity outside urban areas as well. In 2014, more than 2 million Taobao Marketplace stores were registered to rural IP addresses in China.[20] Digital technologies have lowered the barriers to market access, with examples of this leading to the transformation of remote farming communities.[21]

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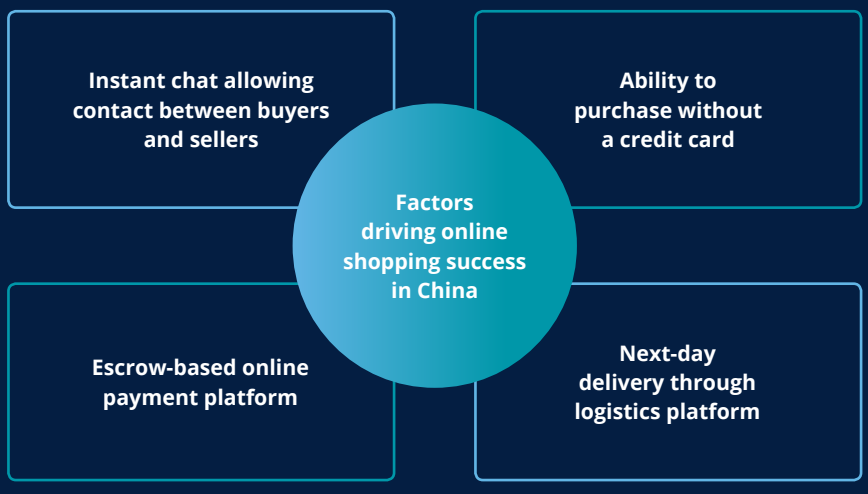
Online shopping in China

The success of Taobao Marketplace and Tmall is attributed to the ability of the Alibaba Group to customise its features to meet the needs of the local market. For example, the AliWangWang instant chat program allows for pre-sales consultation and after-sales service. The introduction of the Alipay escrow-based online payment platform in 2004 provided consumers the additional security of only paying for goods upon receipt and inspection. At the same time, the availability of Alipay meant that many Chinese consumers who did not have credit cards were able to purchase goods online. In 2014, Alipay surpassed Paypal to become the world's largest online payments platform (Bobsguide).

In addition to the development of this digital infrastructure, investment in logistics support services has also been critical. The online shopping experience is ultimately dependent on the goods delivery experience. The Cainiao Network, a partly owned affiliate of Alibaba Group, runs a logistics platform and central data-communications network that helps coordinate deliveries with more than 3,000 independent logistics companies located across China and abroad (Alibaba Group). As of 2015, Cainiao was able to offer next-day delivery of goods ordered from Alibaba's online marketplaces to 34 cities, and had aimed to expand this to 50 cities by the end of 2015 (Alizila). Again, service coverage goes beyond the cities. For example, Cainiao served more than 1,200 villages across a number of provinces at that time, and around 20 percent of the parcels delivered to rural areas were delivered on the same day or the next day (Alizila).

Other factors driving the success of online shopping in China include regular discounts and sales 'events,' such as Singles' Day, and extensive marketing via social media.



As these trends converge and combine, the nature of retail, distribution, marketing, and consumer engagement is changing. With over half of the world's population, 58 percent of its mobile subscriptions, and 53 percent of its Internet users, Asia will play an increasing role in the use of digital platforms to engage customers.[23]

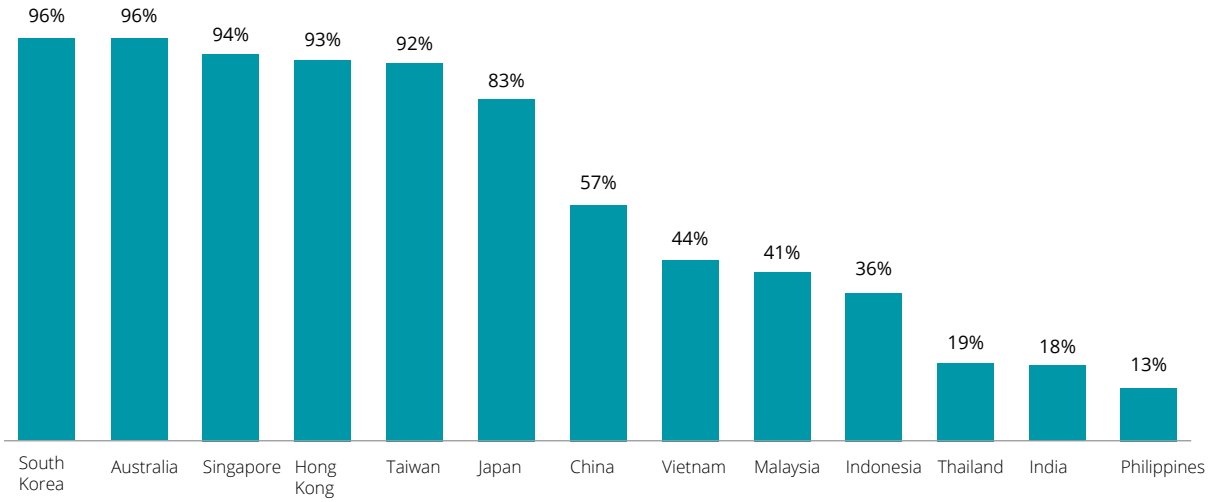
Digital banking

Consumers also stand to benefit from gains in digital banking. In developed Asian markets, Internet banking is now near universal and smartphone banking has grown more than threefold since 2011. In emerging Asian markets, about a quarter of consumers are using computers and smartphones for their banking.

This is important for the traditional banking system, as more than 80 percent of consumers in developed Asian markets are willing to shift some of their holdings to a bank that offers a compelling digital proposition. In emerging Asia, more than 50 percent of consumers indicate such willingness.[24]

Digital banking includes smartphone and Internet banking. Smartphone banking is making particular inroads in developing Asia, with penetration increasing over fivefold in the three years from 2011 to 2014, going from 5 percent of the population using smartphone banking in 2011 to 26 percent in 2014.[25]

Figure 1.6 – Digital banking penetration, 2014



Source: McKinsey 2015, Digital banking in Asia: What do consumers really want?

Mobile banking can also improve financial inclusion in the region. For example, in Papua New Guinea, mobile network operators have been exempted under the Banks and Financial Institutions Act 2000 to conduct mobile phone money transfers.[26] In some countries, electronic top-ups allow individuals to send or receive airtime, which can act as transfers similar to mobile money. Further, mobile banking promotes financial inclusion by providing access even in regions where the number of physical branches is limited.

Financial inclusion through digital banking has been taken very seriously in India, where a large section of the population still relies on informal sources of financing. The government started to push for banking via digital modes in 2014 through the popular JAM (Jan Dhan, Aadhar, and mobile) program. The idea is simple: JAM aims to connect a citizen's unique identity number (Aadhar number) with the bank account and mobile number. Other examples in India include the use of Unstructured Supplementary Service Data (USSD), which allows for mobile banking transactions using basic feature phones without the need for mobile Internet connectivity; Unified Payments Interface, which powers multiple bank accounts in a single mobile app; and micro ATMs, where business correspondents (BCs)—who might be local shop owners—act as "micro ATMs" to conduct instant transactions.

Mobile payments are also booming; of the 900 million WeChat users in China, 800 million are using its mobile payment services. Further, AliPay's Quick Response (QR) codes account for about half of the US$5.5 trillion mobile payments made each year in China.[27] Mobile payments are increasingly being used in favour of cash for transactions ranging from grocery shopping to paying for taxis and rental leases.

There is significant potential for such technologies to have an impact on consumers and improve convenience, particularly as much of Asia's populations remain unbanked (see figure 1.7).

Figure 1.7 – Share of population (15+) with a bank account at a financial institution

Country	% with a bank account
Cambodia	12.6%
Myanmar	22.6%
Philippines	28.1%
Indonesia	35.9%
India	52.8%
Thailand	78.1%
China	78.9%
Malaysia	80.7%
Singapore	96.4%
Hong Kong	96.1%

Source: World Bank Global Findex http://databank.worldbank.org/data/reports.aspx?source=1228

Government engagement

Economic takeaways

- In Asia, governments have been taking a greater lead on digital relative to the rest of the world, and this can help countries leap over development hurdles.
- Digital technologies support economic growth and development, and government can play a role in making the most of these technologies to enable the economic advancement of the region.

Digital technologies can help countries leap over development hurdles, increase productivity, and boost economic growth—technological advances and falling prices mean that even countries without extensive telco infrastructure are able to take advantage of digital. Innovation is increasingly based on digital technologies and business models that effectively utilise ICT. As innovation is a key driver of economic and social gains, encouraging businesses and individuals to fully embrace digital technologies should be a priority for governments. Indeed, governments have a strong incentive to provide the private sector with policy incentives to encourage this investment.

In Asia, governments have been taking a greater lead on digital relative to the rest of the world.

- Singapore is ranked first globally on the Networking Readiness Index (NRI), according to the World Economic Forum. This includes ranking No. 1 for government usage on the NRI.
- The UN 2016 e-Government Survey ranked Singapore and the Republic of Korea among the top five world leaders on the Online Service Index (OSI). The Republic of Korea is in the process of implementing a new vision for its government operations, "Government 3.0," with a focus on sharing, openness, communication and collaboration. Citizens can see all services provided by the Korean government on one portal.[28]
- The UN 2014 e-Government Survey ranked the Republic of Korea and Singapore among the world's top three e-government leaders, followed by Japan at number six.[29]

As noted by the Deloitte indices above, Asian governments have a high level of digital engagement compared with other countries with similar GDP per capita.

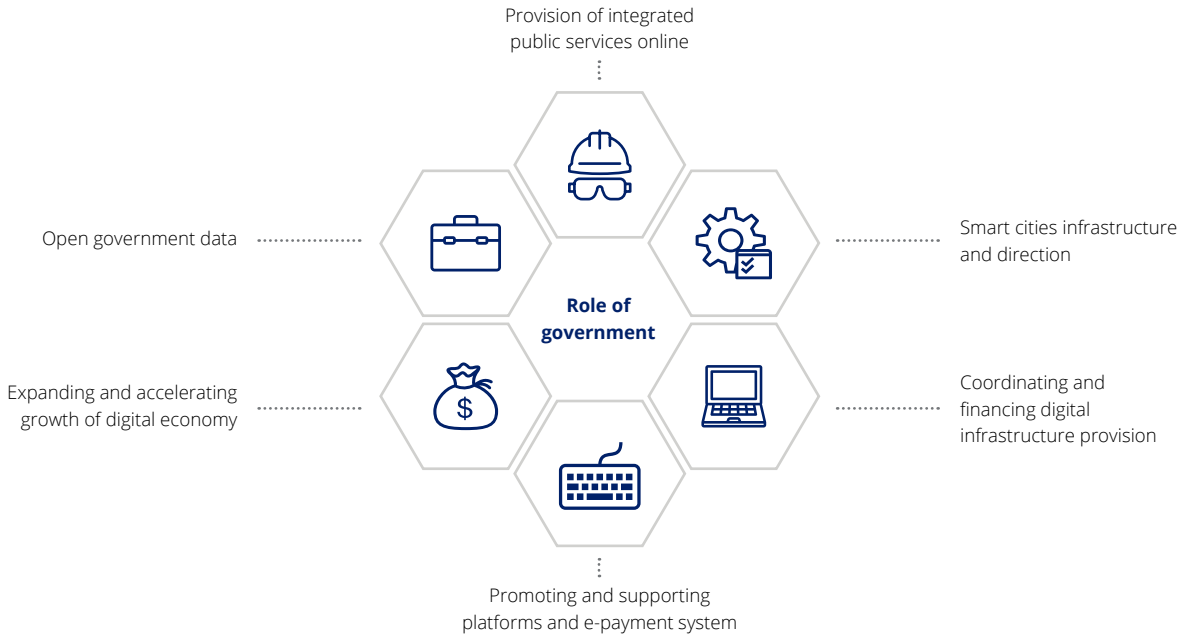
There are a number of roles and opportunities for government. It could act as a facilitator, for instance, by providing policy incentives to support digital infrastructure development, or directly invest in digital and increase the use of digital in its own operations—by providing government services online, for example. This chapter explores some of these aspects.

Role of government

Government can play a role in a number of areas to drive digital opportunities in Asia. It is acknowledged that there are many policy agendas associated with digital, ranging from privacy, cyber-crime, and censorship to robotics. However, in this chapter, we focus on the role for government as shown in Figure 1.8.

The UN 2016 e-Government Survey ranked the Republic of Korea and Singapore among the world's top four e-government leaders, followed by Japan at number 11. Asia's regional average is above the global e-Government Development Index average.[30]

Figure 1.8 – Role of government



Source: Deloitte Access Economics

Coordinating and financing digital infrastructure provision

Governments play a crucial role in improving access to high-quality, reliable, and affordable internet for all residents.

This has had positive economic impacts. Rollout of broadband in China (1999 to 2007), with increase in internet domains and users per capita, had a positive impact on firms' manufacturing exports in ICT-intensive sectors. It raised the number of firms that export, the firms' share of export in total sales, and the real value of firms' exports. The higher share of internet domains and users also increased firms' real output and labour productivity.[31]

Research presented in the World Bank's 2009 report *Information and Communication for Development* found a GDP boost of 1.38 percentage points for every ten percentage points increase in broadband penetration.[32]

Whole-of-government service delivery

The spread of digital has also facilitated the trend towards the provision of integrated public services online. This makes it easier for people to interact with the public administration to access information and essential services (whole-of-government service delivery).

India has started the Digital India initiative wherein a whole range of services are to be digitised to increase their reach and improve transparency in tendering. These initiatives have also taken place in the fiscal space, with India establishing the GST System Project. This initiative aims to establish a uniform interface for the tax payer and a common and shared IT infrastructure between the centre and states. This is essentially the backbone upon which India's biggest tax reform in recent years is built.

India has also established the Bhoomi ICT-based land registry and management system in Karnataka. This has involved the integration of the registration department with land-acquiring bodies and banks and other financial institutions, resulting in streamlined and simplified transactions and record administration.

The Japanese economy is unique in its own right as it has one of the most advanced Internet infrastructures in the world. The economy faces strong demographic pressure and one of the ways of tackling it is increasing productivity. Productivity can be increased by retooling the existing population, and digital innovations possibly provide the best way forward. The government, for its part, has a number of initiatives for enhancing its strengths in the ICT sector. Japan also has a number of e-government initiatives that are focused on transcending agency boundaries to enable instant use and sharing of information in ways that unify national and local government.

The smart Japan ICT strategy unveiled in 2014 had two major elements, the first being ICT growth strategy and the second, an initiative on the intensification of international competitiveness and global outreach in the field of ICT. The vision was to create innovation by connecting various things and services via ICT.

Singapore has REACH (reaching everyone for active citizenry @home), a government agency designed to engage citizens on policy issues. Since its inception in 1985, it has been modified to become a designated e-engagement platform to engage citizens via electronic means on key policy initiatives. This is helping it achieve the goals of increasing the participation of citizens in government processes.[33]

The increased connectivity between government institutions also has the potential to encourage different agencies to work more closely together, generating new insights that help improve existing decision-making processes. Singapore has the G-Cloud to securely share information between government agencies.

Open government data

Many governments across Asia are making their data available online in an effort to make public institutions more inclusive and accountable. This can also potentially lead to improved service delivery as data is understood in new ways.

A number of Chinese cities including Beijing, Shanghai and Chongqing have created open government data websites to allow citizens to access government data freely. Datasets include topics such as tourism, education, transportation, land zoning and medical treatment. These websites also encourage the development of Apps based on the available data and provide a platform for these Apps to be shared.[34]

Data analytics also provides governments the opportunity to focus on prevention rather than reaction. This is particularly evident in the area of disaster management:

The Republic of Korea has established the National Disaster Management Information System to provide detailed and timely data on impending disasters at each stage of disaster management (prevention, preparation, response and recovery). Disaster status information is able to be disseminated between local governments in one minute, down from the 35 minutes that were required prior to the establishment of the system. 3,800 CCTV are used in an open system for disaster management. Additionally, the public can receive SMS messages with updates on disaster information available.[35]

Japan has established a 'Nowcast' earthquake information system to warn of imminent disasters. Information on factors such as the timing of seismic wave arrivals and the estimated seismic intensities of incoming seismic waves can be produced.[36]

Ensuring that digital technologies deliver long-term and broad based gains

Governments have a key role in ensuring the social and economic benefits of digital technology are inclusive. The success and sustainability of the digital economy will depend on the ability of governments to develop agile frameworks that allow societies to anticipate and shape the impact of new technologies.[37]

According to the World Economic Forum, "Governments can play a supportive role in creating a level playing field by ensuring a business environment that allows firms to quickly react to new developments; this includes speedy procedures for opening a new business and bringing products to market, providing a supportive innovation ecosystem, ensuring that barriers to entry stay low by enforcing a competition regime that counteracts potential network lock-in, and promoting and facilitating ICT adoption by building out infrastructure and having a clear ICT strategy".[38]

Singapore ranks first in The 2016 Global Information Technology reports measure of Social impact. Gains from ICT adoption are widely shared with digital technologies being used to provide basic access to government services and ensuring that schools are connected.[39]

Smart cities

Smart cities are urban spaces that use innovative digital technologies to support their operations. Digital tools are built into the infrastructure of the city itself to make it more efficient, innovative, and vibrant. This is one area in which digital tools can help a government and city leap over development hurdles in terms of infrastructure, towards more efficient city operations.

Smart cities may include congestion-and crime-management systems: Singapore has a network of sensors, cameras, and GPS devices embedded in taxis to track traffic and predict future congestion to warn drivers to take alternative routes.

In India's ninth most populous city, Pune, the state government introduced Safe City advanced electronic surveillance and the Physical Security Information Management (PSIM) project to combat crime, urban policing issues, and terror threats. This involved installing more than 1,200 cameras as well as a state-of-the-art command and control centre (C3). In almost all major states in the country, police departments have developed apps to support women's safety.[40]

In Japan, smart city initiatives have a particular focus on ensuring the functions of electricity supply networks and emission reduction. As part of these initiatives, thousands of residences have been equipped with home energy-management systems; electric vehicles and renewable energy have been introduced across much of Yokohama. The size of the smart city-related market is expected to be 3.3 trillion yen by 2020.[41]

Another benefit of smart cities is that they support regional connectivity; for example, the government of Singapore has promoted data centres in an effort to attract private entities. In addition, Singapore's Personal Data Protection Commission (PDPC) has actively engaged industry in the development of good practices in data management, including those related to the transfer of data.

This has contributed to Singapore becoming a global leader in digital transfer, which has helped underpin the country's success as a financial hub.

In the case of smart cities, it is essential that the government lead the charge, as the initiatives involve managing significant amounts of sensitive and personally identifiable citizen data. The data must be managed collaboratively and also secured against potential cyber-attacks. A country's government is often best-placed to do so.

According to an Economist survey, 33 percent of respondents who claim that their city has better governance were familiar with the concept of a "smart" city and what this constitutes, compared with 16 percent of those with weaker governance.[42]

Many governments in the region have resorted to planning for smart cities to further the goal of digitisation while also alleviating concerns such as overcrowding, environmental issues, and increased demand for infrastructure and energy. The Japanese government has supported these initiatives for some time by giving subsidies and also collaborating across the globe for the development of Japanese businesses.

Singapore's government established the Smart Nation Vision in 2014 as an initiative to create their smart city. Today, nearly 98 percent of public services are available online, among countless other initiatives (see infographic at the end of the "Role for government" section). The Indian government also has its own smart city mission, wherein 100 cities have been selected for development, with the idea that cities should be able to plan their own growth.

What's next?

Rapid advances in technologies and digital platforms are certainly changing the way we live and operate. The advent of the Internet and the prevalence of smartphones have caused us to rethink how we, as individuals, consume; digital technologies are lowering barriers to entry and presenting new models for businesses, especially small to medium-sized enterprises; and digital is driving the development of public infrastructure, which can help leapfrog traditional development hurdles, increase productivity, and support economic growth.

Technological advances on the horizon, such as robotics and artificial intelligence, are expected to change the way we live and work. Countries that are prepared and digitally engaged will be better placed to ride this next wave.

The government has a key role to play in helping economies and societies take a proactive position on digital, both through its own investment and by providing policy incentives to encourage private-sector investment. How this translates to a country's economic growth, financial inclusion, and social cohesion depends on a number of other factors, including the country's approach to innovation.

As countries become more digitally savvy and economies develop, the role of businesses and consumers come to the fore, while governments take more of a back seat.

Asian economies are leading the race in terms of digital engagement. However, each country is running its own race and there are clear opportunities for countries to accelerate their growth and development by learning from each other's experiences.

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Appendix A: Construction of the Deloitte indices

Engagement indices

The engagement indices are constructed from a range of existing indices and other publically available data. The full range of data sources include:

- The World Bank, "The ease of doing business," 2016; in conjunction with PwC, "Paying taxes 2016: The global picture"; "World development indicators," 2016.
- The World Economic Forum (WEF), "The Networked Readiness Index," 2016; "The 2014/15 executive opinion survey."
- The United Nations Department of Economic and Social Affairs, "e-Government Development Index," 2016.
- The Software Alliance, "The compliance gap: BSA global software survey," 2014.
- The International Finance Corporation in conjunction with the World Bank, "Doing business 2015: Going beyond efficiency," 2015.
- The International Telecommunication Union, "ITU world telecommunication/ICT indicators database, 2015."
- UNESCO, "Tertiary education enrolment rates."
- OECD, "Patent database"
- The IMF, "Financial access survey," 2016.
- The Fletcher School, "Digital Evolution Index," 2013.

Each index is comprised of several components coming from a combination of the above. In particular, the WEF's Networked Readiness Index, the Fletcher School's Digital Evolution Index, and the World Bank's Ease of Doing Business Rankings were built into the indices.

Government engagement is made up of a combination of data profiling government use of digital technology, the extent to which they are creating a political and regulatory environment to foster digital development, as well as the quality of infrastructure established by the government to enable the use of digital.

Like government, business engagement is made up of business use of digital, but also includes measures of the business environment, for instance, innovation levels and start-up culture present in the economy.

Individual engagement is a compilation of usage measures (for example, mobile phone subscriptions, households with Internet access, and so on), as well a s a demographic profile of individuals in the economy (for instance, education and income levels of the population).

Digital Intensity Index

The digital intensity map was constructed by examining the extent to which digital advances will impact an economy industry by industry. Each industry was then weighted by the extent to which digital would have an impact (for instance, impact of digital on finance and communication is larger than on agriculture and manufacturing). Data for these industry weightings come from the Deloitte Access Economics report: *Digital disruption: Short fuse, big bang?*

Asian countries were then assigned these weights in proportion to the industry makeup of their GDP (from UN data). The result being an "intensity" score for each nation—with those countries with a higher focus on industries set to be disrupted by digital scoring higher.

Future China was derived by reweighting current industry shares of GDP to a more services-focused economy, and then recalculating digital intensity assuming those shares

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