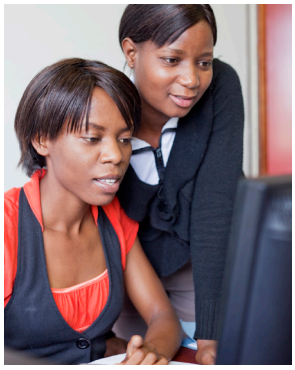
High Tech Practice




Online and upcoming: The Internet's impact on aspiring countries

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Olivia Nottebohm
James Manyika
Jacques Bughin
Michael Chui
Abdur-Rahim Syed

Preface

This report examines the impact of the Internet on a group of developing countries with both the scale and dynamism to be significant players on the global stage in the near future. It is part of a series that focuses on the impact of different, Internet-related technologies on business and the economy. It complements and builds on previous work assessing the impact of the Internet on the advanced economies, as well as China and India, which should provide a basis for comparison (see McKinsey Global Institute, *Internet matters: The Net's sweeping impact on growth, jobs, and prosperity,* May 2011).

In the four decades since its inception, the Internet has driven dramatic change. It has enabled flows of information, including entertainment, news, and financial and academic material. It has brought people closer together by enabling various forms of communication, most notably e-mail, instant messaging, video conferencing, and social networking. And it has allowed consumers to purchase virtually anything at any time, while providing producers with direct access to a wide range of markets. Furthermore, the Internet is also a bustling industry, spurred by entrepreneurship and supported by a variety of industries and large enterprises. Online productivity tools and communications advancements provide benefits to almost all enterprises and governments. Moreover, the Internet has helped governments to broaden citizen services and improve their delivery. In a very short period, it has become difficult for most of us to imagine a world without instant and continuous access to the Internet.

Much of the research on how the Internet has affected business and the economy, including our own, has focused on advanced nations or perhaps large developing countries such as India and China. In this report we turn our focus to what we call "aspiring countries," which are defined as having the economic size and dynamism to be significant players on the global stage in the near future and achieve levels of prosperity approaching those of the advanced economies. Using this definition, we identified 30 countries with a collective GDP in 2010 of $19 trillion, or 30 percent of global GDP. Many of these countries—for instance, Mexico and China—are already significant players in the global economy. However, none has yet achieved the wealth and prosperity seen in advanced economies. In seeking to understand the impact of the Internet in aspiring countries, we largely focus on how economic growth and prosperity have been affected; we also seek to discover how individuals, entrepreneurs, enterprises, as well as public-sector entities have been transformed.

In an attempt to better assess the impact, we developed case studies for nine of the 30 aspiring countries—Argentina, Hungary, Malaysia, Mexico, Morocco, Nigeria, Taiwan, Turkey, and Vietnam. These nine countries represent 20 percent of the GDP of all aspiring countries and they span the regions in which aspiring countries appear. For this sample, in addition to assessing the Internet landscape and its impact on the different groups of participants, we examine the potential for countries to leverage particular strengths of their economies to capture greater impact from the Internet. However, we do not offer prescriptive policies for countries, but rather expand and in some cases initiate dialogue within these countries on how they can further accelerate their initiatives and policies to fully capture the impact of the Internet.

In order to highlight the flurry of Internet activity in these countries, we relied on five broad sources of data: (1) we constructed macroeconomic analyses for the countries, taking into account various data related

to Internet use and infrastructure; (2) we conducted in-country microanalyses of various participants using available data; (3) we carried out a primary survey of about 2,500 SMEs (small and medium-sized enterprises) in eight of the nine focus countries; (4) we leveraged existing research from local and global institutions; and (5) we conducted interviews with experts in relevant countries. The data challenges were significant, which is not surprising for a project of this nature: we encountered incomplete data, noncomparable data, and unreliable data, and we also needed to address issues of bias and selection associated with survey-based results. We conferred with multiple sources and reviewed our findings with experts and institutions throughout the process; we also conducted sensitivity analyses. As a result, we are relatively confident that the findings are directionally robust. However, there is a clear need to conduct further research and capture more data given the growing importance of the Internet and its transformational impact. To help with ongoing research, we have attempted to create some useful indices that can be used to track the impact and development of the Internet (e.g., iGDP, which measures the Internet's contribution to an overall economy; e3, which measures the strength of a country's current ecosystem; i4F, which assesses the strength of the foundations of the Internet in a country; e-commerce platform, which tracks the health of e-commerce foundations in a country; ease of Internet entrepreneurship, which measures the ease of starting and financing an Internet-related business). We have also developed a framework for assessing the macroeconomic strengths of different countries that can be leveraged to fully capture the impact of the Internet (e.g., wealth in natural resources, position as a hub of trade, innovation potential, strength in local consumption, and a strong SME sector). It is important to note that the examples we cite in this report are by no means comprehensive or intended to be considered the most compelling. Their purpose is to illustrate types of innovations and developments we found at the time of writing.

This is an independent McKinsey & Company report that draws on research from McKinsey's High Tech Practice, information from academic and public sources; research conducted with Google; and work from the McKinsey Global Institute (MGI), the business and economics research arm of McKinsey. Without the contributions of academics and researchers cited throughout the report, our effort would not have been possible.

The project was led by Olivia Nottebohm, a McKinsey principal in Silicon Valley; James Manyika, a McKinsey and MGI director in San Francisco; Jacques Bughin, a McKinsey director in Brussels; and Michael Chui, a senior fellow at MGI in San Francisco. Abdur-Rahim Syed managed the project team of Mitra Mahdavian, Lionel Guillou, Aaron Berger, Julia Huang, and Nirant Gupta. The core team worked closely with in-country colleagues in McKinsey's High Tech Practice, including Acha Leke, a director in Lagos; Bengi Korkmaz, a principal in Istanbul; Matias Satz, a principal in Buenos Aires; Olazhir Ledezma, a principal in Mexico City; Suraj Moraje, a principal in Johannesburg; Juan Bertiche, an associate principal in Buenos Aires; Nuno Goncalves Pedro, a senior expert in Beijing; and Othmane Mikou, an engagement manager in Casablanca. We are also grateful for the insights of Nicklas Lundblad, Betsy Masiello, and Jonathan Hall at Google.

We are grateful for the review, challenge, and advice provided by our academic advisers for this research: Martin Baily, a senior adviser to McKinsey and a senior fellow at the Brookings Institute; Bill Dutton, a professor of Internet studies at the University of Oxford; Nahed Azab, an assistant professor at American University in Cairo and an expert in e-government; and Hal Varian, the chief economist at Google and an emeritus professor in the School of Information, the Haas School of Business, and the Department of Economics at the University of California at Berkeley.

McKinsey's research and information network and MGI's analytics group were also pivotal in the production of this report. The authors would thus like to acknowledge the researchers who made significant contributions to the fact base: Soyoko Umeno, senior research analyst in global economics with MGI, and Akshat Harbola, a knowledge specialist in global economics with MGI. Finally, we are grateful for the vital input and support of leaders in McKinsey's High Tech Practice, especially Peter Bisson, a director in Stamford, Conn.; Lenny Mendonca, a director in Washington, DC; and Richard Dobbs, a director in Seoul.

In conclusion, we view this work as part of a critical research program to develop a deeper perspective on the transformational impact of the Internet on growth and prosperity around the world.

Olivia Nottebohm
Principal, McKinsey & Company
Silicon Valley

James Manyika
Director, McKinsey & Company
San Francisco

Jacques Bughin
Director, McKinsey & Company
Brussels

Michael Chui
Senior Fellow, McKinsey Global Institute
San Francisco

Abdur-Rahim Syed
McKinsey & Company
Silicon Valley

In 2010...

1 billion Internet users in 30 aspiring countries—half of the global tally of Internet users

535 million users of online social networks in 30 aspiring countries, out of **957 million** users worldwide

310 million+ mobile devices used to access the Internet in 30 aspiring countries out of **800 million** worldwide

73% of Internet users don't use English as a first language

$135 billion estimated consumer surplus in 30 aspiring countries

143,000 Internet-related businesses started every year in 30 aspiring countries

1.9% average Internet contribution to GDP in 30 aspiring countries vs.

3.4% in developed countries

2.3% average Internet contribution to GDP growth in aspiring countries over the past five years vs.

21% in developed countries, 2004–2009

1.9 million

jobs associated with the Internet in six aspiring countries

1.3%

of jobs in six aspiring countries associated with the Internet

3.2 jobs created

per job lost in the SMEs of eight aspiring countries vs.

1.6 jobs

in developed country SMEs

Contents

Executive summary

The Internet today connects about two billion people worldwide. Half of these are living outside the advanced economies, often in countries some that are quickly climbing the developmental ladder, with diverse populations and inarguable economic potentialities; countries as varied as Algeria, South Africa, China, Iran and Mexico. One indicator of development is Internet adoption. The pace at which countries outside of the advanced economies are adopting the Internet is much faster than that of advanced economies, yet 64 percent of the population in these countries remain unconnected. Research by us and others has highlighted the power of the Internet to contribute to economic growth and prosperity, and provide individuals, entrepreneurs, enterprises, and even governments with new ways to connect, consume and deliver products, services and content.

Few studies have focused on the impact of the Internet and the opportunity it offers in the developing world. The bulk of the research, including our own, has thus far looked at developed countries and focused primarily on the quantitative impact of the Internet on GDP. In this report, we take a different tack, choosing to examine more populous and faster-growing parts of the world where the Internet offers even greater potential. We look beyond the impact of the Internet on GDP: we measure its broader impact in terms of consumer surplus and the development of Internet ecosystems. We also look at how different participants have benefited from the Internet already, specifically measuring country environments for e-commerce and entrepreneurship, and analyzing in detail the impact of the Internet on small and medium-sized enterprises (SMEs). Finally, we try to assess the potential for future impact of the Internet on these countries.

We have defined 30 countries as "aspiring": i.e., those with the economic size and dynamism to be significant players on the global stage in the near future and achieve levels of prosperity approaching those of the advanced economies. Together, these 30 countries represent 30 percent of global GDP. We have studied nine of these in particular detail: Argentina, Hungary, Malaysia, Mexico, Morocco, Nigeria, Taiwan, Turkey, and Vietnam. The combined GDP of this group constitutes one-fifth of the GDP of our set of 30 aspiring countries. We chose not to study India or China, the two largest aspiring countries, as we have covered them previously in other reports.[1]

While the aspiring countries vary in terms of the nature and development of their Internet ecosystems, as well as the nature of opportunities and challenges they face, it was overwhelmingly clear that the potential for the Internet to transform these economies is quite significant. Each country we studied offered its own unique insights in terms of impact to date, opportunities, and challenges in a way that makes the country case studies interesting in their own right. However, in summary the report makes seven key findings:

1. **The Internet is growing at a tremendous rate in aspiring countries, but with distinctly different growth paths.** Internet penetration has grown at 25 percent per year for the past five years in the 30 aspiring countries, compared with 5 percent per year in developed countries. This phenomenal rate is possible because of previously low penetration: while average Internet penetration in most developed countries is above 70 percent, it is half that for most aspiring countries. The path that the growth is taking is different from that seen in the developed world. In aspiring countries it is partly the outcome of the high rates of adoption of mobile phones. Mobile subscriptions in these countries have increased from 53 percent of worldwide mobile subscriptions in 2005 to 73 percent in 2010. Many Internet users in aspiring countries are gaining access to the Internet solely through mobile phones, using mobile technology creatively to address local constraints.

1 McKinsey Global Institute, *Internet matters: The Net's sweeping impact on growth, jobs, and prosperity,* May 2011; *McKinsey Quarterly,* "China's Internet obsession," March 2010; *McKinsey Quarterly,* "Can India lead the mobile–Internet revolution?", February 2011.

2. **The impact of the Internet in aspiring countries has been significant, but there is tremendous potential impact if these countries reach developed world levels of access and usage.** The Internet contributes an average 1.9 percent of GDP in aspiring countries—$366 billion in 2010. By comparison, the Internet in developed countries contributes an average 3.4 percent of GDP. The great potential for Internet growth in the aspiring countries can be seen in our nine focus countries. There the Internet has accounted for anywhere between 1 and 13 percent of GDP growth over the past five years—adding an estimated total of $28 billion incremental GDP. The average contribution to growth in aspiring countries of 2.8 percent is much lower than that of developed countries, where the Internet has contributed an average of 21 percent to GDP growth between 2004 and 2009. A great deal of scope for growth in the aspiring countries is also present in Internet impact on consumer surplus. Today, measurable consumer surplus is between $9 and $26 per user per month in the nine aspiring countries, much lower than the $18 to $28 per user per month we have seen in developed economies. However, as a share of the Internet's contribution to GDP, it is higher than in advanced economies.

3. **Individuals in aspiring countries have utilized the Internet in significant and dynamic ways.** Individuals have often been the first to benefit from the Internet in aspiring countries, mostly through free services such as e-mail, social networks, search engines, and access to information, educational, entertainment, and other content. The younger half of the population drives the adoption of online services, and the level of their engagement with certain online activities, such as social networking, often exceeds that of their developed country counterparts. As a result, individuals in these countries, when connected, have experienced greater change in access to content and services compared to their developed world counterparts. As already mentioned, the measurable consumer surplus has been significant. Social (non-economic) benefits of the Internet are also significant and can have an impact on the well-being of large numbers of people. These include individual benefits, such as the ability of individuals to access education and health information and join civic associations, as well as benefits to larger communities, such as the ability to coordinate disaster relief.

4. **Entrepreneurs in aspiring countries have thrived despite Internet ecosystem constraints.** Entrepreneurs in aspiring countries have been able to create many new businesses, many accessing customers and suppliers beyond their cities and countries. Many of these entrepreneurs have had to innovate, creating new business models that enable users to overcome local constraints, such as offering payment for online purchases upon physical delivery or using mobile accounts instead of credit cards. Occasionally, there have been entrepreneurs from aspiring countries who have ended up disrupting established models in the advanced economies. It's also important to note that many of these entrepreneurs are often effectively social entrepreneurs, as they are helping to build a robust Internet ecosystem that allows individuals, enterprises, and governments to play a broader and deeper role in the economy and society.

5. **There is tremendous potential for enterprises to leverage and gain benefits from the Internet—much more than they do today.** Large enterprises were the first to adopt broadband and now are leading the way in adopting more advanced Web technologies. They are as a result increasing revenue and lowering costs. Multinationals can also apply Web-based solutions learned in one market to operations in other countries. While in many aspiring countries they are constrained by distinct local conditions, those multinationals that have succeeded have reaped significant benefits from better resource management to increased efficiency among their employees. SMEs have not yet leveraged information and communication technologies (ICT) and Web technologies as much as large enterprises. SMEs continue to have lower broadband penetration and make limited use of electronic messaging and online marketing. The adoption of Web technologies by SMEs may propel economic growth in the aspiring world. Where they do deploy ICT and Web technologies, SMEs have found increased revenue, lower costs, higher productivity, and net job creation. Those SMEs that are investing in Web technologies such as e-mail, Web sites, cloud computing, and e-business solutions are also the ones growing the fastest. SMEs that spend more than 30 percent of their budget on Web technologies grow their revenue nine times as fast as SMEs spending less than 10 percent.

6. **Governments and the public sector are starting to offer better and more accessible public services through the Internet, but still have opportunity to go further.** E-government services are still nascent in aspiring countries. They have nonetheless already often allowed governments to improve delivery of services such as health care and education. As aspiring country governments invest

more in e-government services, they are likely to step up from one-way information dissemination to highly efficient two-way transactional modes with their citizens. Aspiring country governments have also often played an active role in driving Internet access and use, from investing in infrastructure in rural areas to creating innovation clusters with a focus on Internet-driven growth.

7. **Aspiring countries can leverage their distinct characteristics to drive the development of Internet ecosystems.** Each aspiring country has very different macroeconomic profiles, (e.g., the role that trade already plays in the economy varies). Each element of strength can be leveraged to fully capture the power of the Internet to drive growth and prosperity. How each country chooses to leverage these characteristics will likely lead to different and distinct paths to fully capitalize on the Internet's potential and growth.

In addition to the summary findings above, it is worth noting a few broader themes as follows: Our research shows that across all countries it is generally individuals and small entrepreneurs that have experienced the greatest impact from the Internet. What these user groups can now do in terms of access, reach, and interaction has expanded significantly. The diversity of languages, cultures and human experiences that these individuals and entrepreneurs represent also dramatically expands the richness of the Internet in terms of its products, services, and content, as well as the range of creativity, entrepreneurship, and innovation that are displayed.

In economic terms, the Internet creates the potential for these countries to leapfrog certain steps of development and facilitate faster entry and participation in the global economy. However, for the Internet ecosystems of aspiring countries to mature, these countries need to ensure that several foundational elements are in place. Chief among these are a robust infrastructure, easy and inexpensive access to the Internet, robust commerce platforms, and industry structures that are open to competition so that users have access to rich and compelling products and services.

Lastly, it is important to note that with the growth of the Internet anywhere—whether in the developed or developing world—comes greater threats and possibilities for misuse. There are large and growing concerns regarding piracy, cybercrime, cyberterrorism and privacy. These are very real concerns that require concerted and coordinated action. However, it is our view that the power of the Internet to drive growth and prosperity far outweighs the risks and concerns, and so these concerns should not be an excuse to limit the growth and use of the Internet. The opportunities for individuals, entrepreneurs, enterprises, and government and policy makers are tremendous, as the details in this report suggest.

1. The Internet is growing at a tremendous rate in aspiring countries, but with distinctly different growth paths

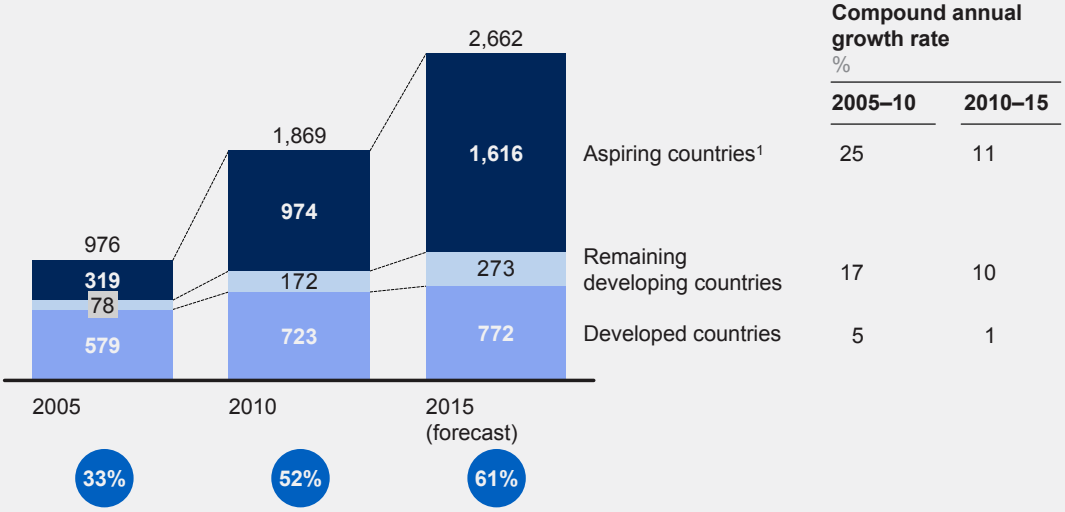
The Internet's presence in aspiring countries is significant. Even more noteworthy is the tremendous pace of its growth. From 2005 to 2010, the number of Internet users in aspiring countries has grown at about 25 percent per year (from 319 million users to 974 million users), approximately five times the growth rate of developed countries. The share of Internet users in aspiring countries has consequently increased from 33 percent in 2005 to 52 percent in 2010 and is forecast to further increase to 61 percent by 2015.[2] Looking forward, Internet use in aspiring countries is expected to grow at a rate of 11 percent per year, over ten times as fast as in developed countries (Exhibit E1).

2 Economist Intelligence Unit World data, Internet users, 2011.

Exhibit E1

More than half of current Internet users are in aspiring countries and their number is growing at ~five times the rate in developed countries

Estimated Internet users
Million users



	Compound annual growth rate % 2005–10	2010–15
Aspiring countries[1]	25	11
Remaining developing countries	17	10
Developed countries	5	1

1 Includes Algeria, Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hungary, India, Indonesia, Kazakhstan, Malaysia, Mexico, Nigeria, Pakistan, Poland, Romania, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, Ukraine, Vietnam. Data unavailable for Morocco from this source.

SOURCE: Economist Intelligence Unit (EIU) World Data; McKinsey analysis

Having cost-effective and high-quality Internet access is crucial to spreading the technology in aspiring countries. An expanding Internet infrastructure has allowed the dramatic rise of Internet use in aspiring countries, often with lower connectivity costs. Advances in PC and mobile phone technologies have led to better performance at much lower cost. Millions of people are today accessing the Internet through simple feature phones.

In the evolution of their Internet ecosystems, the aspiring countries we studied have some shared experiences as well as some very distinct differences. Similarities have included the importance of infrastructure and digital literacy as building blocks. E-commerce has also thrived, although only where certain preconditions have been met, including the security of paying online and the degree of trust in parcel delivery. Differences have often arisen in the way countries have circumvented such barriers. Some countries have overcome constraints related to the security of online payments through increased legal protections; others have found alternatives to credit card payment such as online payments tied to mobile phone billing. Another example of such differences is in parcel delivery systems. Private-sector players have often stepped in to provide reliable parcel delivery. In addition, entrepreneurs have often found creative ways to circumvent parcel delivery issues such as shipping to local grocery stores that can hold products for pick up. It is clear that while cost and access constraints have limited Internet penetration and the engagement of users in all countries, individuals have often found new and innovative ways to leverage the Internet for their economic and social benefit.

High-quality Internet access was once prohibitively expensive for many users in aspiring countries, as the fixed and variable costs associated with fixed-line broadband was usually passed on to individuals. The rise, and near ubiquity, of mobile Internet has circumvented this problem. Mobile phones are less expensive than laptops, and rural areas are now made accessible without prohibitive capital outlays on cable. Mobile device subscriptions have grown at significantly higher rates in the aspiring world. Between 2000 to 2010, the annual growth of mobile subscriptions was 7 percent in the United Kingdom and 9 percent in the United States. Over the same period, Argentine mobile subscriptions grew at 22 percent per year and Malaysian mobile subscriptions at 19 percent per year. The difference is even more dramatic when we look at countries that have more serious infrastructure challenges. Mobile subscriptions in Vietnam grew at an annual rate of 67 percent and in Nigeria at 109 percent over this period.[3] While only 25 percent of Internet users in developed countries such as the United States and United Kingdom gain Web access principally through mobile phones, in aspiring countries that share is often much higher: in Egypt it is 70 percent; in India, 59 percent; and in Nigeria 50 percent.[4] These users are urban as well as rural, and are often young people.

In summary, the state of the Internet at the time of writing varies significantly across different aspiring countries and also when compared with the advanced economies. (See Exhibits E2 and E3 for a summary of the landscape of Internet usage, impact, and ecosystem health across the aspiring countries on which we focus, with a set of developed countries included for comparative purposes.)

Internet users in aspiring countries have adopted certain online activities more quickly than their counterparts in developed countries. The popularity of social networking is one example. Globally, Internet users spend 17 percent of their online time on social networks.[5] But aspiring country users often use social networking at much higher levels. Mexican users spend 30 percent of their time online and Malaysian users 33 percent engaged in social networks.[6] Social networking for the purposes of communication partly drives this behavior, as social networks offer an inexpensive alternative to telephone communication within and between countries. The economics for the individual has driven the popularity of Internet-based alternatives to more expensive traditional communication. Skype, for example, is already the world's largest international voice carrier.[7]

It is only a matter of time before aspiring countries develop a much richer and more textured global Internet ecosystem. While English is still the primary language of the Internet, the languages of aspiring countries are the fastest-growing on the Internet—73 percent of users Internet users do not speak English as a first language. From 2000 to 2011, while the English-speaking Internet user base was growing by 301 percent, Arabic-speaking Internet users were growing by 2,501 percent, and Chinese-speaking users were growing by 1,479 percent (Exhibit E4).[8]

3 Economist Intelligence Unit World data, Mobile subscribers, 2011.
4 On Device Research, "The 'Mobile Only' Internet Generation," December 2010.
5 ComScore, "The network effect: Facebook, LinkedIn, Twitter & Tumblr reach new heights in May," June 2011.
6 ComScore, "Social networking accounts for one-third of all time spent online in Malaysia," October 2011.
7 Mikael Ricknäs, "Skype is largest international voice carrier, says study," IDG News Service, March 25, 2009.
8 Internet World Stats, "Top ten languages used in the Web," http://www.internetworldstats.com/stats7.htm (accessed December 1, 2011).

Exhibit E2

Internet landscape and impact statistics

Top quartile | Second quartile | Third quartile | Bottom quartile

	Internet users Million	**Internet penetration** % of population	**Fixed broadband subscribers** % of population	**Mobile broadband subscrip-tions** % of population	**Median monthly cost of 1 Mbps** $ PPP	**Online retail share of retail** %	**Internet contribution to GDP**[1] % of GDP	**Internet contribution to GDP growth**[1] % of GDP growth
Argentina*	26	64	10	13	16	1.1	2.2	2.7
Brazil	79	41	7	11	17	3.1	1.4	2.4
Canada	28	81	30	15	5	0.9	2.7	10.2
China	486	36	9	2	11	1.1	2.6	3.4
France	50	78	33	36	8	3.8	3.2	17.6
Germany	67	82	32	36	4	3.8	3.2	24.3
Hungary*	7	68	20	30	3	1.1	3.9	11.4
India	98	8	1	1	59	0.3	3.2	5.2
Italy	33	54	22	59	7	0.9	1.7	12.2
Japan	101	79	27	88	–	3.2	4.0	–
Malaysia*	16	55	7	27	50	4.4	4.1	2.3
Mexico*	39	34	10	8	22	0.5	1.0	2.2
Morocco*	16	49	2	10	–	0.5	0.9	1.2
Nigeria*	52	33	<1	3	–	0.1	0.5	0.9
Russia	61	43	11	17	5	2.1	0.8	0.9
South Korea	40	83	36	91	-	12.3	4.6	16.0
Sweden	8	90	32	84	3	3.8	6.3	32.9
Taiwan*	16	72	23	–	–	3.0	5.4	12.7
Turkey*	36	49	10	18	9	0.8	0.9	1.5
United Kingdom	53	85	31	56	4	7.7	5.4	22.7
United States	250	81	27	54	5	4.0	3.8	14.9
Vietnam*	27	31	4	13	41	–	0.9	1.6

* Focus aspiring countries

1 Internet contribution to GDP calculated in 2010 for Argentina, Hungary, Malaysia, Mexico, Morocco, Nigeria, Taiwan, Turkey, Vietnam and in 2009 for all other countries. Internet contribution to GDP growth is calculated from 2005 to 2010 for Argentina, Hungary, Malaysia, Mexico, Morocco, Nigeria, Taiwan, Turkey, Vietnam, and from 2004 to 2009 for all other countries.

SOURCE: Internet World Statistics, 2010; Hungarian Central Statistical Office 2010; Economist Intelligence Unit Telecoms and Technology Report data for 2010, published in 2011; Morocco, Agence Nationale de Reglementation des Telecommunications, 2010; Malaysia Communications and Multimedia Commission data for 2010, published in 2011; ICT Vietnam Whitebook data for 2010, published 2011; International Telecommunication Union, World Telecommunication/ICT Development Report and database, 2010; World Bank population data, 2010; Cost of 1 mbps from Speedtest.net pulled in November 2011, PPP adjustment to US dollar using World Bank 2010 conversion rate; Euromonitor International, 2010; McKinsey analysis

Exhibit E3

Internet foundations statistics

Scale to 100

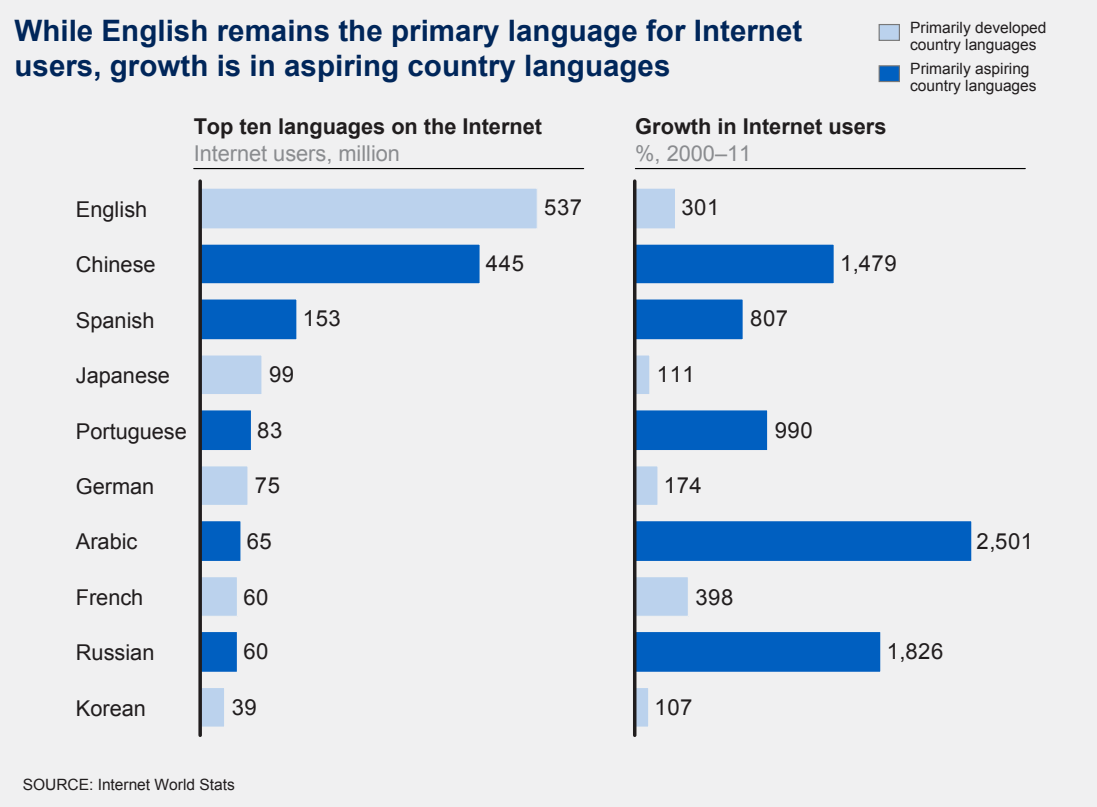
Top quartile | Second quartile | Third quartile | Bottom quartile

	Human capital	Base infra-structure	Internet infra-structure	Internet access-ibility	Ease of Internet entrepre-neurship	E-commerce enable-ment	Financial capital	Business environ-ment	Global connected-ness
Argentina*	17	22	32	24	21	30	5	32	37
Brazil	25	39	30	31	29	44	16	34	37
Canada	31	60	79	78	84	78	30	80	52
China	69	46	27	19	35	34	23	55	31
France	35	60	70	71	71	70	30	72	54
Germany	36	60	75	80	59	71	21	80	59
Hungary*	22	42	57	58	64	51	10	46	46
India	25	26	11	10	25	28	24	45	29
Italy	20	36	47	57	45	50	12	51	44
Japan	42	60	69	61	54	67	19	80	35
Malaysia*	25	57	40	25	40	44	27	65	68
Mexico*	16	29	23	35	33	36	10	40	43
Morocco*	23	37	17	35	39	25	19	41	47
Nigeria*	13	9	4	44	36	20	11	36	37
Russia	57	31	27	41	42	34	16	32	41
South Korea	43	60	76	56	57	64	19	61	38
Sweden	35	60	91	87	71	75	37	89	60
Taiwan*	35	60	66	67	71	67	43	71	65
Turkey*	19	43	42	24	43	35	13	47	40
United Kingdom	37	60	87	88	78	80	27	79	65
United States	85	60	76	80	76	81	81	79	53
Vietnam*	40	32	24	11	30	21	16	43	39

* Focus aspiring countries

SOURCE: World Economic Forum, Global Information Technology Report 2010-2011; Computer Industry Almanac; Pyramid Research; United Nations Conference on Trade and Development, Information Economy Report 2010; World Digital Media Trends; Euromonitor; International Data Corporation; World Bank; World Economic Forum, Global Competitiveness Report 2010-2011; IMD World Competitiveness Online; Capital IQ; UNESCO; ITU World Telecommunication; International Finance Corporation; Speedtest.net; Transparency International; Economic Intelligence Unit; postal operator websites; Telegeography; International Monetary Fund; FDI markets; Economist Intelligence Unit; Global Insight; CIA Factbook; CEPII; Ethnologue: Languages of the World; McKinsey analysis

Exhibit E4



2. The impact of the Internet in aspiring countries has been significant, but there is still tremendous potential if these countries reach developed world levels

The economic and social impact of the Internet on individuals and communities has already been significant, though low compared to the advanced economies. We have measured the impact of the Internet on GDP and consumer surplus, two elements that constitute only a part of its total impact. The richness of the Internet and its far-ranging social impact on individuals online and offline is difficult to quantify, but we have tried to give a sense of the breadth of that impact through illustrative examples. In our analysis of the SME sector, we have also assessed Internet-related job creation and productivity gains. We made conservative ingoing assumptions in this area, not taking into account, for example, the wider benefits to society through increased transparency, or benefits to the economy from a more diversified base of economic activity. We therefore believe that our sizing of the total impact of the Internet is likely to be understated.

In 2010, we estimate that the total contribution of the Internet to GDP in all aspiring countries was $366 billion.[9] Of this, $66 billion came from our nine focus aspiring countries, $243 billion from the BRICs (Brazil, Russia, India, and China), and $57 billion from the remaining aspiring countries (Exhibit E5). If we consider that the Internet contributes an average of 1.9 percent to the GDP of all aspiring countries compared with 3.4 percent in developed countries, it becomes apparent that the Internet has a great deal of room to bolster further economic growth in aspiring countries. In absolute terms, this potential is even more striking. The economic value generated annually by the Internet is $119 per capita in aspiring countries compared with $1,488 per capita in developed countries.[10]

9 Internet contribution to GDP is calculated in detail for the nine focus countries and BRIC countries and is estimated for the remaining aspiring countries using best available data.

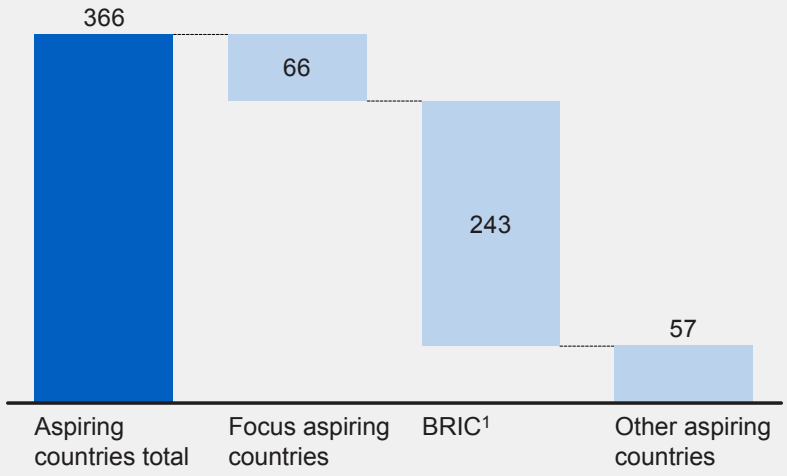
10 Developed countries estimated by aggregating Canada, France, Germany, Italy, Japan, South Korea, Sweden, the United Kingdom, and the United States.

Exhibit E5

The Internet contributed $366 billion to aspiring countries' economies in 2010—1.9 percent of a total GDP of $19.3 trillion

Internet contribution to GDP, aspiring countries

$ billion, 2010



1 For the Internet contribution to GDP in Brazil, Russia, India, and China, see McKinsey Global Institute, *Internet matters: The Net's sweeping impact on growth, jobs, and prosperity*, May 2011.

SOURCE: Gartner; Global Insight; Organisation for Economic Co-operation and Development (OECD); ITU; International Data Corporation (IDC); World Health Organization (WHO); ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; PhoCusWright; Pyramid Research; UN Educational, Scientific and Cultural Program (UNESCO); McKinsey analysis

This economic impact varies widely even among countries at a similar stage of development. Among the nine aspiring countries on which we focused, the Internet contributed between 0.5 and 5.4 percent of GDP. Among developed countries, the Internet contribution to GDP ranged from 1.7 to 6.3 percent. The scope for potential impact in aspiring countries is clear, and robust Internet ecosystems could unlock much more value (see Box E1, "Common factors need to be addressed to build a robust Internet ecosystem").

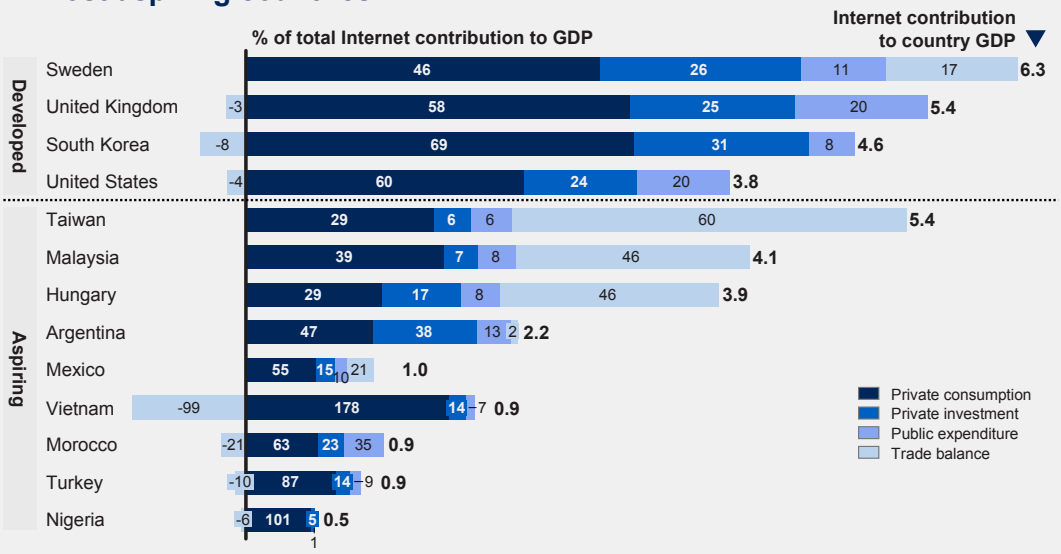
A related difference between developed and aspiring countries is in the composition of the Internet's GDP contribution. GDP, the value of all goods and services produced in an economy, can be measured as the sum of investment by the public sector (e.g., government, nongovernmental organizations); investment by the private sector (e.g., enterprises); consumption of goods and services; and export of goods and services, minus imports of the same. We have measured the Internet-related proportion of each category that contributes to GDP, thereby providing a total contribution of the Internet to GDP. For most aspiring countries, Internet-related consumption forms the vast majority of the contribution to GDP (Exhibit E6). Individuals are the first to benefit from the Internet through their engagement in social media, communication, gaming, and consumption-focused activities. The Internet's enterprise benefits are more prevalent in the mature Internet ecosystems of the developed countries. Internet-related private investment therefore contributes less to GDP in aspiring countries (13 percent) than in developed countries (29 percent).

The total contribution of the Internet to GDP in some aspiring countries, notably Taiwan and Malaysia, is similar to those levels observed in developed countries. While consumption is high, these aspiring countries benefit from being net exporters of ICT goods and services. In fact, the most notable difference between the contribution of the Internet to GDP in aspiring countries compared to developed countries is how the trade balance can take precedence over other contributing factors. On average in aspiring countries, 32 percent of the contribution of the Internet to GDP is due to net exports of ICT-related goods, compared with 3 percent for developed countries.[11]

11 McKinsey Global Institute, *Internet matters: The Net's sweeping impact on growth, jobs, and prosperity,* May 2011.

Exhibit E6

Private consumption forms the bulk of the Internet's contribution to GDP in most aspiring countries



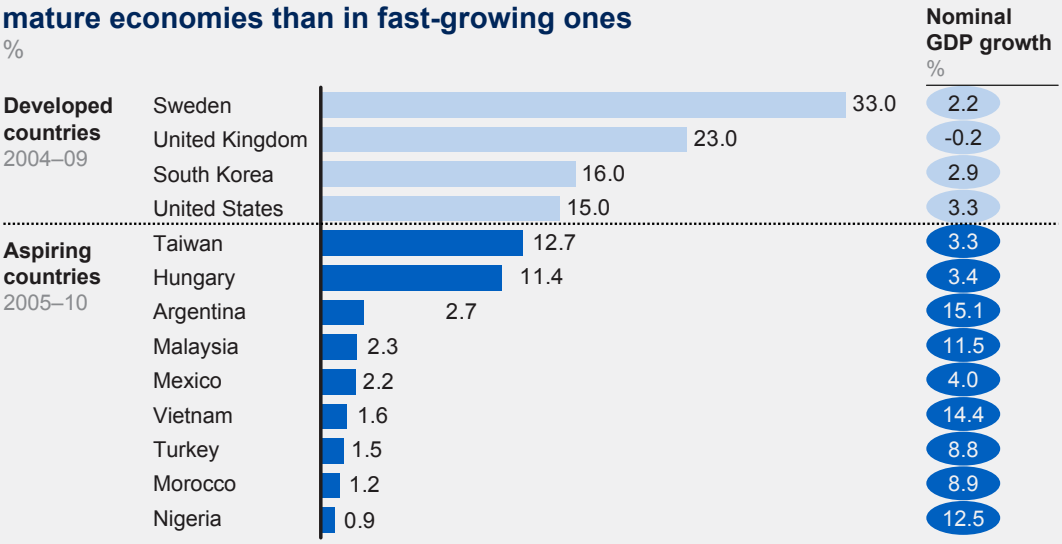
SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

From 2005 to 2010, the Internet accounted for 2.8 percent of the combined GDP growth of the nine aspiring countries on which we focus.[12] The Internet accounted for 21 percent combined GDP growth in the developed countries studied (Exhibit E7).[13] While this difference can be partly explained by high growth in aspiring countries that makes the contribution seem proportionally smaller, it also points to the very large untapped potential of nascent Internet ecosystems for swift growth.

Exhibit E7

The Internet's contribution to GDP growth is higher in mature economies than in fast-growing ones

%



NOTE: For consistency across countries, where possible GDP growth figures are based on the World Bank's World Development Indicators: US dollars at current prices. Estimates from other sources may differ.

SOURCE: McKinsey Global Institute, Internet matters: The Net's sweeping impact on growth, jobs, and prosperity, May 2011; Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

12 Internet contribution to GDP growth is defined as the increase in Internet contribution to GDP, divided by the overall GDP growth in the same time period.

13 As assessed in McKinsey Global Institute's *Internet matters* report, using the same methodology as in this report, but from 2004 to 2009.

While expenditure on Internet-related goods and services is easily measurable and incorporated in calculations of the Internet's contribution to GDP, consumer utility is more difficult to assess. Extrapolating from survey-based data on the value of free Internet services—from e-mail to browsing to information services and search, net of annoyances like spam and excessive advertising—we have estimated the consumer surplus for aspiring countries. We found that consumer surplus is significant, ranging from $9 per month per Internet user in Nigeria to $26 per month per Internet user in Taiwan. Consumer surplus per user in most aspiring countries is significantly lower than that of developed countries, where it ranges from $18 to $28 per user per month.

Consumer surplus, as a share of Internet contribution to GDP, is higher in aspiring countries than it is in developed ones. This is in line with our broader findings that individuals are the first to benefit from the Internet in aspiring countries. We believe that there is significant room for growth here. We found that the total consumer surplus would increase from $135 billion to $364 billion per year in aspiring countries if Internet penetration reached the levels in developed countries. This is a conservative number, as we have not quantified all categories of consumer use. Our consumer surplus estimates cover the broad categories of communication, entertainment, and services.[14] Our estimates are not exhaustive, however; for instance, we leave out some categories such as "document sharing" made newly popular by start-ups such as Dropbox. Furthermore, we do not account for the offline benefits of having a robust Internet ecosystem, such as the ability to research products online even if they are purchased offline.

Beyond the Internet's economic impact, users gain significant social utility from the Internet. The Internet has allowed individuals to participate in social issues of their concern, as well as connect with like-minded communities and civic groups. Users can leverage the Internet to stay informed on matters of civic interest and communal and individual well-being such as health, emergencies, and disaster relief. Aspiring countries are leveraging the Internet for social impact in diverse ways. Two typical examples are mPedigree, a public-private partnership that uses mobile networks and the cloud to tackle drug counterfeiting in sub-Saharan Africa and South Asia, and the Khan Academy, which provides free classes online throughout the world.

Box E1. Common factors need to be addressed to build a robust Internet ecosystem

The first step to a robust Internet ecosystem is quality infrastructure. Basic infrastructure, such as reliable electricity supply and roads to allow postal delivery, is a must, as well as quality fixed or mobile Internet infrastructure. Secure Internet servers and large international Internet bandwidth are necessary to fully capture the value from the Internet. A lack of secure servers can increasingly be circumvented with cloud solutions, depending upon the availability of reliable Internet supply. A wide range of technological options for this are available, including 3G, 4G, WiMax, satellite, cable, and dial-up.

Beyond infrastructure, a mature Internet ecosystem is defined by the intensity of Web use by all stakeholders, the main ones being individuals, businesses, and government. Getting more individuals online requires raising the level of digital literacy, cutting the cost of access to both devices and Internet connections, and developing quality offerings, including content in the national language. Businesses also derive considerable benefits from the Web but need to invest in Web technologies that drive productivity and allow companies to access new markets, customers, and suppliers. Such investments also involve employee training in Internet use and a healthy broadband infrastructure. Finally, governments need to invest in quality online services that will engage citizens and help them realize cost savings from increased efficiency.

If infrastructure is present and users are becoming engaged, the next step is leveraging the Internet for economic and social benefits. This includes promoting business-to-business (B2B) e-commerce to increase enterprise productivity and facilitate exchanges between businesses, and promoting business-to-consumer (B2C) e-commerce to benefit individuals. Entrepreneurs have often been critically important in unlocking the power of the Internet, but a common constraint has been access to capital for early-stage investments.

14 Consumer surplus is measured across communication (e-mail, instant messaging, telephony, social); entertainment (games, music, video, WebTV); and services (P2P, search, comparison, mapping, directories, yellow pages, blogs, wikis, advertising, privacy).

3. Individuals in aspiring countries have utilized the Internet in significant and dynamic ways

For individuals in the aspiring world, adoption of Web technologies has grown and continues to grow rapidly. The high rate of adoption has been driven by the utility that individuals derive from the Internet, including a host of benefits from search to shopping, and from media consumption to access to information.

Some are direct and highly visible benefits such as consumer surplus from e-commerce, which provides access to wider variety of goods and services that would otherwise not be available. E-commerce in aspiring countries grew significantly from 2005 to 2010 and is projected to continue expanding.[15] E-commerce not only provides consumers choice in purchasing goods and services, but also increases competition that leads to more competitive pricing and price transparency in both online and offline retail outlets. Online research, furthermore, allows consumers who prefer to purchase offline to make more educated purchasing decisions.

Individual benefits extend well beyond consumer surplus. Users can gain access to a wide range of research tools in areas like education and health, and participate in activities online from filing taxes to identifying the best available crop prices in real time. Similarly, the Internet promotes community by helping online individuals find other people with similar interests and hobbies.

The benefits of the Internet accrue to both Internet users and non-users. The Internet enhances transparency in the political sphere, for example, through publication of campaign contributors, or in the commercial sphere by enabling price comparisons. Those not online can still benefit from enhanced transparency. Farmers who are not online, for example, can benefit from more competitive pricing for the goods they purchase and sell if other farmers have drawn in more customers or reduced the role of intermediaries. This happened in Ghana when the innovative service Esoko began collecting and distributing agricultural market data in a system that is now used across much of Africa.

Much of the online engagement in aspiring countries is by young users. Web technology users in aspiring countries are younger on average than those in developed countries (Exhibit E8). In Turkey the median age of Internet users is 28, while in Europe it is 44.[16] Web-related technologies are most popular with young users. In aspiring countries they drive adoption of free or low-cost technologies and activities such as social networking or VoIP (voice-over Internet protocol). They are also the first users of higher-cost Web technologies such as smartphones, which they use in greater numbers than do their counterparts in developed countries.

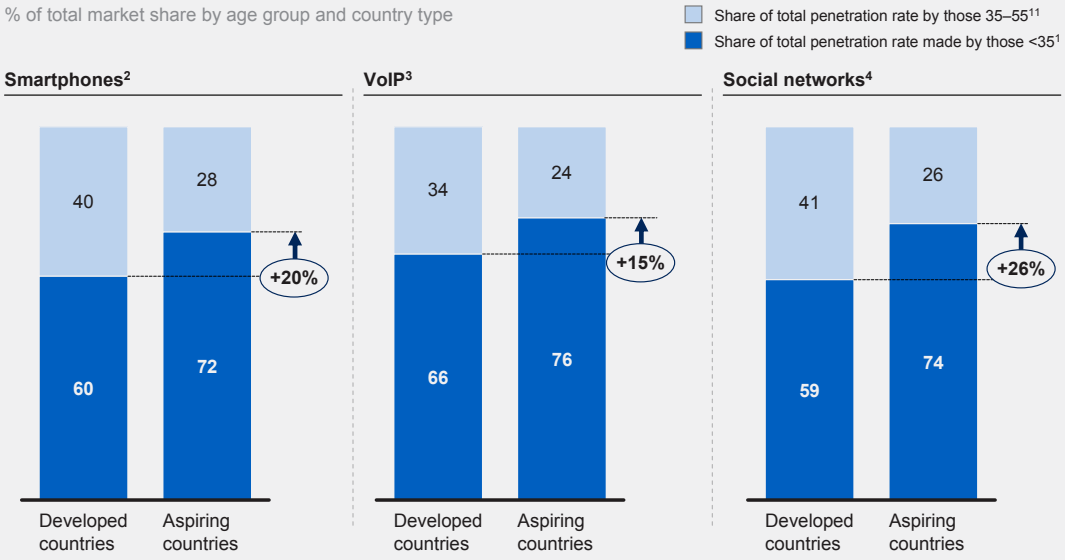
15 Euromonitor.

16 United Nations, "World Population Prospects: The 2010 Revision," 2010.

Exhibit E8

Consumers aged under 35 represent a greater share of the smartphone, VoIP, and social network markets in aspiring countries

% of total market share by age group and country type



1 Analysis and illustration exclude consumers over 55 due to inconsistent data.
2 Aspiring countries include: Brazil, China, Poland, and Russia. Developed countries include: France, Germany, Italy, Netherlands, Spain, United Kingdom and United States.
3 In addition to countries included in footnote above, additional aspiring countries include India and Malaysia.
4 Same set of countries as those listed in footnote 3. Social network penetration based on consumers using social networks at least once a week.

SOURCE: 2011 McKinsey iConsumer Survey (~28,000 survey respondents across aspiring countries and ~53,000 survey respondents across developed countries. Only urban responses collected in India, China, and Malaysia)

4. Entrepreneurs in aspiring countries have thrived despite Internet ecosystem constraints

Entrepreneurs in aspiring countries have leveraged increases in Internet use and infrastructure improvements to create new business models. From successful implementations of popular Web applications in developed countries to new commerce and policy platforms, entrepreneurs have brought new services, expanded products, and deeper content within reach of users in aspiring countries. With about 150,000 Internet-related businesses started each year in aspiring countries, entrepreneurs have driven much of the growth of the Internet ecosystems in aspiring countries. They are building the foundations that consumers and enterprises can then take advantage of.

Entrepreneurship in aspiring countries has been encouraged by demand for localized solutions to local constraints or modification of successful Internet models from developed countries to the local market. Examples of this entrepreneurship include the design of new ways to pay online, like mobile payments tied to bank accounts. Similarly, innovation in parcel delivery has yielded new solutions such as those involving networks of local businesses in the delivery of products to end users. Start-ups have replicated successful business models created in developed countries while simultaneously adapting to unique local conditions. Trendyol, a Turkish Internet service with a business model similar to Gilt Groupe, very successfully leverages social networking for sales and marketing and has drawn a large number of followers on Facebook.[17] Many entrepreneurial ventures in aspiring countries also address broader social issues. For example, EpiSurveyor, a Web- and mobile phone-based data collection platform often used to collect public health data remotely, has played a critical role in tracking polio monitoring.

17 Y. M. Ousley, "Turkish flash sales site Trendyol raises $26 million," *Internet Retailer,* August 16, 2011.

Constraints still hamper the effectiveness of small actors in the Internet ecosystem. The level of digital literacy that is sufficient for young people using social networking and media sites is usually insufficient for enterprises using Web technologies. In aspiring countries there is a lack of awareness about more advanced enterprise Web technologies such as electronic customer relationship marketing (eCRM). Entrepreneurs must face the constraints cited by small enterprises as the most challenging: the cost of equipment and availability of the Internet. Inadequate venture capital environments also hold back entrepreneurs. Inward ICT foreign direct investment (FDI) tends to focus on large telecommunications projects or Internet businesses that have already achieved scale. In most aspiring countries the high cost of capital constrains entrepreneurial access to loans and early-stage investment. As a result, even entrepreneurs with promising growth often have difficulty scaling.

5. There is tremendous potential for enterprises to leverage and gain benefits from the Internet—much more than they do today

Large enterprises were early adopters of Web technologies in aspiring countries. Having gained an early competitive advantage, these enterprises then used the Internet to capture market share and gain profitability. Today, they continue to adopt new and sophisticated Web technologies that may still be out of reach for small enterprises that lack similar access to capital—technologies that also enable cost reductions by increasing productivity and decreasing administrative overhead.

Multinational corporations have additionally benefited by applying standardized Web-based solutions across the various aspiring countries in which they operate. However, specific local constraints make such strategies challenging. Multinationals able to overcome these challenges receive additional benefits ranging from increased resource management to improved employee efficiency.

Web technologies have also enabled some companies in the aspiring world to innovate and grow. Companies that were once start-ups in these economies have now risen to prominence by creating Internet-based solutions to constraints on everyday life in these countries. M-Pesa, an innovative service created by Safaricom and owned by Vodafone, originally allowed microfinance borrowers to receive and repay loans conveniently, using a network of mobile airtime resellers.[18] By promoting financial inclusion, the service has grown rapidly. M-Pesa now operates in South Africa and three other countries and accounts for 7 percent of Vodafone's total money transfer revenue.[19]

While SMEs in aspiring countries are largely under-leveraging the Internet, those that have leveraged its potential have attracted significant benefits, including accelerated growth, larger profits, and competitive advantage in the markets in which they compete.

SMEs that have embraced Web technology in the past three years have grown faster than those that have not. SMEs with larger investments in Web technologies have grown the fastest. Growth in SMEs correlates positively with a firm's investment in Web technologies, including online advertising, broadband, and mobile broadband. SMEs not currently invested in the Web but planning to invest within the next two years believe they can catch up with those already invested, while those with no plans to invest believe they will fall further behind (Exhibit E9).

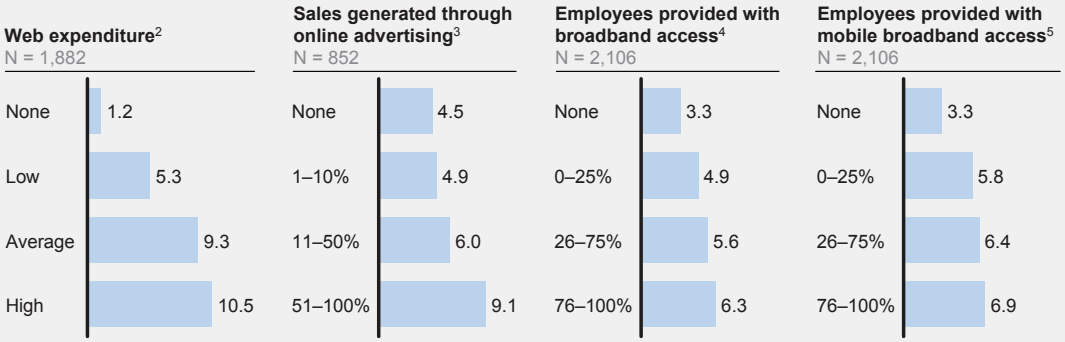
18 N. Hughes and S. Lonie, "M-Pesa: Mobile money for the "unbanked": Turning cellphones into 24-hour tellers in Kenya," *Innovations: Technology, Governance, Globalization,* Volume 2, Issue 1-2 (2007): 63–81.

19 Peter Gakure-Mwangi, "M-pesa earns Vodafone SH1.8 billion in 2010/2011 in [license] fees," Thinkm-pesa.com, August 15, 2011.

Exhibit E9

SMEs' high growth correlates positively with Web spending, online sales generation, broadband access, and mobile broadband access

SME stated growth, %[1]



1 Excludes all respondents who did not know their company's growth rate.
2 Low Web expenditure is less than 10% of total expenses. Average is 11–30% of total expenses. High is greater than 30% of total expenses. "What percentage of your expenses are digital, i.e., linked to Web technologies (electronic messaging, intranet, extranet, WiFi, Web sites, Web 2.0 tools, servers/routers, Web connection for employees, Enterprise Resources Planning (ERP), e-commerce, e-marketing, e-supply chain)?" Excludes "I don't know" responses.
3 "What percentage of your revenues are driven by ONLINE advertising? 2010 (projected)." Excludes "I don't know" responses.
4 "Do you have a broadband Internet connection available to your employees?" If so, "What percentage of your employees have access to it?"
5 "Do you have access to wireless Internet through a mobile broadband connection?" If so, "What percentage of your employees have access to it?"

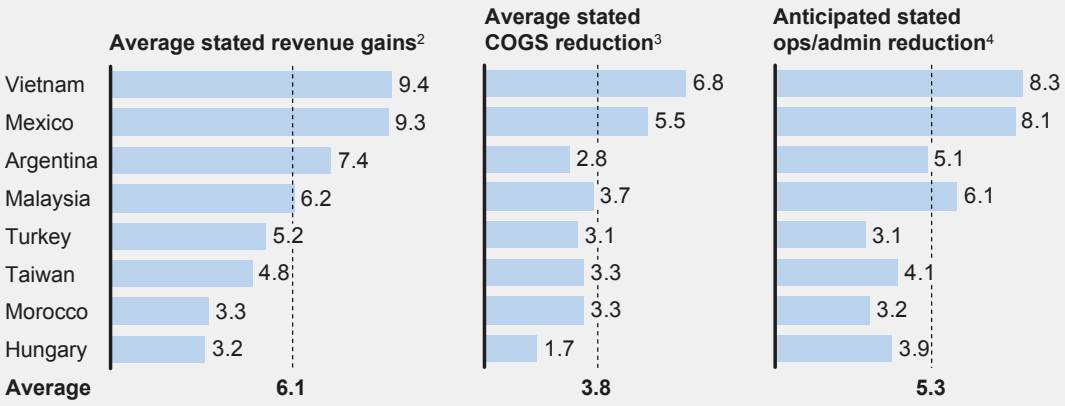
SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

SMEs in aspiring countries that use Web technologies have cited increased revenue, reduced cost of goods sold, and decreased administrative and operations costs (Exhibit E10).

Exhibit E10

Across eight aspiring countries, SMEs say the Internet has allowed them to gain revenue and reduce costs[1]

% (N = 2,484)



1 Nigerian SME sector not surveyed, due to lack of survey resources there
2 Percent of respondents answering "Yes" to "Current performance linked to the Internet: Have Web technologies made it possible for your company to increase your revenue (to an extent that could not have happened through other channels or technologies)?" multiplied by the average stated impact.
3 Percent of respondents answering "Yes" to "Current performance linked to the Internet: Have Web technologies made it possible for your company to reduce your cost of goods sold (COGS)?" multiplied by the average stated impact.
4 Percent of respondents answering "Yes" to "Current performance linked to the Internet: Have Web technologies made it possible for your company to reduce expenses related to administrative, operational and general costs (including marketing expenses)?" multiplied by the average stated impact.

SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

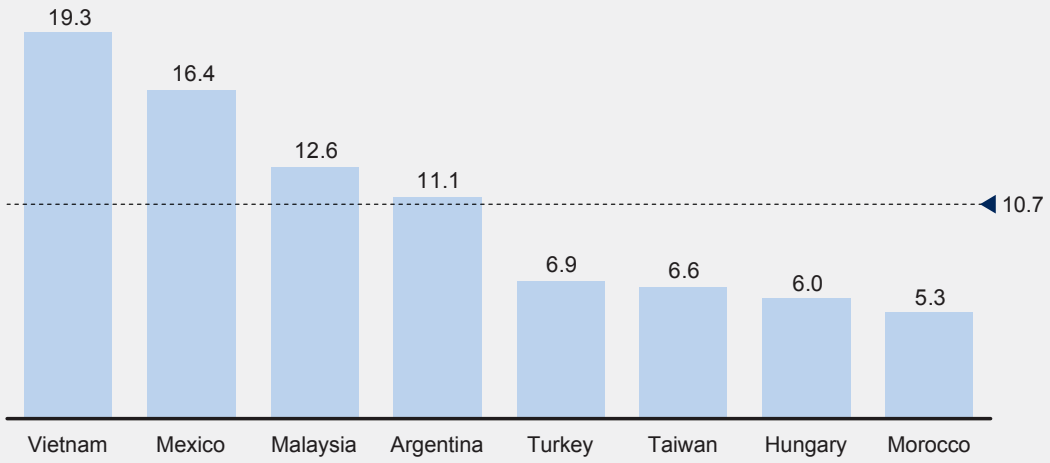
Surveyed SMEs reported that Web technologies have enabled productivity increases of an average of 11 percent. Higher Internet-enabled productivity gains, furthermore, correlated to greater profitability gains (Exhibit E11).

Exhibit E11

McKinsey's SME survey found that productivity gains vary by country

Average stated productivity increase due to Web technologies

%



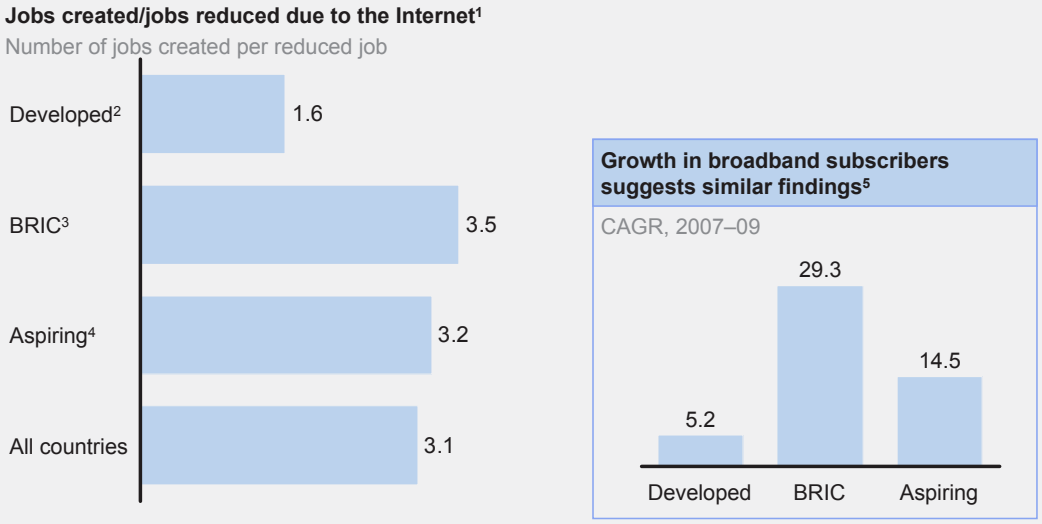
SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

Web technologies are correlated with competition and market leadership in aspiring-country SMEs. The greatest Internet investments and gains occur in the most competitive markets. Similarly, market leaders dedicate the most resources for Internet technologies and reap the most in productivity gains. By their actions, SMEs in competitive markets across aspiring countries are likewise seeking to capture growth and profitability gains by enhancing Web capacity. Surveyed SMEs providing the most employees with access to mobile broadband access were usually in the most competitive markets. Similarly, SMEs in more competitive markets found higher productivity gains from the Internet than those SMEs in less competitive environments.

The economic impact on the SME sector has been positive in terms of creating jobs, too. We have found that the Internet created 3.2 jobs for every 1.0 job it reduced in the aspiring world—more than the 1.6 jobs created for every job lost in developed countries. These figures also align with statistics on the growth of the Internet in these countries (Exhibit E12).

Exhibit E12

The Internet globally creates more SME jobs than it destroys, with the greatest impact in BRIC economies and aspiring countries



1 Respondents were asked: "What has been the net impact of the use of web technologies on your company's total number of employees?" Those answering "a reduction in the number of employees" or "the creation of jobs" were then asked, "Please estimate the creation/reduction in the number of employees relative to its level before (or without) your company's use of Web technologies."
2 Includes Canada, Germany, Italy, Japan, South Korea, Sweden, United Kingdom, United States.
3 Includes Russia, India, China. Data not available for Brazil.
4 Includes Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, Vietnam.
5 Based on broadband subscribers per 100 people.

SOURCE: 2011 McKinsey survey of ~7,000 SMEs; World Bank

6. Governments and the public sector are starting to offer better and more accessible public services through the Internet, but still have opportunity to go further

Governments influence Internet ecosystems in three ways: by enabling citizens' Internet accessibility and digital literacy; by setting the regulatory environment in which Internet ecosystems develop; and by providing e-government services. The governments of developed and aspiring alike focus on all three tasks using fairly similar methods, but a wide variance is observed in how and how completely each objective is met.

Governments can play a strong role in establishing widespread access to the Internet for their citizens. This can be done in two ways: first, governments can enable and/or build the infrastructure needed for mobile or broadband, and second, governments can provide devices that enable Internet access. The United Arab Emirates provides free WiFi in public locations such as airports, reducing the cost of devices as a hurdle to Internet access. Argentina, through Programa Conectar Igualdad, has already provided almost two million free laptops to schoolchildren, reducing a big cost hurdle. Similarly, Saudi Arabia's Home Computer program, a public-private initiative, is seeking to bring one million PCs to homes across the country.

Digital literacy is a key hurdle in many aspiring countries, but it is eroding naturally, as young people grow up with Internet devices and consumer applications such as social networking. The literacy constraint is more of a concern for SMEs, whose adoption of the Internet continues to lag. Some programs, such as Hungary's Digital Renewal Action Plan, focus on spreading digital literacy. In Hungary's case, the target is 100,000 citizens in rural areas, where individual and business Internet use lags the most.

Box E2. Aspiring countries face obstacles to enhancing the impact of the Internet

The outlook for the Internet in aspiring countries is ripe with opportunity, but potential obstacles are also present, including inadequate Internet access, digital literacy, and regulatory and other policies.

Cost-effective Internet access is often beyond the reach of large segments of the population. Delivery of access at low cost is critically dependent on a robust mobile and/or fixed-line Internet infrastructure and affordable device and connection costs. Even with these advantages in place some potential users in aspiring countries will not have the income necessary to access the Internet.

Facility in a language with significant content presence on the Web is an important hurdle for leveraging the Internet. Education matters—a lack of basic literacy inhibits even the use of free services such as online video that do not explicitly involve reading or writing. Digital literacy is an important second-order concern, as even many highly educated people do not know how to gain access to the Internet.

A range of policies can help or hinder Internet ecosystem development. Regulatory barriers and firewalls can impede the free flow of information, and well-intentioned and important controls on content and data management designed to keep the Internet safe for children, for example, can become restrictive in business operations.

Protectionist barriers can include blocking the ability of "foreign" companies to compete using the Internet. Such barriers can reduce the competitiveness of local companies. Consumers lose when competition is constrained, and we have found consumer surplus to be among the most important forms of Internet impact.

Regulatory environments, influenced by governments, can help Internet ecosystems to thrive (see Box E2, "Aspiring countries face obstacles to enhancing the impact of the Internet"). Where policy makers have supported competition and transparency, and provided rights of way and spectrum access without discrimination, they have helped level the playing field for all Internet businesses.

Policy makers in aspiring countries can enable Internet companies and entrepreneurs to thrive in local markets by lowering barriers to registering a business, or easing access to capital. Some countries have done this through government-funded venture capital organizations. Morocco's Maroc Numeric Fund, for example, focuses on providing first-round capital to Internet start-ups.

Aspiring countries can also invest in making their countries a core part of the global supply chain of Internet-related goods and services. From Morocco's Rabat Technopolis to Dubai's Internet City, aspiring countries are positioning themselves as low-cost manufacturing hubs for ICT goods, with governments promoting clusters of both manufacturing and innovation. Malaysia's Multimedia Super Corridor is one example. Another is Taiwan's Industrial Technology Research Institute. Such investments are often made to anchor a larger ecosystem populated by domestic and multinational private firms. National universities with an ICT focus can also play this anchoring role, especially when governments step in to promote relationships between academic research and the private-sector R&D environment.

Beyond setting policy and promoting Internet ecosystems, governments can use the Internet to provide better services for their citizens. In the aspiring world, e-government services are just getting started, but plenty of growth and innovation has been observed, especially in the "m-government" space.

The Internet creates an opportunity for governments to: (1) deliver convenient and transparent services for their citizens; (2) achieve cost savings for the government; (3) achieve cost savings for citizens and businesses; and (4) generate revenue for the government. While developed countries often have robust e-government offerings, aspiring countries vary widely in what government services are provided online.

Many aspiring countries have started to provide information to citizens online. The development and execution of transactional services require a higher level of technical sophistication, and such services are more the hallmark of mature Internet ecosystems than nascent ones. Nevertheless, examples of successful transactional e-government services in aspiring countries exist. Hong Kong's Information Technology and Broadcasting Bureau, for example, has increased efficiency in the government by reducing processing costs from $1.90 per transaction at the counter to $0.80 online.

However, so far only a small fraction of online users in aspiring countries have access to e-government services. If e-government services were offered in aspiring countries at the level of availability and sophistication they are in developed countries,[20] their number of online users could reach 327 million (or one-third of all present-day online users in aspiring countries). Among the actions needed to achieve this level of sophistication would be considerable government investments in developing online offerings (e.g., driver's licenses, tax forms and filings, online education offerings), while more citizens become digitally literate and Internet penetration increases. The penetration need not be PC-based, as aspiring countries are innovating in m-government services to serve their many citizens whose Internet access is through mobile devices.

The role aspiring-country governments can play in enabling Internet impact varies from country to country. Some governments foster Internet ecosystem development through infrastructure investment and regulation e.g., the United Arab Emirates; others actively nurture Internet usage through lower access costs and digital literacy programs, e.g., Hungary; and some promote Internet ecosystem health with innovative e-government services, e.g., Taiwan.

7. Aspiring countries can leverage their distinct characteristics to drive the development of Internet ecosystems

Each aspiring country has a different set of macroeconomic characteristics that can be leveraged to build more robust Internet ecosystems. For those aspiring countries that are embarking on a journey to create their own successful Internet ecosystem, the experiences of their predecessors are germane, and can be drawn upon for useful lessons. Because each aspiring country is unique, we expect different paths will be followed, but the potential benefits from a more digitized society are many and obvious.

We have identified five major macroeconomic attributes that characterize an economy. Most countries possess one or more of these attributes, which include natural resources, global position as a hub of trade, potential for innovation, strong local consumption, and a strong SME sector.

1. **"Resource-rich"** countries that extract highly profitable natural resources (e.g., oil, natural gas) often have the capacity to invest and build Internet infrastructure and other foundational elements, e.g., digital literacy, and make it possible for their citizens to access the Internet. Some countries in our aspiring group are already doing this and investing in mobile or broadband infrastructure, or promoting device access and digital literacy through government-funded or supported programs, e.g., Argentina.

2. **"Hub-of-trade"** countries with a highly developed export economy can invest in ICT-enablement for their enterprises and attract multinational ICT manufacturers to their trade centers, e.g., Vietnam. Countries that are already hubs of ICT manufacturing and export can then create ICT parks focused on innovation, with research institutes, investment firms, and private companies, in an effort to move up the value chain, e.g., Malaysia.

3. **"Innovation-potential"** countries investing significant resources in R&D benefit from large pools of highly educated and creative individuals who can develop new products, e.g., Hungary. Such countries can focus on developing bridges between ICT and Internet-related research facilities and companies, providing access to financial capital to innovative Internet products and ideas, and facilitating the process of starting a business for their newly digitally literate human capital.

20 As measured by the United Nations' E-Government Development Index, the UN's ranking system, from 0 to 1, is used to indicate the level of maturity of e-government services, with variables including policy, infrastructure development, and mobile solutions. United Nations, "e-Government survey 2010."

4. **"Strong-local-consumption"** countries are heavily reliant on domestic production and consumption as a share of their economy, e.g., Turkey. In such countries, Internet household penetration, higher usage and the enablement of commerce platforms for e-commerce can be promoted to help businesses better address domestic consumer demand. Here Internet-related goods and services may further unlock Internet ecosystem benefits.

5. **"Strong-SME-sector"** countries are those where SMEs employ a large share of the workforce, e,g., Poland. Such countries can benefit from development of broadband infrastructure for SMEs and steps to lower the cost of hardware and Internet access.

The economies of most aspiring countries are composed of a mix of these five characteristics, and in promoting their Internet ecosystems they can rely on one or another or a combination, capturing the advantages that flow from them. Developing, forming, and committing to a path of Internet ecosystem enhancement will require participation from all stakeholders in aspiring countries (see Box E3, "All key stakeholders can do a great deal more to unlock the economic and social impact of the Internet"). The rewards, however, are potentially immense, as the experience of the developed economies demonstrates.

Box E3. All key stakeholders can do a great deal more to unlock the economic and social impact of the Internet

Governments can support the development of the foundations of the Internet ecosystem by promoting open access to the Internet, low Internet access costs, broad Internet coverage and digital literacy. To support innovation and entrepreneurship, the educational system must connect with the R&D environment. Governments can even establish innovation hubs. Policy makers also have a role in enabling Internet companies and entrepreneurs to thrive in their local markets. This role includes supporting competition and transparency, and providing rights of way and spectrum access without discrimination. To help bridge the domestic Internet ecosystem to the global one, and ensure that local businesses are globally competitive, policy makers can support international standards and facilitate data transfers.

Enterprises have much to gain from a robust Internet ecosystem. To capture these benefits, enterprises can invest in Web technologies themselves and train their employees to leverage them, too. They can also support local education and digital literacy efforts, even in partnership with local governments. Public-private partnerships can help bring infrastructure to far-flung regions, technology-based solutions to local problems, and even help local businesses become micro-multinationals.

Entrepreneurs can develop innovations that address local constraints and allow Internet ecosystems to leapfrog up the Internet development curve. These innovations can promote Internet use in a self-reinforcing cycle. Examples of these efforts are described in this report; they include innovative cashless payment solutions, marketing through social networks, and various online sales and buying platforms. Each of these successful solutions promotes Internet use, which in turn can enable further adoption of these solutions.

Individuals can drive the positive impact of the Internet in aspiring countries by not only continuing to adopt and use Internet-based products and services, but also by applying the principles of good citizenship and civil society to online behavior. This includes respecting rightful laws and others' privacy, and supporting civic organizations and dialogue.

1. Macro view: The Internet, its economic impact, and potential for future impact in aspiring countries

As with other historic innovations, the advent of the Internet and its multiplier effect on business, government, and personal life has reverberated economically and socially around the world. This is in part due to the massive growth of the Internet over the past three decades. In 1981, in its early days, there were only several thousand Internet users. By 1990, 22 countries were connected. By 1998, almost all countries in the world had some Internet activity.[21] The countries that moved online early did so through academic and educational institutions as well as enterprise and business initiatives. For example, in 1997, 51 percent of Mexico's Internet users were businesses and 29 percent were academic institutions.[22] As the infrastructure for Internet access developed, individuals became a driving force of growth through their adoption of Web services such as social networks and entertainment.

Despite this growth, not all countries have fully realized the potential of the Internet. The purpose of this paper is to understand and measure the impact of the Internet in aspiring countries—not only the wealth it creates but also its longer-term social and macroeconomic implications (see Box 1, "Defining Internet-related activities, aspiring countries, and Internet user groups"). We have taken a view across aspiring countries but have focused on nine of them, detailing the progress of Internet use and potential for each. We also explore the constraints of realizing a healthy Internet ecosystem, which must be addressed to further expand the impact of the Internet in these countries.

Box 1. Defining Internet-related activities, aspiring countries, and Internet user groups

How we define Internet-related activities

This study includes all activities related to both the creation and use of Internet networks and services. We break these activities into four key categories:

- Activities that use the Web for support (e.g., e-commerce, content creation and distribution, and online advertising)
- Telecommunications on IP (Internet protocol) or linked to IP communication (mainly Internet service providers)
- Software and services activities linked to the Internet (e.g., IT consulting, software development)
- Hardware manufacturers or maintenance providers of Web-specific tools (e.g., computers, smartphones, hardware equipment, and servers)

This definition of the Internet includes the totality of Internet activities, as well as a portion of the ICT sector that is Web-related.

21 International Telecommunication Union (ITU), "Promotion and use of the Internet infrastructure in developing countries," December 1998.

22 Ibid.

How we define aspiring countries

We wanted to measure the impact of the Internet on developing countries with real momentum, since most research has been limited to the developed world. However, there are varying degrees of development and Internet penetration among emerging countries, making it difficult to make any general observations and recommendations insightful. We therefore chose a group of "aspiring" countries that we have defined as dynamic and significant enough that they can aspire to become developed countries within a reasonable time frame. Given the economic strength and growth in these countries, we wanted to focus on the role of the Internet because we expect it to have an increasing economic and social impact.

Using a quantitative definition (detailed in the appendix), we consider the following countries to be aspiring: Algeria, Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Iran, Kazakhstan, Malaysia, Mexico, Morocco, Nigeria, Pakistan, the Philippines, Poland, Romania, the Russian Federation, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, Ukraine, Venezuela, and Vietnam. For the purposes of this report, we have selected nine of those countries as a representative sample for deeper analysis: Argentina, Hungary, Malaysia, Mexico, Morocco, Nigeria, Taiwan, Turkey, and Vietnam. These countries span both geography and level of development. We have chosen not to focus on Brazil, Russia, India, or China because these are already the subject of deeper research and their scale and growth models are not replicable by most other aspiring countries.

The reason for choosing aspiring countries was twofold. First, aspiring countries are closer to developed countries in economic development and their Internet penetration, providing a model for other emerging countries looking to expand their Internet impact. Second, aspiring countries have the opportunity to leverage existing infrastructure and development to make further progress along the development curve and capture increases in Internet impact in much less time than the time needed by developed countries.

We have included the nine aspiring countries in the context of a larger set of 57 developed and developing countries. In addition to these nine countries, this set includes the G20, the BRICs, and some populous but less developed nations. These 57 countries constitute 91 percent of world GDP and allow for insights on aspiring countries through comparisons with this larger set of nations.

Major Internet user groups

In our research, we have come across four major user groups in aspiring countries that have captured impact through adoption of the Internet:

- **Individuals** gain the most benefit from the Internet in aspiring and emerging countries. Access to free Web services, communication tools, and entertainment often has minimal costs beyond access charges. In addition, the Internet creates social impact in aspiring countries by enhancing key development criteria such as education.

- **Entrepreneurs** have leveraged increases in Internet use and infrastructure improvements to enable innovative new business models. From successful implementations of popular Web applications in developed countries to new commerce and policy platforms, entrepreneurs have brought new services, expanded products, and deeper content within reach of users in aspiring countries.

- **Enterprises** are able to broaden their consumer reach both within and outside their countries. Telecommunication use and e-commerce have also created new sources of revenue. However, the Internet's impact has gone far beyond increased revenue to enable productivity improvements and cost reductions.

- **Governments** can leverage the Internet to reach more user groups with improved results. Delivering government services through an online platform enables productivity (e.g., resource reductions) while ensuring improved access in rural areas. This creates social impact by enabling transactional services such as registrations and tax payments, as well as providing citizens with information about critical services such as public health and safety.

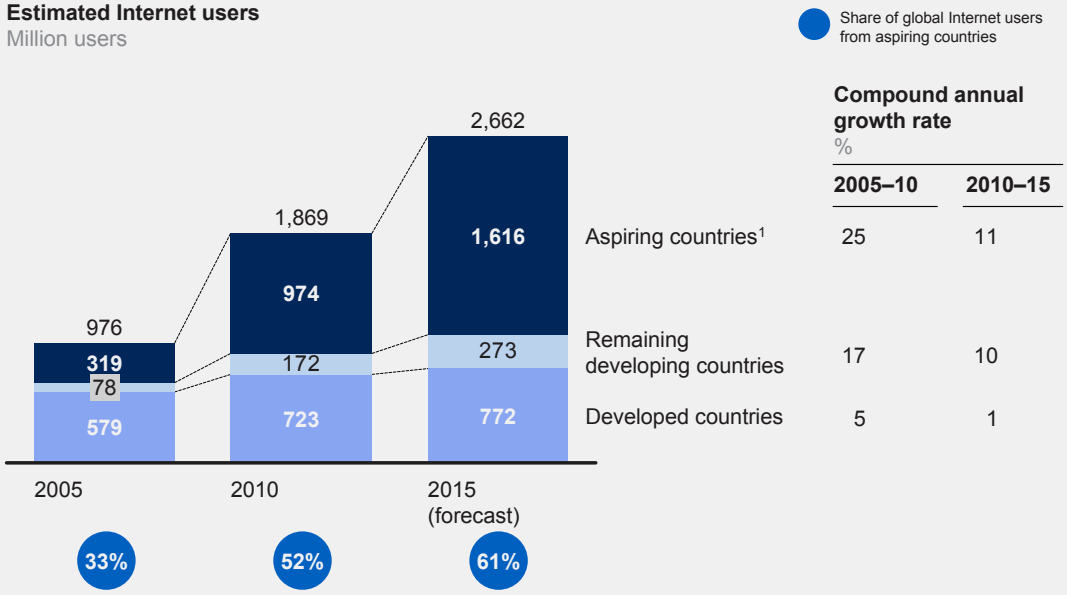
The Internet in aspiring countries has more users and a different use profile than developed countries

The perception of Internet use tends to revolve around developed-world notions of sleek laptops, hyper-connected families, and miles and miles of fiber. These images feed into the common belief that the majority of Internet users reside in the developed world. However, the share of Internet users from developed countries has decreased from 59 percent in 2005 to 39 percent in 2010 and is forecast to fall further to 29 percent by 2015 (Exhibit 1).[23]

What has driven this change is the astronomical growth of Internet use in developing countries. In 2010, there were a total of 1.9 billion Internet users in the world, 61 percent of whom lived in developing countries. Of about 1.1 billion users in developing countries, about 1 billion are from aspiring countries. The number of Internet users in aspiring countries has grown at a compound annual rate of about 25 percent from 2005 to 2010—approximately five times the growth rate in developed countries. Internet use in aspiring countries is expected to grow at ten times the rate of growth in developed countries in the future.

Exhibit 1

More than half of current Internet users are in aspiring countries and their number is growing at ~five times the rate in developed countries



1 Includes Algeria, Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hungary, India, Indonesia, Kazakhstan, Malaysia, Mexico, Nigeria, Pakistan, Poland, Romania, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, Ukraine, Vietnam. Data unavailable for Morocco from this source.

SOURCE: Economist Intelligence Unit (EIU) World Data; McKinsey analysis

The rapid adoption of the Internet in aspiring countries is easy to understand. Like their counterparts in developed countries, Internet users in aspiring countries gain value and surplus from the Internet. However, while Internet penetration in developed countries was slowed by the steep learning curve, aspiring countries have sped up the adoption process by following the example set by developed nations. In addition, the mass of free content and services available online has created large consumer pull for greater Internet use.

Having cost-effective and speedy access to the Internet is crucial to spreading the technology in emerging countries. Internet access typically depends on telecommunications infrastructure and user connectivity. An expanding Internet infrastructure has fostered the dramatic rise of Internet users in emerging countries, often at lower connectivity costs. For users, advances in PC and mobile phone technologies have translated to better performance at much lower costs. This combination of expanded Internet

23 Economist Intelligence Unit World data, Internet users, 2011.

infrastructure, reduced connectivity costs, and cheaper devices has provided the basis for the rapid expansion of Internet use in aspiring countries.

Although the penetration gap between developed and aspiring countries is narrowing, key differences in Internet use remain across these countries. Here are a few examples of such differences (see the detailed profiles of each aspiring country in chapter 2 for more detail):

- **Mobile** connectivity has played a key role in increasing Internet access within aspiring countries (see Box 2, "Mobile technologies are spreading the Internet across aspiring countries"). Mobile technologies have enabled services that were once inaccessible to individuals in aspiring countries, such as mobile banking, health, and education.

Box 2. Mobile technologies are spreading the Internet across aspiring countries

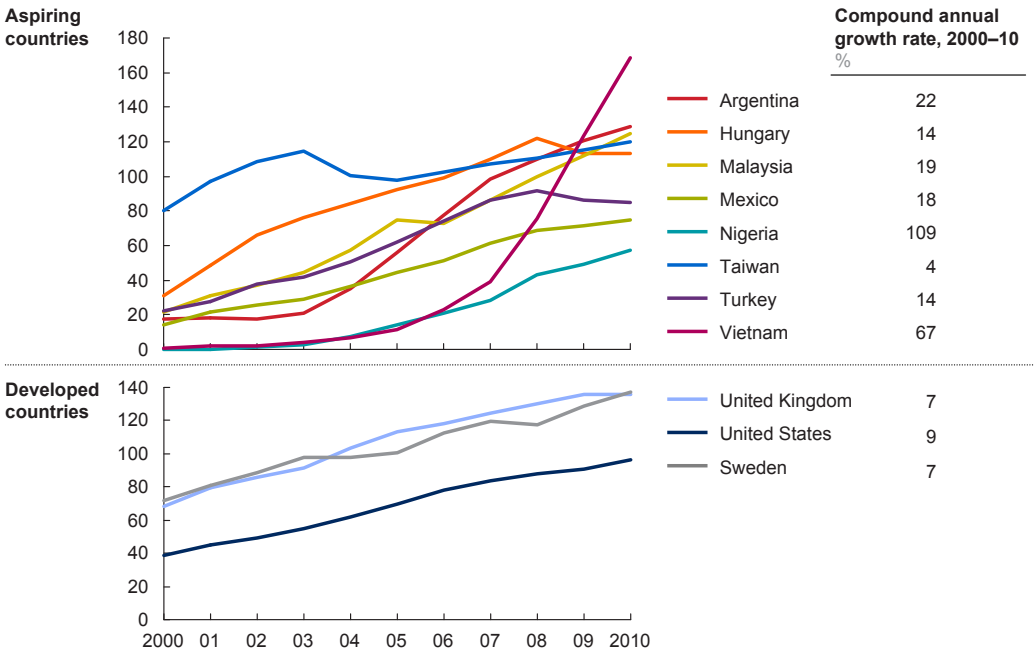
In aspiring countries, low PC penetration, less fixed broadband coverage, and large rural populations have historically constrained Internet adoption. However, mobile technologies have begun to breach the digital divide (Exhibit 2). According to an On Device Research survey, 70 percent of Internet users in Egypt, 59 percent in India, and 50 percent in Nigeria rely primarily on mobile Internet access rather than access via a desktop computer. In comparison, only 25 percent of US Internet users and 22 percent of those in the UK report that they never or infrequently access the Internet via a desktop computer.

Cost-effectiveness partly explains the popularity of mobile Internet connection, which carries lower device and connectivity costs. Mobile connectivity also enables aspiring countries to cross the urban/rural divide with lower infrastructure costs, especially for "last mile" rural populations dispersed through vast geographic areas.

Exhibit 2

Aspiring countries are experiencing rapid growth in the adoption of mobiles

Mobile subscribers per 100 people



Note: Data not available for Morocco.
SOURCE: EIU World Data, 2011; McKinsey analysis

- **Access quality** relies on existing infrastructure and broadband availability. Pyramid Research estimates that in 2010, 65 percent of US households and 64 percent of UK households had broadband access.[24] In contrast, in 2010 household broadband penetration in aspiring countries such as Vietnam and Morocco was less than half of that. Since many Internet users in aspiring countries access the Web exclusively through mobile phones, their access quality is lower, reducing viewing of video and rich media, and affects the functionality of services such as social networking.

Box 3. Many aspiring countries achieve high scores on global connectivity

In aspiring countries, social networking and other Internet services are used to communicate across geographies. For example, a Kauffman Foundation report published in 2011 on recently returned Indian and Chinese immigrants with ties to the United States found that about 80 percent of all former US students or workers maintained at least monthly contact with US family and friends; 55 percent of Chinese returnees and 66 percent of Indian returnees maintained monthly contact with former US colleagues, and many also reported monthly contact with educational institutions, professional organizations, and ethnic organizations.

The McKinsey Global Connectivity Index measures a country's connectivity with the rest of the world along the four dimensions of information, people, goods and services, and financial flows (see appendix for further detail). Countries that score higher on the Global Connectivity Index can expect to see higher connectivity benefits from the Internet overall. Global connectivity is not correlated with the stage of economic development, and many aspiring countries score high on this index (Exhibit 3).

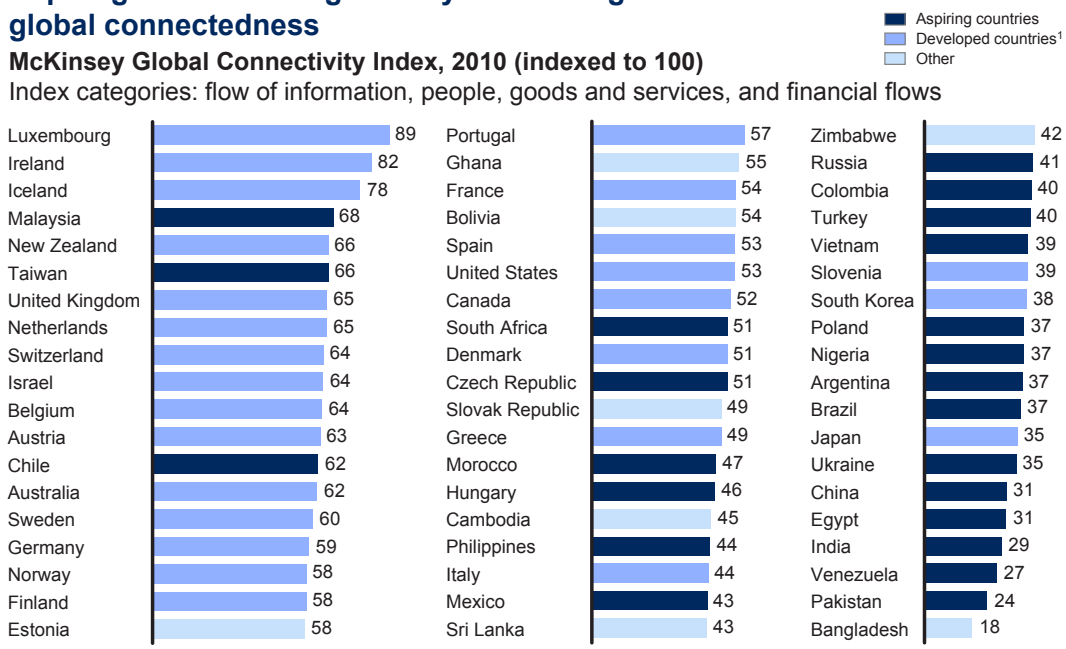
The benefits of Internet connectivity affect individuals and enterprises. For example, in e-commerce the Internet has reduced the role of intermediaries by connecting producers with both domestic and international buyers. The decreased presence of intermediaries allows producers to extract more value from their sales while reaching buyers located anywhere on the globe. Examples of successful global platforms include eBay, Etsy, and Rakuten.

Exhibit 3

Aspiring countries range widely in their degrees of global connectedness

McKinsey Global Connectivity Index, 2010 (indexed to 100)

Index categories: flow of information, people, goods and services, and financial flows



1 Developed countries have a per capita GDP above $20,000 in 2010.

SOURCE: TeleGeography; Pyramid Research; ITU; UNESCO; Euromonitor; World Bank; UN Conference on Trade and Development (UNCTAD); International Monetary Fund (IMF); FDI markets; Dealogic; EIU; Global Insight; CIA World Factbook; CEPII; Ethnologue: Languages of the World; McKinsey analysis

24 Pyramid Research database, 2010.

- **Social networking** is a very popular activity in aspiring countries. Globally, Internet users spend 17 percent of their total online time on social networks.[25] In contrast, Mexican users spend 30 percent and Malaysian users spend 33 percent of their total online time engaged in social networks.[26] Other than global social networks such as Facebook and Orkut, local versions such as QQ in China and Wretch in Taiwan have emerged. One of the most tangible reasons for social networking's popularity is the economic benefit of using free networks for communication both inside and outside the country (see Box 3, "Many aspiring countries achieve high scores on global connectivity"). Given the high cost of telecommunications and the relatively large diasporas among aspiring countries, social networks allow people to stay in contact without the consequence of high telephone bills.

- **Innovative business models** have emerged to overcome the Internet ecosystem constraints of aspiring countries. For example, the Internet has enabled entrepreneurs in aspiring countries to address a variety of issues, from mobile health and e-government services offered to rural populations to innovative payment structures created to address a lack of local credit structure.

Considerable potential remains for broader Internet growth in aspiring countries. Compared with use in developed countries—81 percent of the US population and 85 percent in the United Kingdom were using the Internet as of 2010—aspiring countries generally lag well behind.[27] Forecasts for growth are good, and in Taiwan and Hungary, for instance, Internet penetration is expected to be on a par with developed countries by 2015. However, for many aspiring and emerging countries, there is much distance to be covered if they are to reach their Internet goals. Understanding the Internet's full impact goes beyond penetration in its use and economic indicators, and even in the players in the industry. This paper will identify constraints as well as ideas that might jump-start Internet ecosystems across aspiring countries.

The Internet strongly contributes to the economic growth of aspiring countries—and also has a significant social impact

We have quantified the Internet's contribution to economic growth in two mutually exclusive categories: its contribution to GDP and to consumer surplus. Not having quantified other measures of economic activity spurred by the Internet, such as productivity gains across all enterprises, we believe our estimates to be conservative.

The Internet's contribution to GDP

The total Internet contribution to GDP for all aspiring countries is $366 billion, of which $66 billion comes from the nine aspiring countries in our focus set, $243 billion comes from Brazil, Russia, India, and China, and $57 billion from the remaining aspiring countries (Exhibit 4).[28]

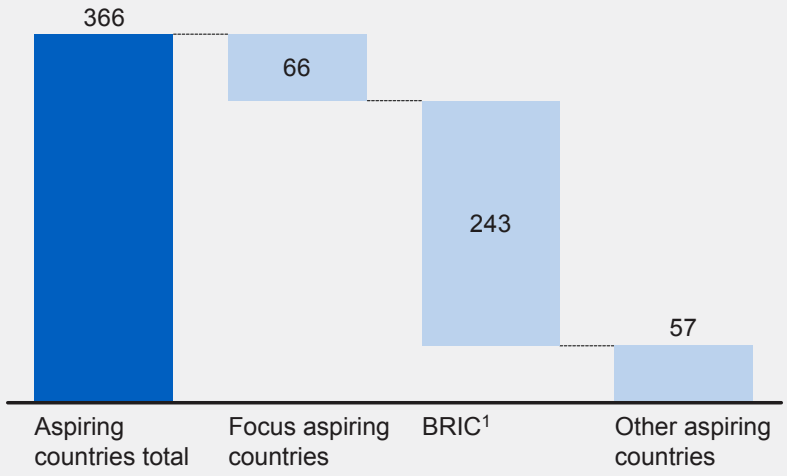
25 ComScore, "The network effect: Facebook, LinkedIn, Twitter & Tumblr reach new heights in May," June 2011.
26 ComScore, "Social networking accounts for one-third of all time spent online in Malaysia," October 2011.
27 Economist Intelligence Unit World data, Internet users, 2011.
28 Internet contribution to GDP is calculated in detail for the nine focus countries and the BRIC countries and is estimated for the remaining aspiring countries.

Exhibit 4

The Internet contributed $366 billion to aspiring countries' economies in 2010—1.9 percent of a total GDP of $19.3 trillion

Internet contribution to GDP, aspiring countries

$ billion, 2010



1 For the Internet contribution to GDP in Brazil, Russia, India, and China, see McKinsey Global Institute, *Internet matters: The Net's sweeping impact on growth, jobs, and prosperity*, May 2011.

SOURCE: Gartner; Global Insight; Organisation for Economic Co-operation and Development (OECD); ITU; International Data Corporation (IDC); World Health Organization (WHO); ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; PhoCusWright; Pyramid Research; UN Educational, Scientific and Cultural Program (UNESCO); McKinsey analysis

We used an expenditure approach with four major components to calculate the contribution of the Internet to GDP (see the appendix for more detail) (Exhibit 5).

- **Private consumption.** This is the total consumption of goods and services by consumers via the Internet and consumers' costs to obtain Internet access. It encompasses personal computers and smartphone sales, B2C e-commerce, residential broadband subscriptions, and revenue from mobile Internet use. Most of private consumption is derived from online purchases of goods and services.[29] For example, Web transactions in Mexico amounted to $1.5 billion in 2010, which translates to an average online spending of $42 per connected person that year.[30] In Malaysia, the average person with Internet access purchased $115 worth of goods and services in 2010, making it one of the aspiring countries where B2C e-commerce is most developed.

- **Private investment.** Private-sector investment in Internet-related technologies (such as telecom, extranet, intranet, cloud, and Web sites) accounts for 13 percent of the Internet's total contribution to GDP.

- **Public expenditure.** Public expenditure incorporates government, public health care, and public education spending on Internet access and services. This group of public entities contributes 9 percent of the total Internet share in GDP. Revenue stems from public consumption and investment in software, hardware, services, cloud, and telecom.

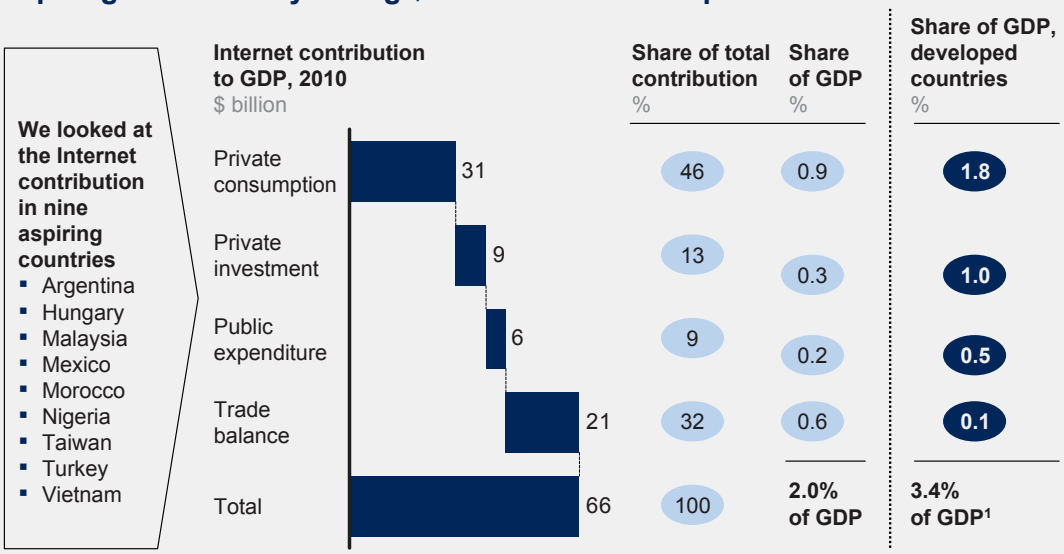
- **Trade balance.** This constitutes exports of Internet-related goods (including Internet equipment) and services, plus B2C and B2B e-commerce, from which were deducted all associated Internet-related imports. For example, in Vietnam, we estimate that $1 billion worth of communications equipment whose value is attributable to the Internet was imported in 2010.

29 Prorated by share of PCs connected to the Internet and share of PC use time online versus other uses.

30 For retail: Euromonitor International, online retail, 2010. For travel: Euromonitor International, Travel and Tourism report for each country, 2010. For gambling: H2 Gambling Capital Consultants, online gambling (sports betting, casino, poker and bingo), 2010.

Exhibit 5

The Internet accounts for an average 2 percent share of GDP in nine aspiring countries—yielding $66 billion in total impact on GDP



The Internet's contribution to GDP in aspiring countries is just over half that of mature countries

Note. Numbers may not sum due to rounding.
1 See McKinsey Global Institute, *Internet matters: The Net's sweeping impact on growth, jobs, and prosperity*, May 2011.

SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

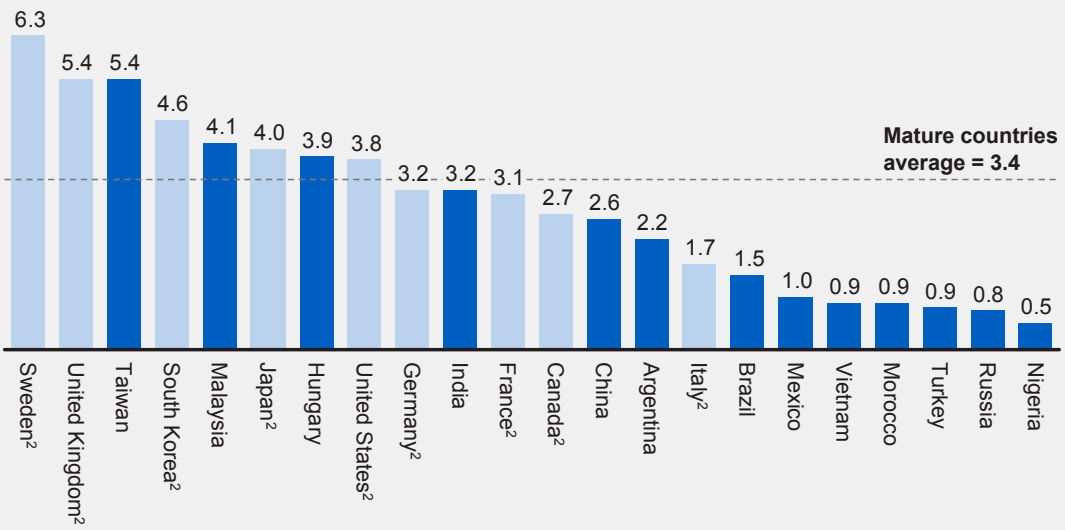
Our research shows that, on average, the contribution of the Internet to GDP in aspiring countries is approximately half that of developed countries (Exhibit 6). However, some aspiring countries have benefited from strong ICT exports that increase the economic impact from the Internet. This demonstrates how aspiring countries can receive great economic benefit from the Internet, and in ways that may differ from developed countries.

The Internet's economic impact varies widely even among countries at a similar stage of development. Among our nine aspiring countries, the Internet contributed between 0.5 and 5.4 percent to GDP, revealing the potential for further Internet development in other aspiring countries (Exhibit 7).

Exhibit 6

Aspiring countries, with a few exceptions, lag behind the developed world in Internet contribution to GDP

iGDP,[1] 2010
% of GDP

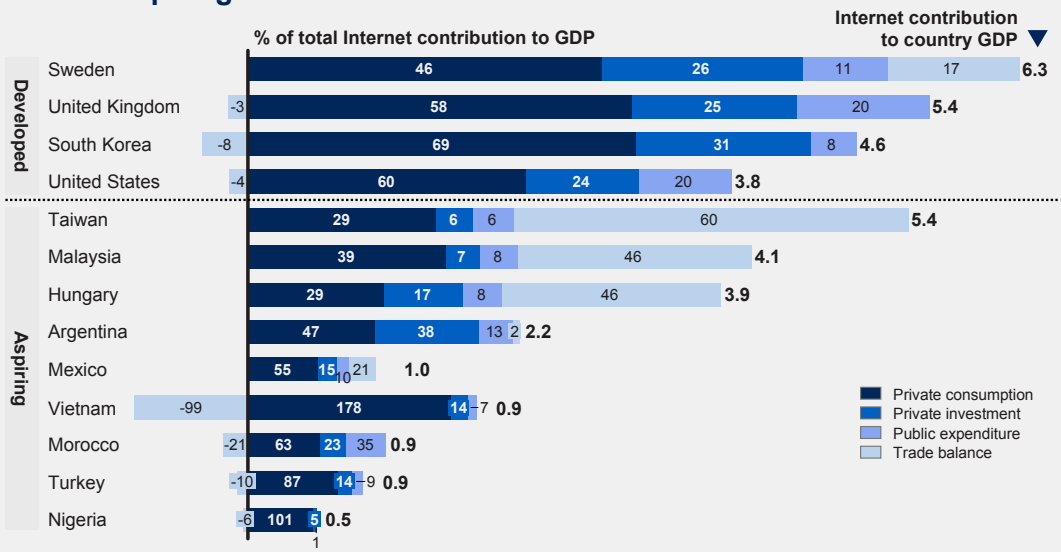


1 GDP assessed by expenditure method, with a share of each category attributed to the Internet.
2 2009.

SOURCE: Gartner; Global Insight; OECD; ITU; International Data Corporation; World Health Organization; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

Exhibit 7

Private consumption forms the bulk of the Internet's contribution to GDP in most aspiring countries



SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

Unlike in developed countries, the trade balance in an aspiring country can take precedence over other factors contributing to the Internet's impact on an economy. On average, 32 percent of the Internet's contribution to GDP is due to the trade balance in aspiring countries compared with 3 percent for developed countries.[31] In most aspiring countries, B2B e-commerce imports and exports are a major contributor to trade balance. The top three performers in our target set (Taiwan, Malaysia, and Hungary) show the largest Internet-related trade surplus. For example, Taiwan and Malaysia have strong global exports in semiconductors and electronics, while Hungary leverages its central position in the European Union along with relatively low-cost labor to export computer hardware and office equipment to Europe. In comparison, Vietnam has the lowest Internet contribution to GDP among our sample countries in large part because the country imports more Internet products than it can export.

On average, private consumption drives 46 percent of the Internet's contribution to GDP in aspiring countries, compared with 53 percent in developed countries. However, some aspiring countries, such as Turkey, Nigeria, and Vietnam, can drive the vast majority of their Internet to GDP contribution from private consumption.

Private consumption and trade remain the backbone of the Internet's contribution to GDP in aspiring countries. Today, private investment contributes only 13 percent of the Internet's contribution to GDP, compared with 29 percent in developed countries.

Considering that the Internet's contribution to GDP lags behind at 1.9 percent in aspiring countries compared with 3.4 percent in developed countries, we believe that there is tremendous growth potential for the Internet as aspiring countries gain economic footing. The growth opportunity is even more striking if we look at absolute rather than normalized figures. The economic value generated annually by the Internet is $111 per capita in aspiring countries, compared with $1,741 per capita in developed countries.[32]

The Internet's contribution to GDP growth

The Internet accounted for 2.8 percent of our nine countries' combined GDP growth from 2005 to 2010 (Exhibit 8).[33] Using the same methodology, MGI's report ***Internet matters: The Net's sweeping impact on growth, jobs, and prosperity*** found that the Internet contributed 21 percent of mature countries' economic growth between 2004 and 2009.

Two key factors explain why the Internet's contribution to developed countries' GDP growth far exceeds what the Internet contributes to economic growth in aspiring countries. First, the Internet ecosystem in most aspiring countries is at an early stage and e-commerce is not fully developed. Second, overall economic growth in aspiring countries exceeds that in more mature countries, thus dwarfing the Internet's contribution.

In the case of Vietnam, Turkey, and Nigeria, the Internet's contribution to GDP growth is approximately twice as high as the Internet's contribution to GDP. This demonstrates the expanding role played by the Internet in aspiring countries. Given that GDP is growing quickly and that the early-stage Internet contribution is growing even faster, we get a sense of a transformative Internet landscape across aspiring countries in the coming years.

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31 McKinsey Global Institute, *Internet matters: The Net's sweeping impact on growth, jobs, and prosperity*, May 2011.

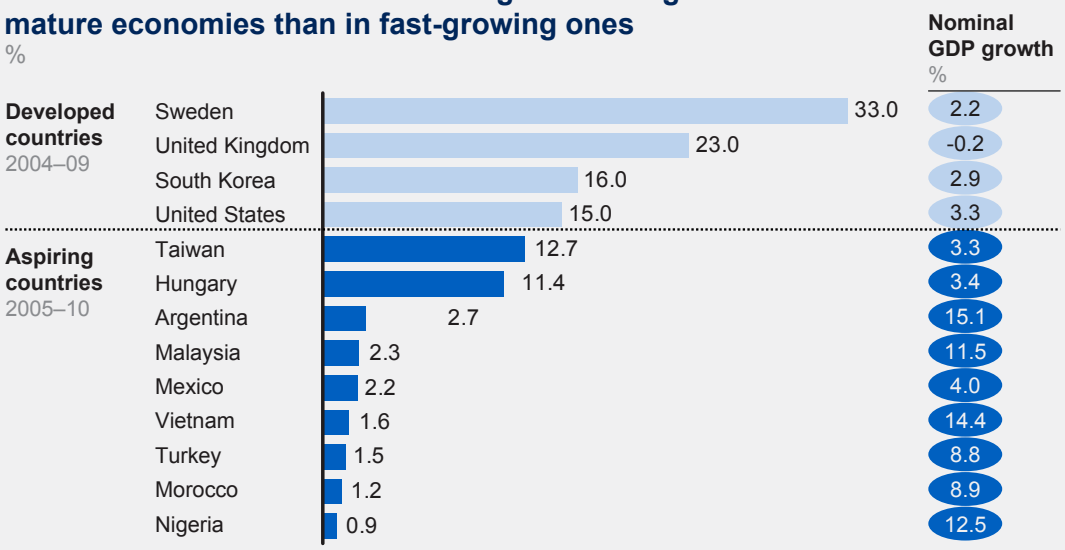
32 Developed countries estimated by aggregating Canada, France, Germany, Italy, Japan, South Korea, Sweden, the United Kingdom, and the United States.

33 Internet contribution to GDP growth is defined as the increase in Internet contribution to GDP divided by the overall GDP growth in the same time period.

Exhibit 8

The Internet's contribution to GDP growth is higher in mature economies than in fast-growing ones

%



NOTE: For consistency across countries, where possible GDP growth figures are based on the World Bank's World Development Indicators: US dollars at current prices. Estimates from other sources may differ.

SOURCE: McKinsey Global Institute, Internet matters: The Net's sweeping impact on growth, jobs, and prosperity, May 2011; Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

Consumer surplus

The Internet's contribution to GDP, as a portion of the Internet's total economic impact, does not capture what individuals gain overall from having access to the Internet (see Box 4, "The Internet's impact on society is broad and deep"). Consumer utility, measured quantitatively as consumer surplus, spans a broad spectrum of free services, from e-mail to browsing to information services and search. It also includes utility from using collaborative services such as wikis, blogs, and social networks. These benefits easily outweigh the costs associated with the Internet, from actual costs in the form of access and subscription fees to irritations such as spam and excessive advertising.

We estimated consumer surplus from the Interactive Advertising Bureau's conjoint-based analysis of consumer utility, based on a survey across France, Germany, Russia, Spain, the United Kingdom, and the United States.[34] Our estimate accounted for the maturity of Internet ecosystems, as well as e-commerce environments (for more detail, see the appendix).

The consumer surplus the Internet generates is significant, ranging from $9 a month in Nigeria to $26 a month in Taiwan—on a par with developed countries. Among our nine aspiring countries, the consumer surplus in Taiwan, for instance, is as high as $4 billion per year (Exhibit 9).

34 A conjoint analysis is a statistical technique that assesses how people value the different features that constitute a good or service.

Box 4. The Internet's impact on society is broad and deep

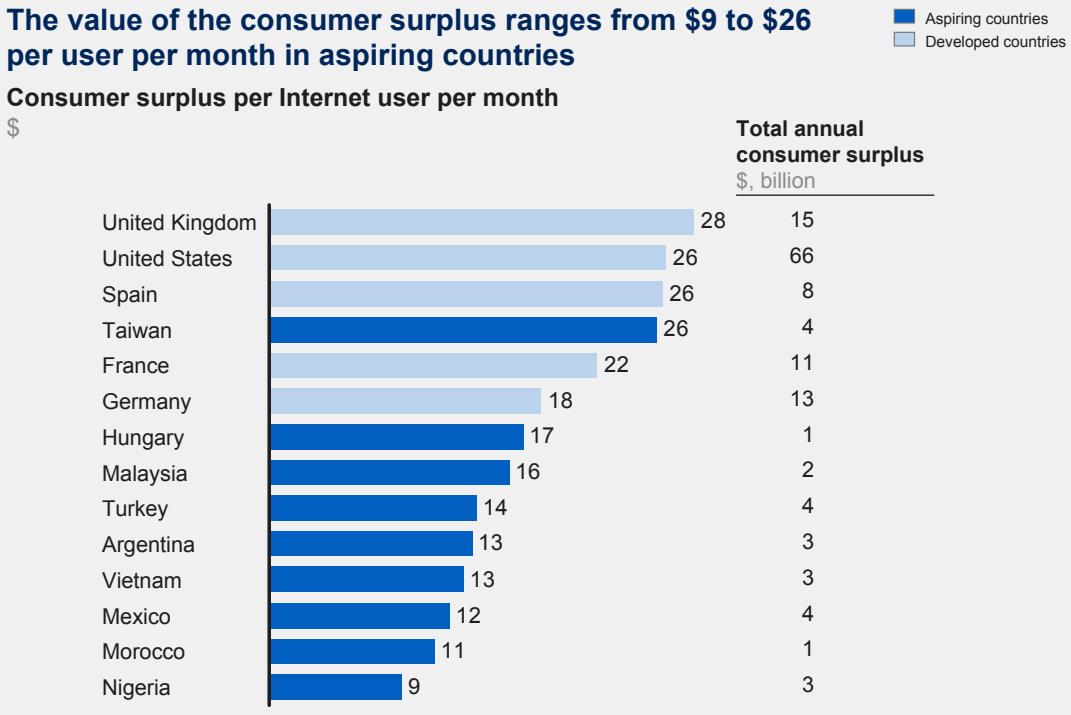
Despite common definitions, the Internet's contribution to society goes far beyond social networking and communication. The Internet has an impact on many social factors, enabling individuals' participation in social issues as well as connections with communities of interest and civic groups. Users can leverage the Internet to stay informed on such matters of civic interest and individual well-being as health, emergencies, and disaster relief. The Internet can also be a tool for the expansion of education and services among societies. For example:

- **Ushahidi** is an African nonprofit company that specializes in developing free and open-source software for information collection, visualization, and interactive mapping. The platform allows for crowd-sourced information collection across the world and on a variety of issues, ranging from natural-disaster response to civic efforts.
- **Khan Academy** is a US-based educational nonprofit that offers free online lectures and exercises on a variety of topics. Services are available to both students and educators with the goal of broad improvements in global education. As of January 2012, the Khan Academy was being used in 28 countries including Nigeria, India, China, and other aspiring countries.[35]
- **EpiSurveyor** is a Web- and mobile phone–based data-collection platform, often used to collect public-health data remotely. Examples of its use include the collection of maternal-health statistics to inform the Health Ministry's budget allocation in Senegal and the Global Polio Eradication Initiative's monitoring of polio campaigns and analysis of immunization activities.

35 AppAppeal, "Khan Academy.org usage per country," January 4, 2012, www.appappeal.com/maps/khan-academy-org/ (accessed January 6, 2012).

Exhibit 9

The value of the consumer surplus ranges from $9 to $26 per user per month in aspiring countries



Note: See appendix for our methodology.
SOURCE: McKinsey analysis

Consumer surplus, compared with the Internet's contribution to GDP, is higher in aspiring countries than it is in developed ones. This is in line with our broader finding that individuals are the first to benefit from the Internet in aspiring countries. As a robust Internet ecosystem develops, its contribution to GDP rises, driven not only by consumer use but also by public and private investment and trade in ICT goods.

The impact of the Internet can be increased by addressing ecosystem constraints

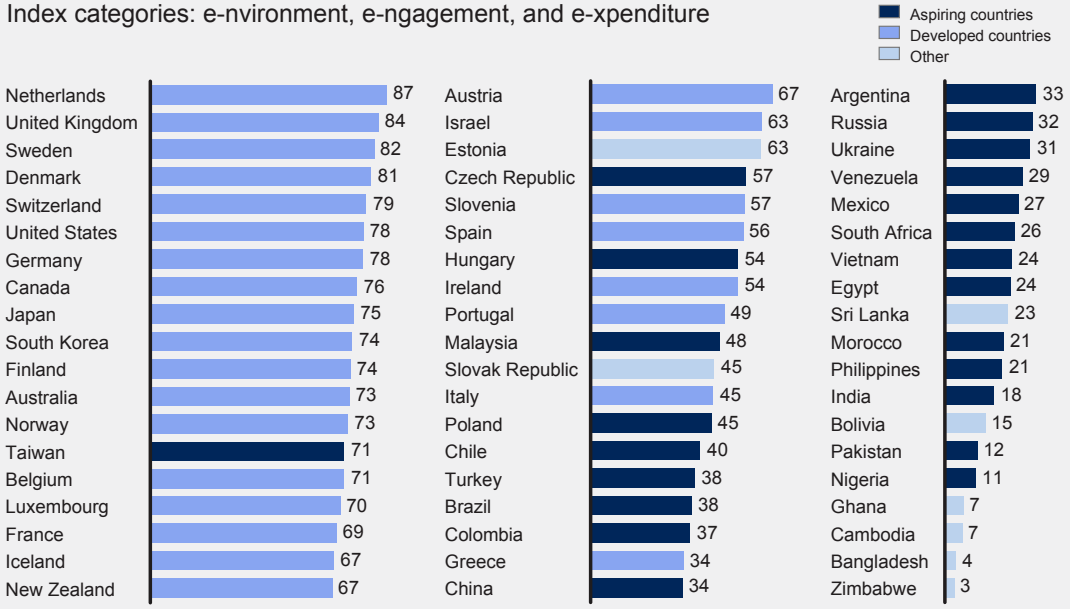
History provides insights into the maturity of Internet ecosystems

Aspiring countries' Internet ecosystems lag behind in maturity compared with developed countries and significantly vary among our target set (Exhibits 10 and 11). We measure the maturity of a country's Internet ecosystem using our e3 Index, which ranks countries against one another using three major drivers of Internet maturity: environment, engagement, and expenditure. Environment reflects Internet speed and penetration, engagement measures use of the Internet by individuals, enterprises, and governments, and expenditure reflects Internet spending such as e-commerce and online advertising.

Exhibit 10

Aspiring countries generally do not have mature Internet ecosystems

Internet ecosystem maturity (McKinsey e3 Index, 2010) (indexed to 100)
Index categories: e-nvironment, e-ngagement, and e-xpenditure

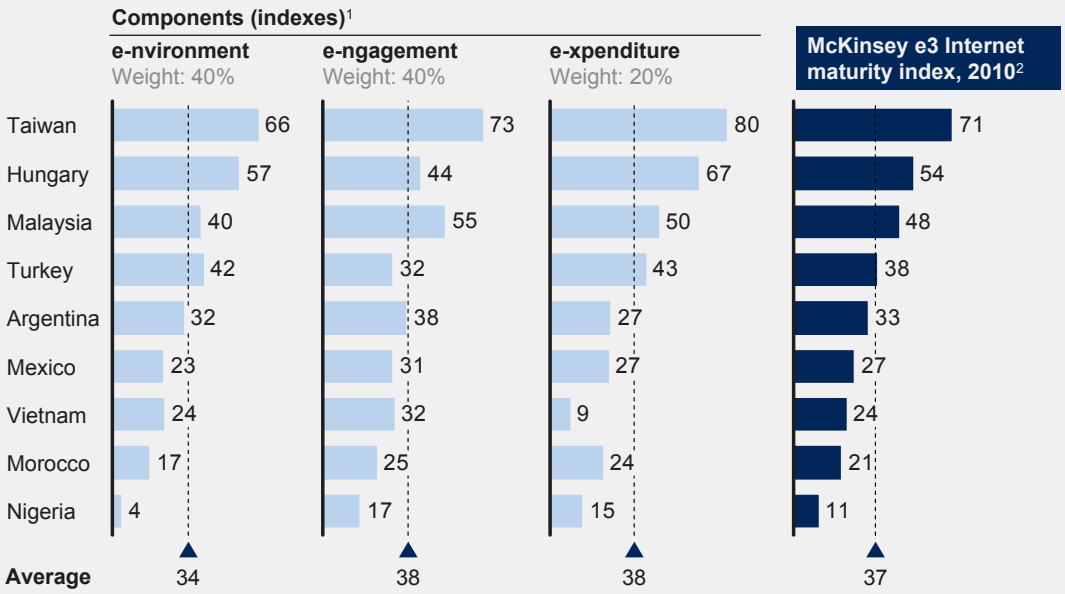


SOURCE: World Economic Forum, *Global Information Technology Report, 2010–2011*; Computer Industry Almanac; Pyramid Research; UNCTAD, *Information Economy Report 2010*; World Digital Media Trends; Euromonitor; IDC; World Bank; McKinsey analysis

As expected, the maturity of Internet ecosystems is lower in aspiring countries than in developed countries. A logical progression on the Internet maturity scale for aspiring countries should start with building the environment (infrastructure), then promoting engagement (online use), and finally pushing for expenditure (e-commerce).

Exhibit 11

Internet ecosystem maturity varies widely across aspiring countries



1 Each index is the average of component subindexes. See appendix for detail on subindexes.
2 Weighted average of the three indicators.

SOURCE: World Economic Forum, *Global Information Technology Report, 2010–2011*; Computer Industry Almanac; Pyramid Research; UNCTAD, *Information Economy Report 2010*; World Digital Media Trends; Euromonitor; IDC; World Bank; McKinsey analysis

Among our focus countries, Morocco and Nigeria have the least mature Internet ecosystems due to low Internet bandwidth and a relatively small number of secure Internet servers. Mexico and Vietnam have relatively high engagement (online use) but are not yet fully leveraging e-commerce. Taiwan has the most mature Internet ecosystem of our focus countries, a maturity that exceeds that of developed countries such as France or Israel. High B2B and B2C e-commerce are key drivers behind Taiwan's high e3 score.

Looking forward yields insights into the foundations of Internet ecosystems

A vibrant Internet ecosystem requires development along four key foundations: human capital, financial capital, infrastructure, and business environment. McKinsey's i4F Index quantifies these four components to create a comparable score for each country. An i4F value is indicative of a country's performance compared with other countries and is scored out of 100 percent. In these calculations, the set consisted of 57 countries.

Aspiring countries' performance on Internet ecosystem foundations, as with their performance on Internet ecosystem maturity, lags behind that of developed countries. Nevertheless, there is variance in what drives this performance from country to country, and these differences offer insights into how, and how well, aspiring countries are leveraging the Internet.

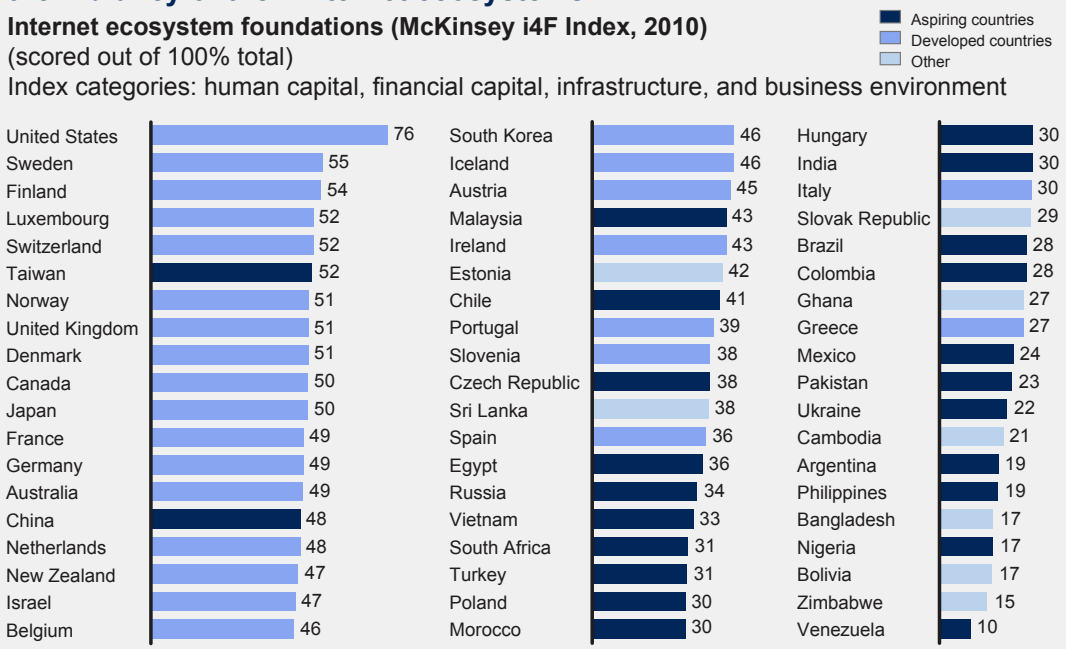
Most aspiring countries, not surprisingly, have low i4F scores. Developed countries typically have more developed Internet ecosystem foundations along the four components (Exhibit 12). The greatest differences between i4F components of developed versus aspiring countries are in business environment and infrastructure.

Taiwan, driven by strong business-environment and infrastructure scores, is the only one of our nine aspiring countries whose Internet ecosystem foundations are as healthy as those in developed countries. However, Taiwan lags behind developed countries in terms of human and financial capital availability. The Internet ecosystems' foundations in Argentina and Nigeria are the least robust among our focus countries, with Nigeria lagging behind in infrastructure, while Argentina could improve its access to financial capital (Exhibit 13). Nigeria's infrastructure concerns are due to a lack of secure Internet servers and a low electricity supply. Argentina's business environment is constrained by low availability of financing.

Exhibit 12

Aspiring countries lag behind developed countries in the vibrancy of their Internet ecosystems

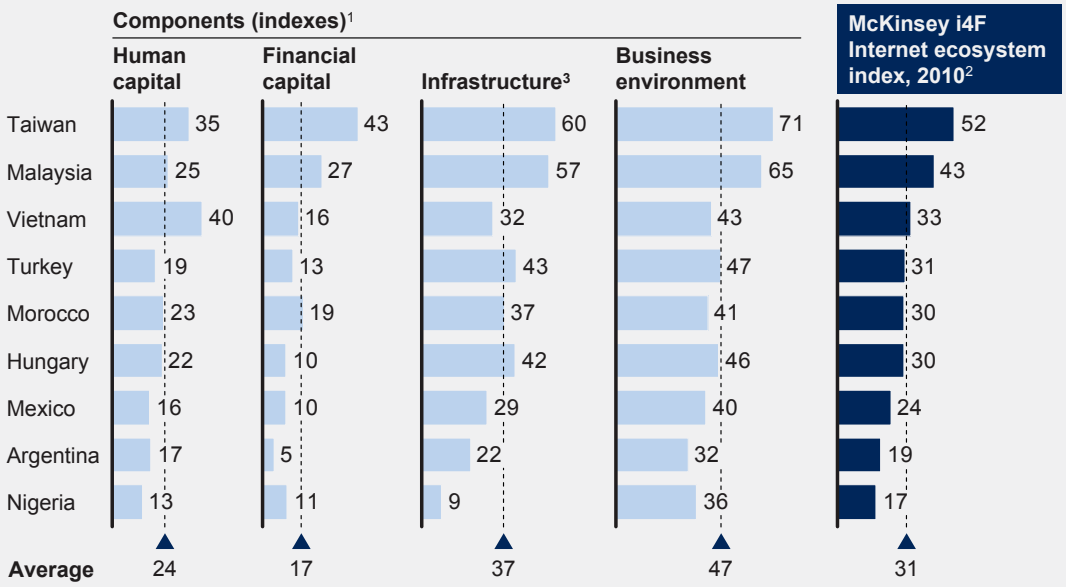
Internet ecosystem foundations (McKinsey i4F Index, 2010)
(scored out of 100% total)
Index categories: human capital, financial capital, infrastructure, and business environment



SOURCE: World Economic Forum, *Global Competitiveness Report 2010–2011*; IMD World Competitiveness Online; Venture Expert; Capital IQ; World Bank; UNESCO; McKinsey analysis

Exhibit 13

Internet ecosystem vibrancy varies widely across aspiring countries



1 Each index is the average of component subindexes. See appendix for detail on subindexes.
2 Arithmetic mean of the four indicators.
3 Infrastructure is viewed as being a "threshold" factor where increases above a certain threshold do not confer additional advantage. All ratings above 60 (our defined threshold) are set to 60.

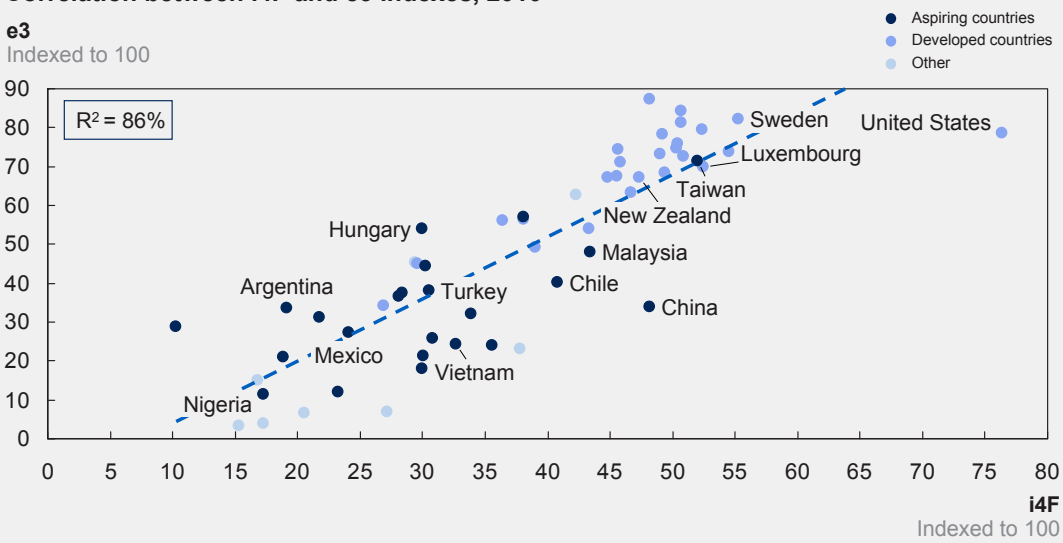
SOURCE: World Economic Forum, *Global Competitiveness Report, 2010–2011*; IMD World Competitiveness Online; Venture Expert; Capital IQ; World Bank; UNESCO; McKinsey analysis

Countries such as the United States and Sweden that have the most favorable environment also have the most mature Internet ecosystems. The correlation between the vibrancy and maturity indexes underscores that a country wishing to build a mature Internet ecosystem must build its core foundations—human capital, financial capital, infrastructure, and business environment (Exhibit 14).

Exhibit 14

The correlation between McKinsey's i4F and e3 indexes suggests that a favorable environment creates a mature Internet ecosystem

Correlation between i4F and e3 indexes, 2010



SOURCE: World Economic Forum, *Global Information Technology Report, 2010–2011*; Computer Industry Almanac; Pyramid Research; UNCTAD, *Information Economy Report 2010*; World Digital Media Trends; Euromonitor; IDC; World Bank; IMD World Competitiveness Online; Venture Expert; Capital IQ; UNESCO

Appropriate infrastructure and a broad user base can enable an Internet virtuous cycle, promoting and providing products and services. This can be seen in the correlation between Internet ecosystem foundations and maturity (see Box 5, "Aspiring countries still laying the groundwork for an Internet virtuous cycle").

Box 5. Aspiring countries still laying the groundwork for an Internet virtuous cycle

In most developed countries, the Internet has achieved a virtuous cycle. With the appropriate infrastructure and broad user base, Internet entities thrive by providing products and services to generate revenue. In turn, such thriving organizations help to invest in infrastructure and promote Internet use. Examples include Google, Apple, and Amazon, which have become giants while promoting Internet use and enabling new players to enter the landscape.

Aspiring countries have not yet achieved this virtuous cycle. A lack of infrastructure correlates with low Internet maturity and use, and a lack of funding sources and user base further complicates this problem (Exhibit 15). By building their base, aspiring countries can begin to create a virtuous cycle by boosting Internet use to the tipping point when infrastructure investments become more attractive.

Exhibit 15

Internet funding sources for business growth vary in aspiring versus developed countries

	Hardware manufacturers	Traditional software and services	Telecommunications	Web activities
Funding sources in developed countries	▪ Users pay for products ▪ Mostly publicly traded companies ▪ Led from the developed world ▪ Large R&D and education investments	▪ Users pay for products and services ▪ Mix of publicly traded, private, and open-source enterprises ▪ Led from the developed world ▪ Large investments in R&D and education	▪ Users pay for services ▪ Mostly publicly traded companies ▪ Competition drives quality improvements and cost reductions ▪ Large infrastructure investments	▪ Users directly pay for services, or advertising and e-commerce generate revenue ▪ Large investments made to start-up activities
Funding sources in aspiring countries	▪ Minimal funding	▪ Minimal software funding ▪ Lower services revenue due to lack of manufacturers	▪ Government ownership or close regulation is common ▪ Private players often have a monopoly	▪ Lower advertising and e-commerce revenue ▪ Users leverage services based in developed countries ▪ Investments mostly from foreign sources
	Most hardware and software products are imported or built from existing Internet Protocol			

SOURCE: McKinsey analysis

2. Deeper dives on the Internet's impact on user groups and countries

The Internet has had significant impact in aspiring countries. Although the scale and nature of the impact differs from one country to another, it does extend to the key user groups of individuals, entrepreneurs, enterprises, and governments. We therefore see value in addressing the effect of the Internet on these key user groups in addition to analyzing the broader impact on the countries as a whole. In this chapter, we offer some detail on the impact of the Internet in nine aspiring countries: Argentina, Hungary, Malaysia, Mexico, Morocco, Nigeria, Taiwan, Turkey, and Vietnam.

User groups

Each of the user groups in aspiring countries receives different benefits from the growth of the Internet. For example, it allows entrepreneurs and enterprises access to markets beyond their immediate geography, while helping individuals to tap into a wide array of previously inaccessible offerings. Governments can use the Internet to better serve their citizens by improving access and services. Governments and enterprises can also use the Internet to improve the efficiency of their efforts, as it promotes better collaboration and increased employee productivity.

The growth of the Internet in aspiring countries is not without its downsides. For example, access to the Internet has allowed SMEs to launch and thus create jobs, but some SMEs are driving efficiency in ways that can reduce the need for jobs in other companies. However, our research has highlighted many upsides, and we have quantified, where possible, the positive effects of the Internet on job creation.

Individuals

The adoption of Web technologies is growing rapidly in the aspiring world, with the youngest users fueling much of this growth. Individuals capture widespread benefits from these trends in adoption.

Consumers benefit from the additional goods and services they are able to purchase as a result of the Internet. E-commerce in the aspiring world has grown significantly from 2005 to 2010 and is projected to continue on an upward trajectory.[36] The popularity of VoIP is another one of the many examples of the Internet's benefits. However, constraints such as limited access, equipment costs, and regulatory barriers can hinder e-commerce and VoIP growth.

Individuals also capture benefits that extend beyond those that can be quantified by the size of payments for goods or services. They benefit from the ability to search, research online and purchase offline (ROPO), access educational and financial resources, and use consumer protection services. The Internet even creates benefits for people who may not necessarily be online. For instance, the Internet helps promote social work and information transparency. By virtue of its many uses, the Internet may also enable individuals in the aspiring world to achieve greater wealth.

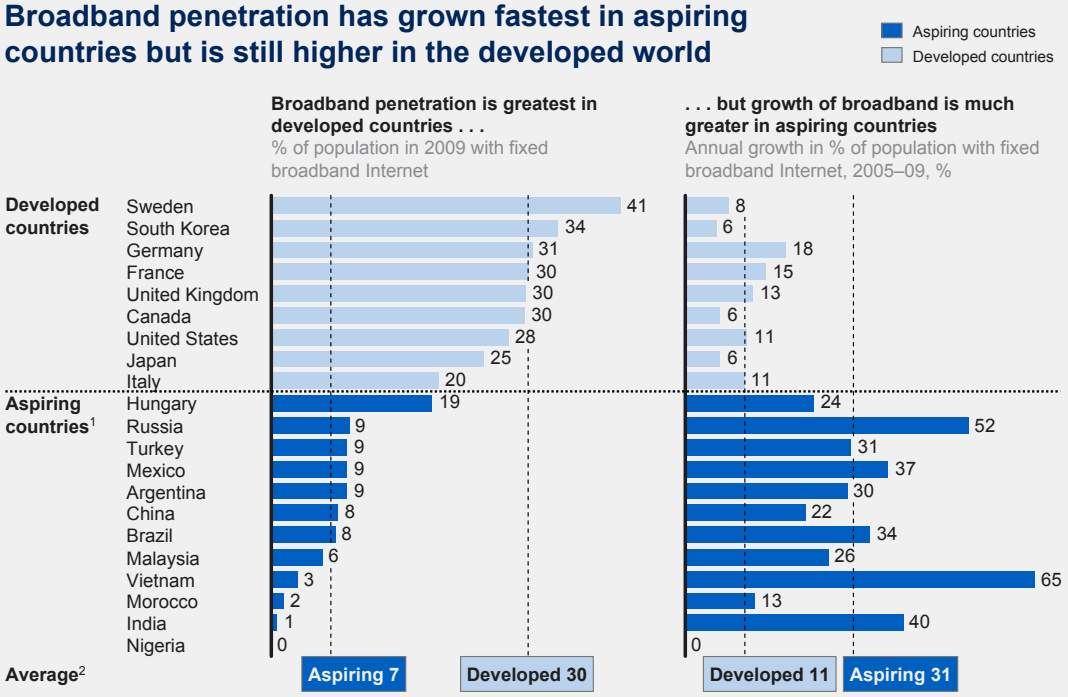
The gap between consumption of Web technologies in the developed and aspiring world appears to be closing. Younger segments of the population are leading this trend. The gap in broadband penetration rates has narrowed significantly. Additionally, while a gap in smartphone penetration persists, consumer expectations suggest that even this may narrow. For some Web activities, such as social networking, the consumption gap has already faded.

36 Euromonitor International, online retail, 2010.

The average annual growth rate of broadband penetration in aspiring countries was three times the average in developed countries from 2005 to 2009. In 2005, the average broadband penetration rate in a developed country (not weighted by population) was ten times the average rate in an aspiring country, but this had fallen to four times the average by 2009 (Exhibit 16).[37]

Exhibit 16

Broadband penetration has grown fastest in aspiring countries but is still higher in the developed world



1 Data for Taiwan not available from this source.
2 Average does not account for differences in population.

SOURCE: World Bank, "Fixed broadband Internet subscribers (per 100 people)"; McKinsey analysis

Similar to the pattern exhibited in broadband, smartphone penetration in 2011 was an estimated 21 percent in the aspiring world and 43 percent in the developed world. However, 54 percent of people surveyed in the aspiring world thought they would purchase a smartphone within six months, compared with only 17 percent in the developed world, suggesting that the gap is set to narrow, as in the case of broadband.[38]

In the case of social networking and VoIP technologies, which are easily accessed in most aspiring countries, consumption levels are nearly on par with developed countries. The estimated social network penetration—defined as the percentage of the population using social networks at least once a week—is 57 percent in the aspiring world, compared with 53 percent in the developed world. Penetration of VoIP, which allows consumers the ability to avoid high mobile costs, is 24 percent in the aspiring world but only 16 percent in the developed world.[39]

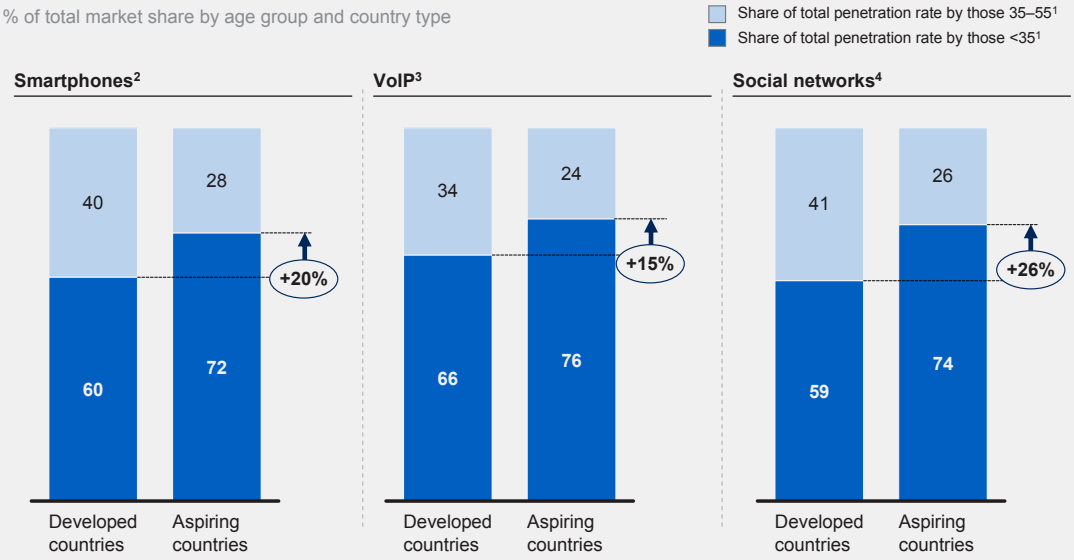
In aspiring markets where overall penetration lags behind the developed world, the segments that are disproportionately behind in Internet adoption tend to include older consumers. In markets where overall penetration has surpassed that of the developed world, younger segments appear to be fueling the trend (Exhibit 17).

37 World Bank, World Development Indicators, "Fixed broadband Internet subscribers (per 100 people)," http://data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).
38 McKinsey iConsumer survey of about 20,000 respondents across aspiring countries, including Brazil, China (only urban responses), Poland, and Russia, and about 53,000 respondents across developed countries, including France, Germany, Italy, the Netherlands, Spain, the United Kingdom, and the United States, 2010.
39 Ibid.

Exhibit 17

Consumers under 35 represent a greater share of the smartphone, VoIP, and social network markets in aspiring countries

% of total market share by age group and country type



1 Analysis and illustration exclude consumers over 55 due to inconsistent data.
2 Aspiring countries include Brazil, China, Poland, and Russia. Developed countries include France, Germany, Italy, Netherlands, Spain, the United Kingdom, and the United States.
3 In addition to countries included in footnote 2, additional aspiring countries include India and Malaysia.
4 This sample includes the same countries as for footnote 3; social network penetration is based on consumers using social networks at least once a week.

SOURCE: 2011 McKinsey iConsumer survey (~28,000 survey respondents across aspiring countries and ~53,000 survey respondents across developed countries; only urban responses collected in India, China, and Malaysia)

Consumers benefit from the wider array of goods and services they can purchase because of the Internet

The fact that individual consumers purchase goods and services through the Web implies that they derive benefit from the purchase greater than the cost paid. Consequently, the growth of e-commerce and VoIP in the aspiring world provide examples of consumer benefits. To continue to capture these benefits, a number of constraints in aspiring countries—including a lack of high-speed access, the cost of equipment, and a lack of trustworthy brands—must be overcome.

The B2C e-commerce market in the aspiring world has grown 31 percent per year since 2005. Moreover, the size of B2C e-commerce in more than 60 percent of aspiring countries tripled between 2005 and 2010.[40]

E-commerce growth may not reach its potential in aspiring countries until consumers in these countries have the same opportunities as their counterparts in the developed world. Our e-commerce platform index (eCP Index) measures e-commerce readiness by combining metrics for a country's online payment infrastructure, parcel delivery systems, and Internet readiness. Online payment enablement consists of the number of financial cards in circulation, the volume of cashless payments, and the legal protection provided to the e-consumer. Parcel delivery is based on the reliability of the postal system, the cost of domestic shipping, and the percentage of a population with delivery to their homes. Internet readiness accounts for a country's volume of secure servers, Internet penetration, and domain registration cost. Taking all factors into account, a country with a high eCP score (on a scale from 1 to 100) is considered to have high e-commerce enablement.

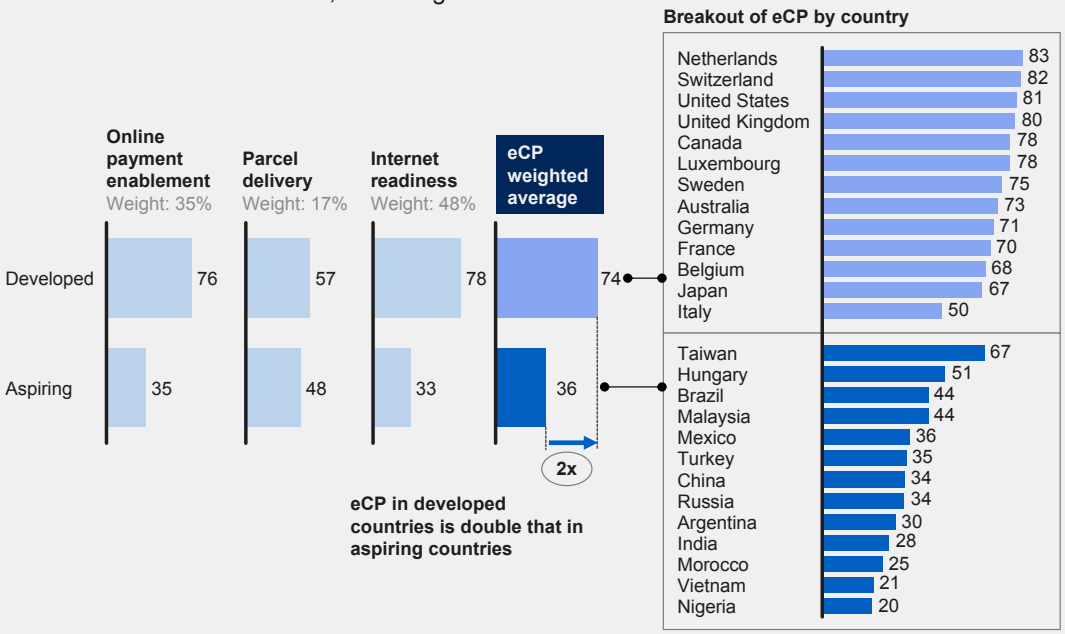
40 International Data Corporation; total B2C e-commerce activity in 2010; aspiring countries include Argentina, Brazil, China, Hungary, India, Malaysia, Mexico, Poland, Russia, Taiwan, and Vietnam.

The average eCP score in the developed world in 2010 was twice the average score in the aspiring world (Exhibit 18). While Taiwan does appear on par with the developed world in pursuing e-commerce activities, consumers in other aspiring countries are less equipped to do so. Despite growth in Internet adoption, Internet readiness appears to be a primary obstacle to enablement, suggesting a lack of reliable, secure infrastructure.

Exhibit 18

McKinsey's e-commerce platform index (eCP Index) indicates that aspiring countries are less enabled to use e-commerce

Index: 1 = lowest enablement, 100 = highest enablement



SOURCE: World Bank; World Economic Forum; ITU; EIU; IMD World Competitiveness Online; postal operator Web sites; expert interviews; McKinsey analysis

VoIP is another example of a service that consumers can purchase that would not be available without the Internet. The service offers consumers in the aspiring world lower costs and provides them with a way to use integrated communications platforms (e.g., VoIP services act as a competitive offering to phone services). In 2010, the worldwide VoIP market was estimated at $50 billion, an increase of about 40 percent from the estimated 2008 figure of $35 billion. The majority of this total can be attributed to consumer use, not enterprise use. Residential users accounted for about 69 percent of the total VoIP market in 2011.[41] As we have noted, many of these users are from the aspiring world, where VoIP has penetrated about one-quarter of the population.

Continued adoption and use of VoIP and e-commerce requires strong, widespread infrastructure, cheap access, and trustworthy online services. However, many aspiring countries face constraints in these areas. In the aspiring world, 20 percent of SMEs cited low bandwidth as their country's primary constraint while an additional 34 percent of SMEs cited the cost of equipment or the cost of Internet access as the primary constraint. Additionally, 46 percent cited a lack of trustworthy national brands or symbols as a general constraint. [42]

41 Infonetics Research, "VoIP and UC services and subscribers," March 2011.

42 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.

Box 6. The Internet enables wide-ranging social benefits for individuals

Free online content facilitates education at all levels

The Khan Academy states that its "library of videos covers K-12 math, science topics such as biology, chemistry, and physics, and even reaches into the humanities with playlists on finance and history." The Khan Academy makes 2,700 teaching videos available and provides statistics to track results, "knowledge maps" to track progress, and data to analyze and improve performance.[43]

In higher education, Yale, MIT, UC Berkeley, NYU, Stanford, and many more universities stream video webcasts of select courses online for free. The prevalence of these webcasts is met with high demand in the aspiring world and elsewhere. "Open Yale Courses" has had more than one million unique visitors from 191 countries since its debut in December 2007.[44] Additionally, MIT recently announced the launch of MITx, "which will offer the online teaching of MIT courses free of charge to anyone in the world."[45]

Medicinal counterfeiting has decreased due to the use of Internet technologies in Africa and Asia

At least 2,000 people die each day due to medicinal counterfeiting, which costs pharmaceutical companies an estimated $75 billion in lost revenue and up to $200 billion in other costs. The World Health Organization estimates that in many places in Africa, India, and parts of Southeast Asia, up to a third of medicines are compromised.

The problem is being addressed by the mPedigree Network, a public-private partnership, which takes the innovative approach of tagging individual medicine packs with a unique, non-duplicable ID that individuals can send via Short Message Service (SMS) to a toll-free four-digit number to check its authenticity. The response, from Internet-connected data centers managed by Hewlett-Packard, comes within seconds.[46]

Transferring funds has become more reliable through the mobile Web in African and Latin America

In Africa, M-Pesa, a mobile phone-based money transfer service initially developed by Safaricom, was designed to enable consumers to complete basic banking transactions without visiting a bank branch. The benefits M-Pesa offers include providing a secure platform, lowering the cost of transferring funds, and enabling more consumers to be included in financial markets. Today M-Pesa operates in Kenya, Tanzania, Afghanistan, South Africa, and elsewhere; it has more than 14 million subscribers in Kenya alone.[47] Similarly, in North America, m-Via provides a secure mechanism for Mexican immigrants in the United States to send money to the mobile phones of their families back home.[48]

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43 Khan Academy, http://www.khanacademy.org (accessed December 1, 2011).
44 Lecturefox blog, "MIT launches online learning initiative MITx," http://www.lecturefox.com/blog (accessed December 20, 2011).
45 James Crotty, "MIT game-changer: Free online education for all," *Forbes,* December 21, 2011.
46 mPedigree, "What can mPedigree do for global health?," http://www.mpedigree.net (accessed December 1, 2011).
47 Daily Nation, "M-Pesa transactions surpass Western Union moves across the globe," October 20, 2011.
48 Justmeans.com, "Social enterprise: Sending money is now as simple as sending a text," November 30, 2011.

Individuals also enjoy benefits beyond additional purchase options

The Internet's benefits to individuals span a variety of disciplines and activities whose value cannot be directly measured or observed. Internet users benefit from the ability to search and engage in ROPO activity. They also benefit from improved access to education, financial resources, and consumer protection services (see Box 6, "The Internet enables wide-ranging social benefits for individuals").

McKinsey research from 2011 found, "The average Internet user in the United States performed some 1,500 searches, while some 1.6 trillion searches a year are conducted globally. In emerging countries such as Brazil and India, people—that is, information seekers and consumers—capture the biggest proportion of the value created by search."[49] The value these consumers capture from search includes time saved, raised awareness, entertainment, better matching, price transparency, and more. For each purchase, a consumer finds time to perform ten online searches compared with two offline.[50] Moreover, 30 percent of total queries on search engines are for such topics as entertainment, adult content, games, or sports.[51]

The value that search provides through price transparency can be demonstrated through ROPO activity. In India in 2009, the value of total ROPO activity was an estimated $700 million, while in Brazil it was between $1.1 billion and $1.4 billion.[52] These estimates could increase over time with continued adoption of the Internet and rising e-commerce activity.

Individuals not necessarily online may also receive benefits from externalities created by the Internet

Externalities created by the Internet that benefit online and offline users include increasing the effectiveness of socially beneficial activities by facilitating the assembly of like-minded individuals and creating greater information transparency and accountability (see Box 7, "Blogging allows HIV/AIDS activists to connect and strategize").

Box 7. Blogging allows HIV/AIDS activists to connect and strategize

The "Blogging Positively" initiative started in 2008 in Kenya and creates a mechanism for HIV-positive bloggers around the world to discuss concrete steps to support infected individuals and organizations working in the field. One of the major accomplishments of this initiative has been the "Blogging positively e-guide," which provides a collection of case studies, interviews, and best practices about citizen media related to HIV/AIDS. Additionally, the initiative has created a map-based directory of advocates to illustrate worldwide support for the cause. Countries with bloggers taking part in the initiative include Argentina, Brazil, Mexico, South Africa, Kenya, India, China, and Russia.

Entrepreneurs

Entrepreneurs in aspiring countries have leveraged increases in Internet use and infrastructure improvements to enable innovative new business models. From successful adaptations of popular Internet applications in developed countries to new commerce and policy platforms, entrepreneurs have brought new services, expanded products, and deeper content within reach of users in aspiring countries. To distinguish between successful entrepreneurial efforts and large enterprises, for the purposes of this report, we have defined entrepreneurial efforts as those that include innovative, Internet-enabled companies established within the past ten years.

49 McKinsey & Company, *The impact of Internet technologies: Search*, July 2011.
50 McKinsey analysis of comScore data, eBay annual report.
51 McKinsey & Company, *The impact of Internet technologies: Search*, July 2011.
52 Ibid.

Some stories of entrepreneurs creating Internet impact are well known. Over the past 20 years, entrepreneurial efforts of innovative individuals have underpinned the astounding growth in Internet use. These entrepreneurs have successfully turned their visions into large, profitable enterprises such as Google, Microsoft, and Apple. As Internet use has grown, entrepreneurs have used technology as a platform to help users overcome various obstacles to fulfilling their needs. For example, peer-review Web sites enable honest feedback on products and services, while e-commerce platforms provide a wide array of products to consumers in many locations.

Entrepreneurship flourishes organically in most aspiring countries. In recent years, Internet entrepreneurship in these countries has been fueled by high growth in Internet access and increased financing opportunities due to globalized markets. Some successful entrepreneurs, for instance, have created targeted solutions to local obstacles or adapted successful approaches from developed countries to capture the local market. Examples of such entrepreneurship include the creation of many local flash sales and group buying Web sites, as well as the use of innovative approaches to overcome shortcomings in payments infrastructure, as highlighted in our country profiles. Social entrepreneurship has also grown from addressing the pervasiveness of counterfeit drugs to developing new ways for people to connect with each other based on common interests (see Box 8, "Innovative start-ups provide facts for farmers, comfort for parents (as of December 2011)").

Box 8. Innovative start-ups provide facts for farmers, comfort for parents (as of December 2011)

- **Bey2ollak.** This is an Egypt-based mobile and Web-based application that offers real-time crowd-sourced traffic updates. The idea was conceived as a response to the founders' frustration with Cairo traffic. The day the application was launched, it gained 5,000 users and a partnership offer from Vodafone Egypt. The service reached 46,000 registered users in less than a year.[53]

- **Ezulwini Chocolat.** This South African chocolate company was founded by local entrepreneur Nontwenhle Mchunu, who aimed to create Africa's first premium chocolate brand using only local and sustainable ingredients.[54] Products are currently distributed through the company's Web site as well as through local retail outlets, hotels, and custom orders.

- **Esoko.** This is a Web-based information-sharing application from Africa, mostly used in the agricultural industry to collect and distribute market data via text message. Individual farmers, businesses, and governments depend on the application to receive price alerts, track stock and inventory, and find buyers and sellers.[55] Built in Ghana, the application is now used in Nigeria and elsewhere in Africa.

- **SecQ.me.** Inspired by high crime rates in Malaysia and around the globe, SecQ.me is a mobile-based personal safety application. The application is based on the idea of prevention; it encourages users to provide accurate and frequent updates of their location and activities to a private online database without fear of judgment, say, from parents. Users upload activities and their duration to SecQ.me (e.g., taxi ride from hotel to work, 15 minutes, taxi number 1234), and alerts are automatically generated if safety is not confirmed once an activity is complete. This way, alerts can be initiated even if the user cannot actively seek help. Additional functionality includes GPS integration and the ability to subscribe to someone else's feed with that person's permission.[56] In 2011, SecQ.me was in the top 5 applications (of more than 200 entries) in the Ericsson Application Awards competition.

53 TheNextWeb.com, "Bey2ollak: An Egyptian start-up success story to aspire to," July 17, 2011.
54 Ezulwini Chocola, ezulwinichocolat.co.za (accessed December 1, 2011); Natasha Hanshaw, "All about the 'chocolate lady': A young South African entrepreneur," beyondgoodintentions.wordpress.com, January 17, 2009, www.beyondgoodintentions. wordpress.com/2009/01/17/all-about-the-chocolate-lady-a-young-south-african-entrepreneur/ (accessed December 1, 2011).
55 Esoko, www.esoko.com (accessed December 1, 2011).
56 SecQ.me, www.secq.me (accessed December 1, 2011).

Exhibit 19

Most aspiring countries are not well set up for Internet entrepreneurship

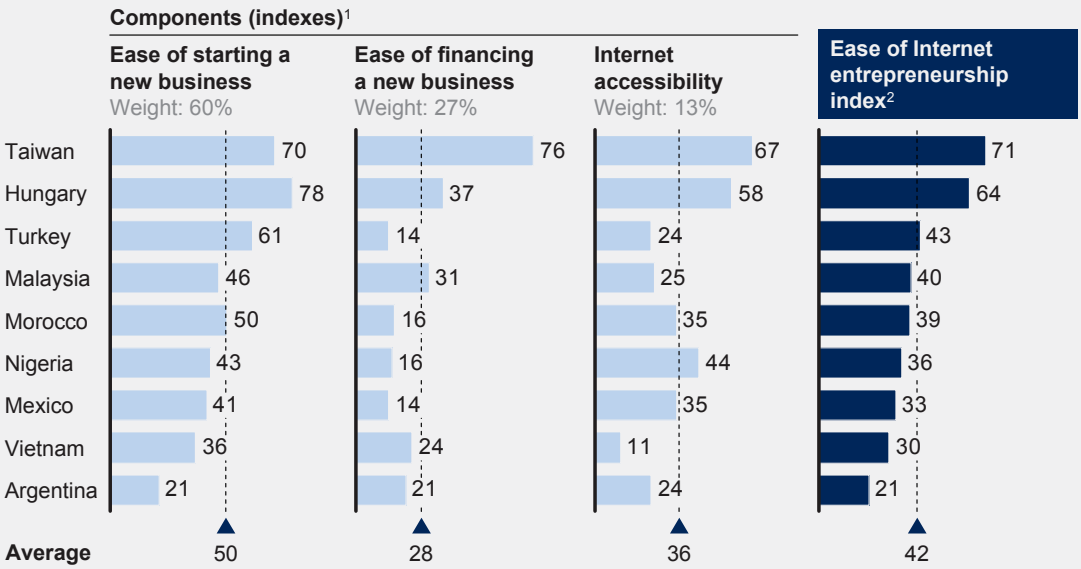
McKinsey "ease of Internet entrepreneurship" index (indexed to 100)

Index categories: ease of starting new business, financing new business, Internet accessibility

SOURCE: World Bank; Computer Industry Almanac; ITU; Capital IQ; World Economic Forum, *Global Competitiveness Report, 2010–2011*; International Finance Corporation; Speedtest.net; domain name registration Web sites; Transparency International; McKinsey analysis

Exhibit 20

Difficulties in financing and accessing the Internet are holding back entrepreneurship in certain aspiring countries



1 Each index is the average of component subindexes. See appendix for detail on subindexes.
2 Weighted average of the three indicators. Weighting methodology is explained in the methodology section of the report.

SOURCE: World Bank; Computer Industry Almanac; ITU; Capital IQ; World Economic Forum, *Global Competitiveness Report, 2010–2011*; International Finance Corporation; Speedtest.net; domain name registration Web sites; Transparency International; McKinsey analysis

Although stories of successful entrepreneurialism abound in aspiring countries, structural gaps still limit the full potential of the Internet to support entrepreneurs. The biggest hurdles are difficulties associated with starting and financing a new business, including those related to fulfilling procedural requirements. Financing can be an obstacle because it is often costly to start a new business and because the availability of private investments and loans can be limited.

We created the "ease of Internet entrepreneurship" index to reflect the three main constraints to creating successful Internet-related entrepreneurial ventures: the ease of starting a new business, the ease of financing a new business, and Internet accessibility (Exhibit 19). In the first area, the overall ease of registering and administering a new business in each country is measured. The second component measures the financial capital requirements to start a new business and the entrepreneur's ability to meet those requirements with available funding sources. The third component measures Internet cost and availability, both for new businesses and their potential local individual users (see the appendix for more detail on our methodology).

All three components of the overall index are key enablers of entrepreneurship. In comparison with Internet-based entrepreneurs in developed countries, those in aspiring countries find it more difficult to start a new business. However, a few aspiring countries, such as Taiwan and Hungary, have fostered an environment for Internet entrepreneurship that is comparable to that of developed countries.

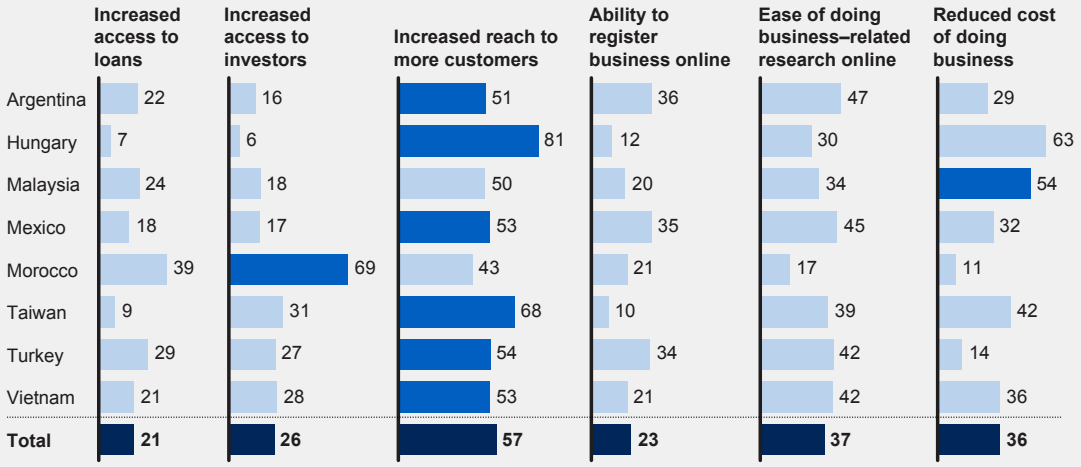
Entrepreneurship in aspiring countries is generally constrained by all three key factors, often to differing degrees. Entrepreneurs in Turkey and Mexico find it particularly difficult to secure financing, while entrepreneurs in Vietnam are constrained by low Internet accessibility. Argentina's entrepreneurs run into trouble starting and registering new businesses (Exhibit 20).

As Internet ecosystems continue to develop in aspiring countries, a few key areas of opportunity exist for potential entrepreneurs (Exhibit 21). Entrepreneurs can provide innovative solutions to local problems, thus ensuring an audience for their products with minimal external competition. In addition, because certain constraints affect a number of aspiring countries, entrepreneurs can address multiple markets in different geographies and potentially increase their overall reach. New technologies will further benefit from increases in Internet adoption rates and decreases in access costs.

Exhibit 21

McKinsey's SME survey finds entrepreneurs seeing "increased reach to more customers" as the Internet's biggest benefit

Benefits of Internet for entrepreneurs
Question: What are the two best ways the Internet encourages entrepreneurship in your country? (%)



NOTE: Sum of percentages for each country is equal to 200%, since respondents were asked to choose two options. Numbers may not sum due to rounding.
SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

However, in contrast to entrepreneurs in developed countries, those in aspiring countries cannot assume that there will be an Internet ecosystem to support their efforts. For example, for e-commerce, constraints such as lack of trust, cashless payments, or parcel delivery services must be addressed. Entrepreneurs in aspiring countries might need to address the underlying conditions required for a strong Internet ecosystem in order to achieve full impact. In this sense, Internet entrepreneurs in aspiring countries are often social entrepreneurs, too.

Enterprises

The Internet affects both small and large enterprises, and its impact has been largely beneficial and widespread. In the aspiring countries we surveyed, the Internet has created more jobs than it has destroyed in the Internet-enabled SME sector. Enterprises aspiring to become market leaders can use Web technologies as a tool to propel growth and profits. Conversely, those that continue to ignore Web technologies may be left behind.

SMEs

To better understand the SME sector in aspiring countries, we launched a survey in eight countries: Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam (see Box 9, "An online survey of 2,484 SMEs formed the basis of our findings"). An assessment of survey responses suggests that SMEs in aspiring countries that have invested in Web technologies have seen faster growth, more profits, and higher performance than their competitors (Exhibit 22). This suggests that the adoption of Web technologies by SMEs may enhance economic growth in the aspiring world.

Box 9. 2011 online survey of 2,484 SMEs formed the basis of our findings

Our findings are based on a survey, primarily conducted online, that targeted 2,484 Internet-enabled SMEs in eight aspiring countries. SMEs surveyed had fewer than 500 full-time employees. The same survey, with the same set of questions and available responses translated into local languages, was used in all countries. The response rate by country varied between 12 percent in Argentina and 30 percent in Morocco.

All respondent answers were weighted against the industry in which they conduct business as well as whether the SME was Internet-related. The purpose of this weighting was to ensure that the distribution of respondents in each country matched that country's industry mix and Internet use. For instance, if 20 percent of our respondents in a country belonged to the agriculture sector, but the country's agricultural sector made up only 10 percent of the economy, we would reduce the importance of each response from an agricultural respondent by 50 percent. In this manner, we are able to account for online survey biases, for example, adjusting for agricultural respondents or ICT-related companies. When stating our sample size of respondents to any survey question, we represent the weighted sample size, not the unique number of respondents.

The survey is a useful tool for understanding SMEs in each country's economy, but we acknowledge its limitations. The sample set may be structurally different from the other user groups in an economy. Moreover, the survey depends on the accuracy of responses and honesty from respondents.

Exhibit 22

Overview of Internet-enabled SME Web technology use, benefits, and constraints

Top quartile | Second quartile | Third quartile | Bottom quartile

Category		Country								All responses
		Argentina	Hungary	Malaysia	Mexico	Morocco	Taiwan	Turkey	Vietnam	
Web-intensity % of SMEs	With above-average Web expenditure[1]	15	9	19	19	4	15	18	13	**14**
	Providing broadband access	79	87	86	84	60	82	74	84	**80**
	Providing mobile broadband access	62	42	80	75	64	59	55	76	**65**
	Using online sales	31	22	29	31	8	26	22	44	**27**
	Using online purchasing	40	38	38	47	4	43	28	52	**37**
	Using e-business (i.e., eCRM, eSCM)	15	10	29	23	27	40	14	53	**27**
Profitability Benefits from Web technologies (%)	Current revenue increases	7	3	8	9	8	9	5	9	**8**
	Anticipated future revenue gains	9	7	9	13	4	6	7	12	**8**
	Current COGS reductions	3	2	4	5	3	3	3	7	**4**
	Anticipated future COGS reductions	4	3	6	8	4	5	5	8	**5**
	Current productivity gains	11	6	13	16	5	7	7	19	**11**
Growth Average growth for SMEs (%)	With below-average Web expenditure[3]	8	1	5	6	2	2	3	11	**5**
	With above-average Web expenditure[1]	9	13	10	12	5	4	8	14	**10**
	Providing least broadband access[4]	7	-4	3	5	1	1	3	12	**3**
	Providing greatest broadband access[5]	9	2	6	8	3	3	5	12	**6**
Constraints[6] % of SMEs citing[7]	Cost of Internet access	42	36	48	35	20	39	40	31	**36**
	Cost of equipment	40	40	26	51	13	30	10	40	**32**
	Low bandwidth (Internet speed)	29	14	50	22	58	41	14	23	**31**
	Lack of trust in society	26	46	21	22	38	20	35	11	**27**
	Lack of education on using Internet	19	23	16	30	20	6	14	33	**20**

1 Internet-enabled SMEs spending more than 10% of total expenses on Web technologies. For Web-intensity section only: analysis excludes SMEs unable to state percent of total expenses attributed to Web technologies. For growth section only: analysis excludes SMEs unable to report current growth rate
2 Percent of Internet-enabled SMEs stating gain multiplied by average stated gain. Assumes those stating not stating benefit were not effected by Web technologies.
3 Internet-enabled SMEs spending less than 10% of total expenses on web technologies. Analysis excludes SMEs unable to report current growth rate.
4 Internet-enabled SMEs providing no employees with broadband access. Analysis excludes SMEs unable to report current growth rate.
5 Internet-enabled SMEs providing more than 25% of employees with broadband access. Analysis excludes SMEs unable to report current growth rate.
6 Five most frequently cited constraints across the aspiring world listed (among a group of 17 total options)
7 Percent of SMEs citing as a top-five constraint in their country

SOURCE: Survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

Finding 1: Internet investment accelerates SME growth

The Internet has helped the SMEs that embrace it to grow in the past three years. Growth in SMEs has a positive correlation with a company's investment in Web technologies, including online sales, broadband, and mobile broadband. Those SMEs not currently invested in the Web, but planning to become invested within two years, believe they can catch up with those already invested. However, those with no plans to invest believe they will fall further behind.

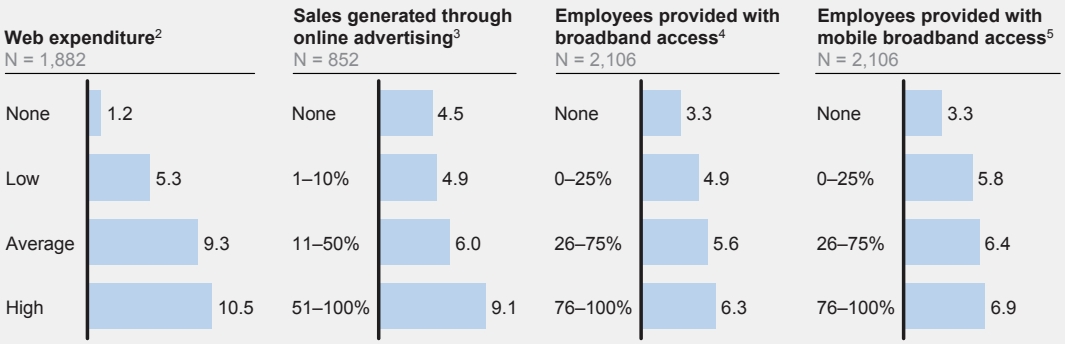
As competition grows in aspiring countries, Internet-enabled SMEs appear to have the advantage. Those spending the most on Internet technologies have grown nine times as fast as those spending the least over the past three years. Similarly, SMEs providing the greatest broadband access to their employees have grown twice as fast as those providing the least over the past three years.

SMEs that reported little to no expenditure on Web technologies are currently growing at 1 percent per year, while those that invested more than 30 percent of their expenses in Web technologies (described as "high" Web expenditure) are growing at almost 11 percent per year (Exhibit 23). However, SMEs planning to invest in the Internet in the next year have greater revenue, cost of goods sold (COGS), and operations and administrative expense expectations than those already invested. Conversely, SMEs unable to make investments in Web technologies over the next few years anticipate that their growth will be slower than their Internet-enabled counterparts.

Exhibit 23

SMEs' high growth correlates positively with Web spending, online sales generation, broadband access, and mobile broadband access

SME stated growth, %[1]



1 Excludes all respondents who did not know their company's growth rate.
2 Low Web expenditure is less than 10% of total expenses. Average is 11–30% of total expenses. High is greater than 30% of total expenses. "What percentage of your expenses are digital, i.e., linked to Web technologies (electronic messaging, intranet, extranet, WiFi, Web sites, Web 2.0 tools, servers/routers, Web connection for employees, Enterprise Resources Planning (ERP), e-commerce, e-marketing, e-supply chain)?" Excludes "I don't know" responses.
3 "What percentage of your revenues are driven by ONLINE advertising? 2010 (projected)." Excludes "I don't know" responses.
4 "Do you have a broadband Internet connection available to your employees?" If so, "What percentage of your employees have access to it?"
5 "Do you have access to wireless Internet through a mobile broadband connection?" If so, "What percentage of your employees have access to it?"

SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

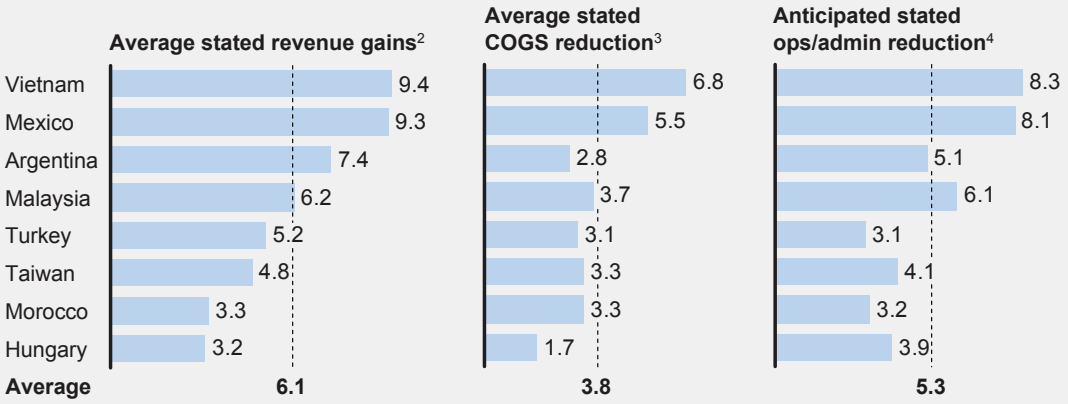
Finding 2: Internet technologies enable SMEs to reap greater profits

In the aspiring world, SMEs using Internet technologies report higher revenue, lower COGS, and lower administrative and operations costs (Exhibit 24). The advantage of Internet technologies comes largely from a core set of technologies that includes e-mail and social networks. Each of the eight aspiring countries we surveyed reported Internet-related gains, though the magnitude of these gains varies depending on the technologies and levers employed. Being able to track where these gains have been the greatest, which factors most influence success in each country, what technologies offer the greatest boost per unit of investment, and what technologies are on the cusp of widespread use can help determine future direction and business decisions (see Box 10, "Hoba Hoba turns to the Internet to bring its music to fans," and Box 11, "NetPincer reduces channel costs for restaurants in Hungary").

Exhibit 24

Across eight aspiring countries, SMEs say the Internet has allowed them to gain revenue and reduce costs[1]

% (N = 2,484)



1 Nigerian SME sector not surveyed, due to lack of survey resources there
2 Percent of respondents answering "Yes" to "Current performance linked to the Internet: Have Web technologies made it possible for your company to increase your revenue (to an extent that could not have happened through other channels or technologies)?" multiplied by the average stated impact.
3 Percent of respondents answering "Yes" to "Current performance linked to the Internet: Have Web technologies made it possible for your company to reduce your cost of goods sold (COGS)?" multiplied by the average stated impact.
4 Percent of respondents answering "Yes" to "Current performance linked to the Internet: Have Web technologies made it possible for your company to reduce expenses related to administrative, operational and general costs (including marketing expenses)?" multiplied by the average stated impact.

SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

Box 10. Hoba Hoba turns to the Internet to bring its music to fans

In December 2011, Hoba Hoba's *Trabando* had nearly 500,000 hits on YouTube. The band has performed at Mawazine (one of Morocco's largest music festivals) alongside famous Western artists such as Kanye West, Joe Cocker, Lionel Richie, Shakira, and Earth Wind & Fire.

Only ten years earlier, the band was struggling to attract fans. Hoba Hoba found it difficult to plan in-person concerts, and over time, the Internet became the easiest forum to spread its music. In June 2011, Hoba Hoba's Reda Allali said, "the Internet has changed the whole situation in Morocco … we put directly our songs on the Web site, and then people download them."[57]

57 Banning Eyre, "Despite regional upheaval, Moroccans flock to festival," NPR Music, June 13, 2011.

Box 11. NetPincer reduces channel costs for restaurants in Hungary

Creating a Web site for a small restaurant in Hungary that is not tech-savvy can be difficult and costly. Between managing a Web site, building capability to process orders, and purchasing infrastructure to be tech-capable, most restaurants stay offline.

NetPincer, a growing online company in Eastern Europe, has changed these dynamics. The company will display a restaurant's menu, provide access to its users, and process orders without requiring members to own a computer. Revenue is generated by charging restaurants a portion of the value of the total order.

Our survey found that 64 percent of SMEs report increased revenue from Web technologies. The average gain was 6 percent for all SMEs (Exhibit 24). Moreover, 83 percent of SMEs anticipate revenue gains in the next three years. Some segments, including those that are well connected to the Internet ecosystem, benefit more than others. Internet-related companies, for instance, reported 1.7 times the gains of other companies.

Certain technologies were more highly correlated with revenue gains. Electronic messaging (e.g., e-mail and instant messaging) accounted for nearly one-third of all revenue gains.[58] The companies providing the least amount of employees with access to e-mail reported a 3 percent revenue gain, compared with the 7 percent increase enjoyed by companies with the greatest access. Other technologies reported to boost revenue were social networks and Web site purchases and sales. SMEs believe these devices help increase revenue by increasing customer satisfaction, attracting more customers, and building deeper customer loyalty.

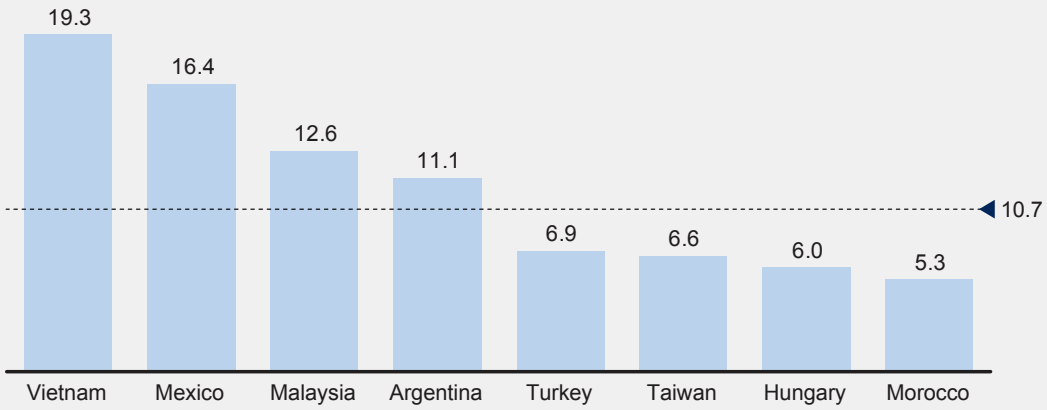
Newer technologies, such as smartphones and online payment features, also generate higher revenue for SMEs that make investments. Companies providing the most employees with smartphones reported triple the revenue gains due to Internet technologies as those providing the least. SMEs that offered online payment features on their Web sites reported that their revenue gains from the Internet were double those for SMEs without these features, yet only 10 percent of total SMEs employed them. SMEs also reported that the Internet created productivity gains. The SMEs surveyed indicated that Web technologies allowed productivity to increase by around 11 percent (Exhibit 25). The countries that observed the greatest productivity gains also saw the greatest increases in profitability.

Exhibit 25

McKinsey's SME survey found that productivity gains vary by country

Average stated productivity increase due to Web technologies

%



SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

In our survey, about half of SMEs reported that Web technologies also helped reduce COGS. The average reduction was 4 percent across all SMEs, including those that reported reductions as well as those that did not. An additional 16 percent anticipate reductions in the next three years. Internet-related SMEs with 250 to 500 employees reported the greatest reductions in COGS. The technologies that trigger these reductions are similar in aggregate, but the size of their impact varies by country (Exhibit 26). Moreover, the technologies that reduce COGS are similar to the technologies that boost revenue gains, implying multiple gains and purposes for each Web technology (Exhibit 27).

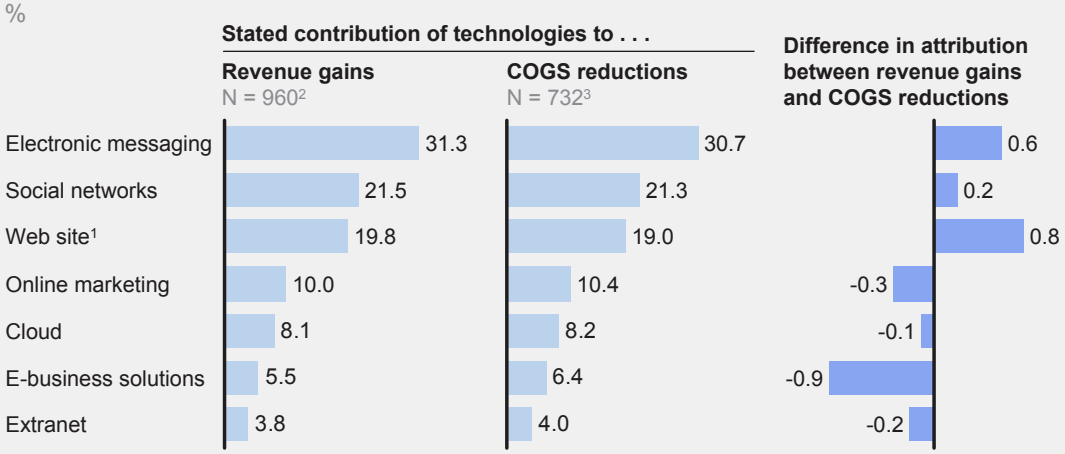
58 Based on the following survey question: "How would you break down the impact which the various technologies have had on your revenue increase?"

Exhibit 26

Technologies leading to higher revenue and lower cost of goods sold are similar overall—but the size of the impact differs by country

All aspiring countries

%



1 Web site purchase and sales.
2 Includes only the respondents that stated revenue gains and were able to quantify those gains and specify their root technological causes in response to the following question: "How would you break down the impact which the various technologies have had on your revenue increase (sum must equal 100%)?"
3 Includes only the respondents that stated COGS reductions and were able to quantify those reductions and specify their root technological causes in response to the following question: "How would you break down the impact which the various technologies have had on your reduction in COGS (sum must equal 100%)?"

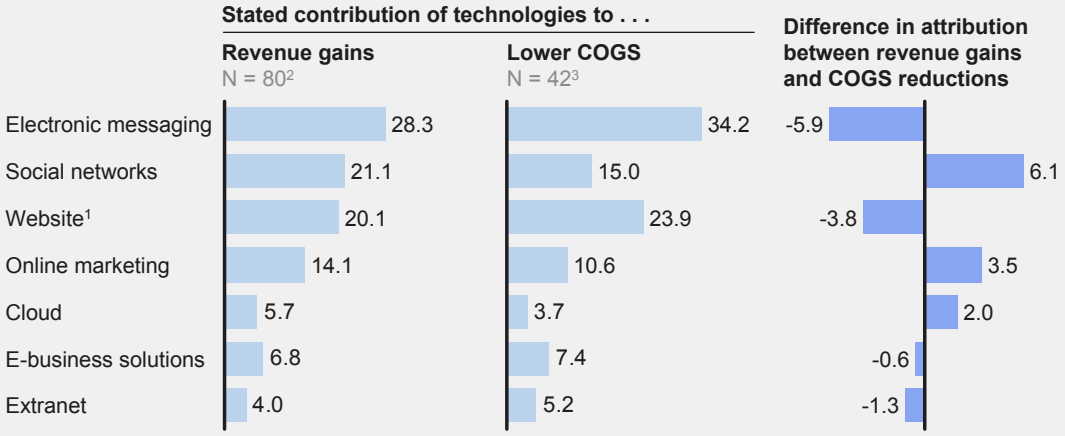
Note. Numbers may not sum due to rounding.

SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

Exhibit 27

Technologies leading to higher revenue and lower cost of goods sold are similar overall but the size of the impact differs by country—Argentina

%



1 Web site purchase and sales.
2 Includes only respondents stating revenue gains with the ability to quantify those gains and specify the root technological causes of those gains. "How would you break down the impact which the various technologies have had on your revenue increase? (sum must equal 100%)"
3 Includes only respondents stating cost of goods sold (COGS) reductions with the ability to quantify those reductions and specify the root technological causes of those reductions. "How would you break down the impact which the various technologies have had on your reduction in COGS? (sum must equal 100%)"

SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

For SMEs in all aspiring countries, the three main drivers of reductions in COGS enabled by the Internet were improved employee efficiency, reduced costs of goods purchased, and reduced delivery and distribution costs. Certain enablers have more impact in some countries than in others. In Vietnam, for example, reduced distribution costs were cited 1.3 times as often as they were elsewhere. SMEs in Morocco and Turkey believe that social networks lowered cost of goods purchased 1.4 times as much as elsewhere. In Malaysia, SMEs attributed 1.5 times more reduction in COGS to online marketing.

Knowing that the Internet can be effective in a business setting does not ensure that SMEs will adopt the technology. Although 64 percent of SMEs reported that Web technologies reduce costs of operations, administration, and marketing expenses, use of these technologies is not yet universal. Nonetheless, the average operations, administration, and marketing reduction was 5 percent for all SMEs. Most of these companies (74 percent) anticipate similar cost savings in the next three years. The SMEs that spend the most on Web technologies achieve the greatest reductions in operating and administrative costs—10 percent. In comparison, those spending little to no money on Web technology save only about 2 percent.

The reasons most frequently cited for these reductions include lower spending on marketing (54 percent of respondents), decreased spending on human resources (52 percent), and lower support costs (48 percent). E-business solutions, i.e., online customer relationship management (CRM) systems and electronic CRM (eCRM) systems, are critical to achieving these gains. The traditional versions of these solutions are common in large enterprises, where they have been in place for many years. However, such solutions are nascent in SMEs because traditional solutions are rather expensive. SMEs using electronic enterprise resource planning systems (eERP), electronic supply chain management systems (eSCM), or eCRM reported that they realized greater reductions in operations and administrative expenses than those that do not them, but penetration remains low (about 10 percent per solution).

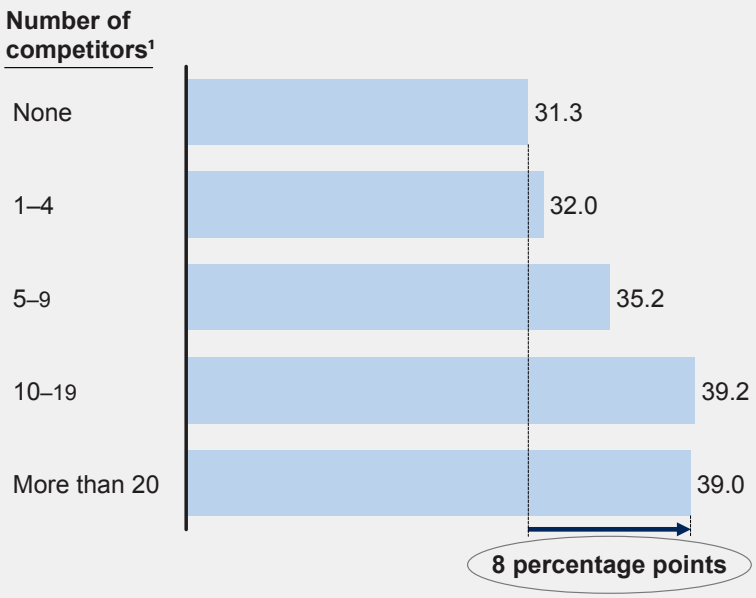
Finding 3: The use of Internet technologies can be vital to competition and market leadership

The greatest Internet investments and gains occur in the most competitive markets. Additionally, market leaders budget the most for Internet technologies and reap the most in productivity gains. This implies that SMEs in competitive aspiring world markets would benefit from enhancing their Web capacity to grow and make gains in profitability. In our survey, SMEs provided access to mobile broadband to the greatest number of employees in the most competitive markets (Exhibit 28).

Exhibit 28

Competitive markets are correlated with more access to mobile broadband

Average % of employees with mobile broadband access



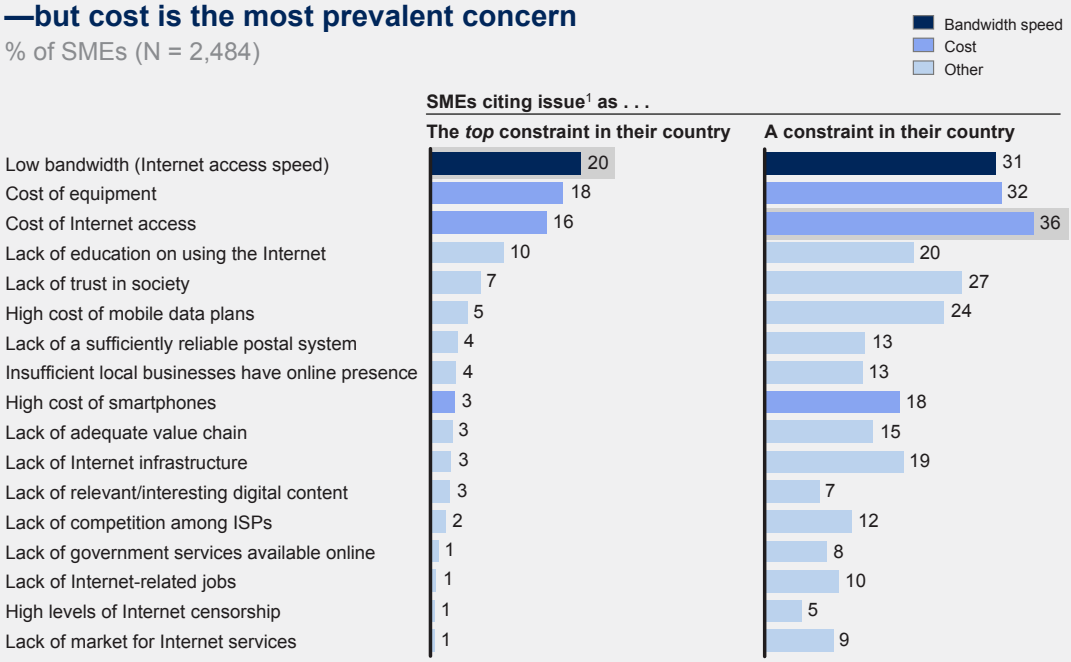
1 Number of competitors identified by each SME.
SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

Finding 4: There are still significant constraints to SMEs capturing the full potential of the Internet in the aspiring world

Exhibit 29

Bandwidth speed is the primary concern of many SMEs —but cost is the most prevalent concern

% of SMEs (N = 2,484)



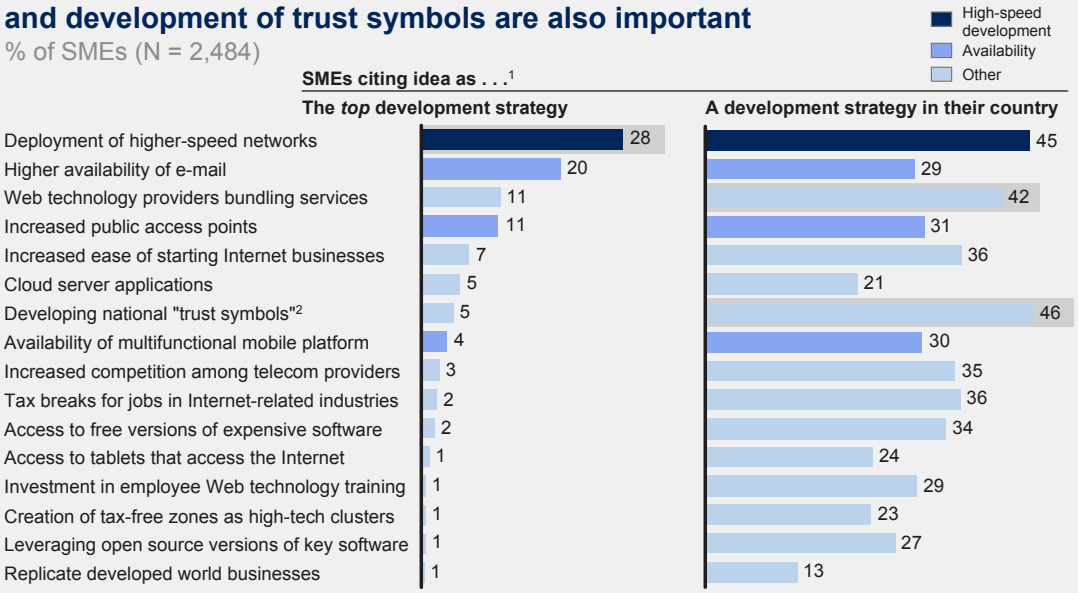
1 "In your opinion, what are the *general* bottlenecks discouraging people in your country from using the Internet? (rank top 3)"

SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

Exhibit 30

Deployment of higher-speed networks is the primary development strategy cited by SMEs, but the availability and development of trust symbols are also important

% of SMEs (N = 2,484)



1 "In your experience, what are some ways countries can leapfrog the Internet development curve? (rank top five)."
2 Full response: "Developing national "trust symbols" for Web sites, and in particular e-commerce platforms, in order to improve Internet security and identity protection."

SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

Among our survey respondents, the speed of the Internet was the primary constraint for SMEs in aspiring countries. The cost and availability of equipment were also commonly cited challenges (Exhibit 29). All three of these constraints limit the use of Internet technologies and e-business solutions available to SMEs. Cloud computing, for instance, is not feasible without broadband access. To leapfrog the Internet development curve, many SMEs suggested that higher-speed networks for mobile Internet be deployed. SMEs also believe that developing national "trust symbols" (to improve Internet security and online identity protection) could help increase Internet development (Exhibit 30).

Finding 5: The Internet has a positive impact on creating jobs in the SME sector

Our research found that the Internet creates 3.2 jobs for every 1 job lost in SMEs in aspiring countries. This translates to a 3.5 percent net increase in employment. Of all jobs in these countries, 1.3 percent can be associated with the Internet (see Box 12, "The Internet creates jobs in the SME sector in aspiring countries").

Box 12. The Internet creates jobs in the SME sector in aspiring countries

We determined the number of jobs affected by Web technologies by asking carefully constructed questions in our SME survey.

Methodology used to determine jobs created or lost by the Internet

The SME survey posed a series of questions to determine the percent of total jobs created or lost in a business as a result of Web technologies. The survey also asked how many employees there were in the business. Combining the two elements provided us with a job gain or loss calculation for each SME. Summing this calculation across all respondents allowed us to calculate the total number of jobs created and lost across our sample. The ratio of these two numbers produced the number of jobs created per job lost.

First, respondents were asked to state whether Web technologies had an impact on their business:

> "What has been the net impact of the use of Web technologies on your company's total number of employees?": (1) A reduction in the number of employees; (2) no impact; (3) the creation of jobs.

If a respondent answered "a reduction in the number of employees" or "the creation of jobs," the respondent was then asked to quantify the magnitude:

> "Please estimate the number of jobs created relative to the number of employees before (or without) your company's the use of Web technologies": (1) 1–5 percent; (2) 6–10 percent; (3) 11–20 percent; (4) 20–50 percent; (5) 50–100 percent; (6) more than 100 percent.

To attribute a percentage creation/reduction to each selection, we assumed the midpoint of the chosen response. For example, if a respondent selected "the creation of jobs" and then "6–10 percent," we would assume the respondent had observed an 8 percent increase in job creation. Given the size of our sample (2,484 SMEs), we believe that the average of each possible response approximates the true average intended by respondents. If a respondent selected "no impact," the effect of Web technologies on jobs was set to zero. No respondent answered "more than 100 percent."

We then referenced the respondent's stated employee size to determine the net number of employees created or reduced by Web technologies.

> "What is the current size of your company (including all persons paid by your company)?": (1) Less than 10 people; (2) between 10 and 99 people; (3) between 100 and 249 people; (4) between 250 and 499 people.

As with the quantification of the Web's impact on employment, we assumed the size of a respondent's company to be the midpoint of that respondent's selection.

After determining a company's stated effect on employment and employee size, we used the following formula to calculate the number of jobs created per job lost:

$$\frac{\Sigma(\text{Stated job creation}_i \times \text{employee size}_i)}{\Sigma(\text{Stated job reduction}_i \times \text{employee size}_i)}$$

This formula calculates the sum, of the estimated number of jobs created across our sample divided by the sum of the estimated number of jobs reduced across our sample. The net effect on total employment can also be calculated using the same questions with the following formula:

$$\frac{\Sigma(\text{Stated job creation}_i \times \text{employee size}_i) - \Sigma(\text{Stated job reduction}_i \times \text{employee size}_i)}{\Sigma(\text{employee size}_i)}$$

While this methodology provides an estimate of jobs created per job lost and net effect on employment in the SME sector, it does not allow us to make broader claims about the economy as a whole. SMEs behave differently than larger enterprises, and it is likely that the sectors made different Internet-related labor decisions. Since we conducted our survey primarily online, we may be observing a sample of SMEs that are more technologically savvy and more likely to have observed benefits. Finally, we cannot survey those firms that have already failed as a result of Web technologies, which may create an upward bias in our results.

Despite the limitations of a survey-based approach, this methodology captures a random sample of SMEs in a variety of countries and industries. We feel the structural biases (no explicit biases exist) of the survey do not negate the effects we observed.

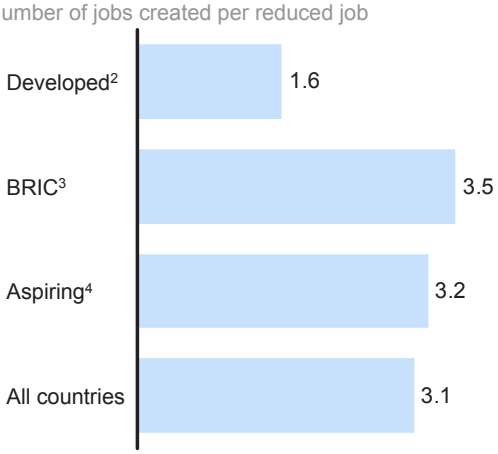
The creation of 3.2 jobs for every 1 job lost in the aspiring world is greater than that in the developed world (1.6 jobs for every job lost) but less than that in the BRIC countries, where 3.5 jobs are created for each job lost (Exhibit 31). These figures also align with statistics on the growth of the Internet in these countries. While the Internet appears to be creating more jobs than it destroys, its overall effect on employment remains relatively small: net change in employment in the SME sector attributed to the Internet was 3.5 percent in the aspiring world, 2.7 percent in the BRICs, and only 0.7 percent in the developed world (Exhibit 32).

Exhibit 31

The Internet creates more SME jobs than it destroys, and it has the greatest impact in BRIC economies and aspiring countries

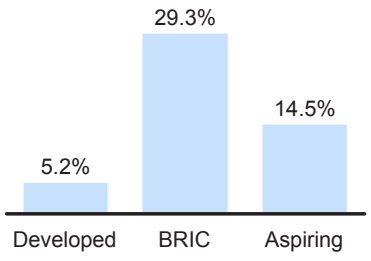
Jobs created/jobs reduced due to the Internet[1]

Number of jobs created per reduced job



Growth in broadband subscribers suggests similar findings[5]

Compound annual growth rate, 2007–09, %



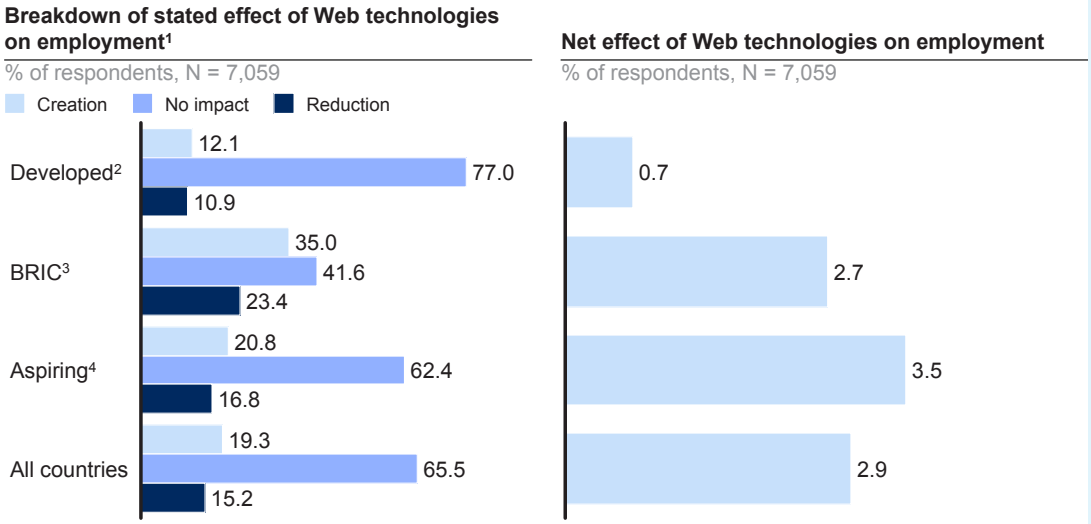
1 Respondents were asked: "What has been the net impact of the use of Web technologies on your company's total number of employees?" Those answering "a reduction in the number of employees" or "the creation of jobs" were then asked, "Please estimate the creation/reduction in the number of employees relative to its level before (or without) your company's use of Web technologies."
2 Includes Canada, Germany, Italy, Japan, South Korea, Sweden, the United Kingdom, and the United States.
3 Includes Russia, India, China. Data not available for Brazil.
4 Includes Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam.
5 Based on broadband subscribers per 100 people.

SOURCE: 2011 McKinsey global SME survey of ~7,000 SMEs; World Bank; McKinsey analysis

Exhibit 32

Web technologies have a net 3 percent impact on global employment—but 65 percent of SMEs report no impact

%



1 Respondents were asked: "What has been the net impact of the use of Web technologies on your company's total number of employees?"
2 Includes Canada, Germany, Italy, Japan, South Korea, Sweden, the United Kingdom, and the United States.
3 Includes Russia, India, China. Data not available for Brazil.
4 Includes Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam.

SOURCE: 2011 McKinsey global SME survey of ~7,000 SMEs

Large enterprises

Among the first to adopt broadband in the aspiring world, large enterprises now appear ready to embrace advanced Web technologies such as cloud computing. In aspiring countries, multinational corporations and large domestic enterprises—including those mimicking business models from more developed countries—are already adopting these technologies.

Profitability gains provide an important incentive for adopting innovative Internet-based solutions. The Internet enables large enterprises to increase revenue by creating greater access to customers and improving mechanisms for segmentation. These technologies also enable cost reductions by increasing productivity and decreasing administrative overhead.

Additionally, multinational corporations may benefit from applying standardized Web-based solutions across their operations in various countries. Unfortunately, global companies face many challenges in pursuing such strategies. But companies that can overcome these challenges derive additional benefits, including increased resource management and improved employee efficiency.

Internet technologies have also enabled some companies in the aspiring world to innovate and grow into large enterprises. Some companies that began as start-ups in these economies have risen to prominence by creating a solution to a former constraint.

Large enterprises were early adopters of broadband and appear to be early adopters of newer Web technologies, too

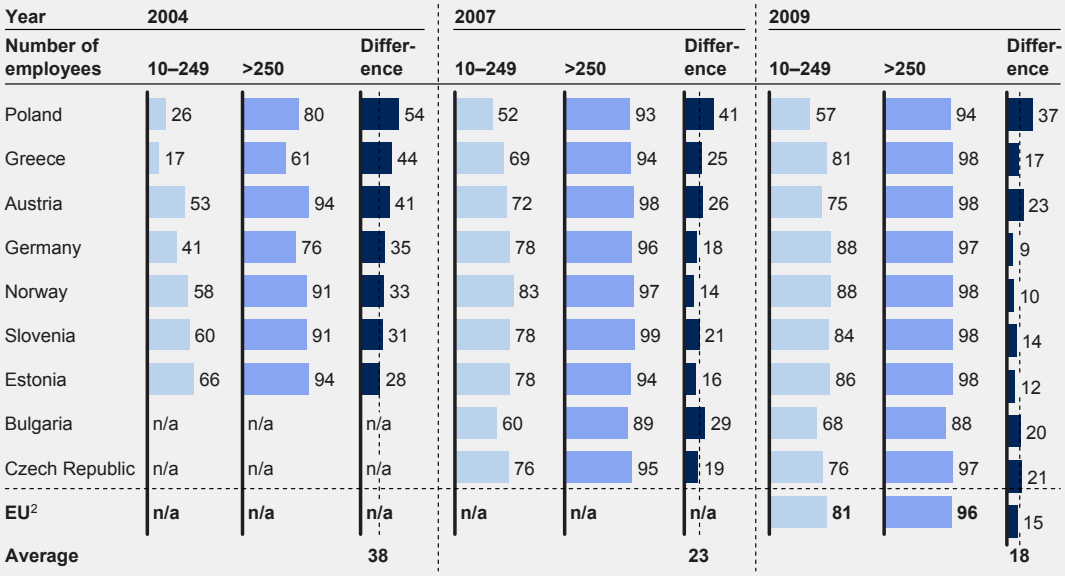
Some of the relevant characteristics that distinguish the largest companies in the world from SMEs are access to capital, a willingness to make long-term investments, and broader operations. These distinctions may have allowed a greater proportion of large enterprises than of SMEs to invest in the Internet in the aspiring world, and they could continue to position large enterprises to be early adopters of some newer Internet-based technologies.

The effects of early adoption by large enterprises can still be observed. In 2009, the share of enterprises with broadband access in the European Union was 15 percentage points greater than the proportion of SMEs with access (Exhibit 33).[59]

Exhibit 33

Large enterprises adopted the Internet before SMEs, but the gap in broadband penetration has decreased over time

% of businesses with fixed broadband access[1]



1 All countries with data available from 2004 to 2009 from Eurostat.
2 EU data from 27 countries, in Eurostat.

SOURCE: Eurostat; McKinsey analysis

As the gap between broadband penetration for SMEs and large enterprises continues to close, it appears that large enterprises will seek a competitive advantage by investing in newer, more advanced Internet technologies (see Box 13, "Large enterprises around the globe show their eagerness to invest in new cloud technologies"). These companies are among the first to make investments, for example, in cloud computing, intranets, and mobile broadband. SMEs, on the other hand, may lag behind; for instance, in Argentina, SMEs attribute less than 6 percent of revenue gains made due to Web technologies specifically to the cloud.[60] Yet, large enterprises in Argentina, especially telecommunications companies, have recently announced large investments in the cloud.[61]

Other technologies have seen similar differences in rates of adoption. In the European Union, 80 percent of large enterprises have developed an intranet, compared with 55 percent of midsize enterprises and 29 percent of small enterprises. Mobile broadband access is also three times as prevalent in large enterprises as in small ones.[62]

Large enterprises in aspiring countries are also driving the adoption of Internet technology by developing Internet-based business models that were successfully implemented in developed countries (see Box 13, "Several Web-based companies in the aspiring world have business models similar to those in the developed world"). Such innovation usually involves successfully localizing strategies that have worked elsewhere, tweaking them to match local consumer preferences.

59 Eurostat, ICT usage in enterprise, 2011.
60 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.
61 Juan Pedro Tomás, "Companies to accelerate adoption of cloud-based solutions in 2012, Cisco says," Business News Americas, December 1, 2011.
62 Konstantinos Giannakouris and Maria Smihly, "ICT usage in enterprises," Eurostat, 2010.

Box 13. Large enterprises around the globe show their eagerness to invest in new cloud technologies

On December 6, 2011, Cisco announced CloudVerse, which the company described as "an integrated set of capabilities that enables customers to deliver cloud applications and services by uniquely combining the unified data center and cloud intelligent network."[63]

One day later, independent bloggers reviewing CloudVerse noted that several enterprises in both developed and aspiring countries had announced that they would adopt the cloud technology.[64] While many of these enterprises may have been contacted prior to official release, the quick response of enterprises across the globe suggests that they are keen to capture competitive advantage from this new technology.

63 Cisco blog, "Cisco CloudVerse enables public, private, and hybrid clouds," December 6, 2011, http://blogs.cisco.com/sp/cisco-cloudverse-enables-public-private-and-hybrid-clouds (accessed December , 2011).
64 Business Technology Roundtable, "Cisco CloudVerse: A comprehensive cloud framework," December 7, 2011.

Box 14. Several Web-based companies in the aspiring world have business models similar to those in the developed world

Baidu. This company can be compared with Google. Baidu is China's largest Web services company and earns 63 percent of Internet search revenue in China.[65] Baidu was ranked fifth in the world for traffic from September to December 2011.[66]

PagosOnline. This Colombian company, launched in 2002, can be compared with PayPal. Buscapé, a large Brazilian comparison shopping site, purchased 75 percent of the company in 2010. PagosOnline now operates in many Latin American countries[67] and competes directly with PayPal.[68]

Restorando.com. This company can be compared with OpenTable. Launched in Argentina in October 2010, the service is free to diners and includes a loyalty program: after a certain number of bookings, members receive a free meal. Atomico backed Restorando.com in a recent round of venture capital investment.[69]

Tudou. This company can be compared with YouTube. It is the leading video sharing platform in China; since going live in the second quarter of 2005, Tudou has grown significantly—visitors to the site watch more than 100 million videos each day.[70]

Zizigo. This company can be compared with Zappos. Launched in Turkey in April 2011, the Web site has a 365-day return policy and 24/7 customer service.[71]

65 Business Insider, "18 booming Chinese brands that could take over the world," October 10, 2011.
66 Alexa, "Top 500 global sites," www.alexa.com/topsites/global (accessed December 1, 2011).
67 Anna Heim, "10 Latin American startups you should watch out for," TheNextWeb.com, May 16, 2011.
68 Alan Colmenares, "Latin American payments are easier than ever," Tropicalgringo.com, February 25, 2011.
69 Anna Heim, "10 Latin American startups you should watch out for," TheNextWeb.com, May 16, 2011.
70 CrunchBase, http://www.crunchbase.com/company/tudou (accessed December 1, 2011).
71 Matt Marshall, "Why Turkey is the next raging e-commerce hotspot," VentureBeat, November 26, 2011.

Large enterprises seeking profitability gains have partially driven early adoption

The Internet helps large enterprises increase revenue and reduce costs, yet the means of making these gains can vary significantly (Exhibits 34 and 35). Although they are often overlooked, cost reductions derived from the Internet can be critical to the continued adoption of Internet solutions in large enterprises. The efficiency gains that large enterprises capture from the Internet often dwarf those made by their smaller counterparts.

Exhibit 34

Large enterprises in the aspiring world are deploying a variety of strategies to increase revenue through the use of Web technologies

Company	Country	Web technology	Strategy to use Web technology to gain revenue
Grupo Clarin	Argentina	Digital media, cloud	▪ **Increased customer usage:** Clarín will use KIT digital's premium cloud-based software solutions and multiscreen video delivery system to support its news portal ▪ Clarín is now using KIT digital's technology to stream major events such as Creamfields, a digital music concert that was watched by more than 500,000 viewers
Standard Chartered	Malaysia	Mobile banking	▪ **Increased customer attraction:** Standard Chartered Bank Malaysia (StanChart Malaysia) recorded 46% growth in online banking customers between January 2011 and October 2011 ▪ The bank recently released a new application, Breeze, and enhanced its online banking offering to help facilitate mobile banking activity
Chartis	Indonesia	E-content distribution	▪ **Increased customer distribution:** Chartis uses Internet technologies to reach people in a more effective way ▪ Web technologies also enable Chartis customers to do business with the company more easily by minimizing the use of paper and speeding up the claims procedure process
Max/ New York Life	India	SAS-based business analytics	▪ **Improve customer satisfaction:** The Indian subsidiary of New York Life is using an SAS-based system to improve customer satisfaction and increase the effectiveness of cross- and up-sell campaigns

SOURCE: Marketwire, "KIT digital signs deal with Clarín in Latin America," November 30, 2011; Rupinder Singh, "Malaysia is fastest growing online market in StanChart's regional network," *Business Times*, December 7, 2011; *The Jakarta Post*, "Technology overcomes geographical challenges for business," November 19, 2011; Sandra Ng et al., *2012 top 10 ICT predictions*, IDC, December 2011; McKinsey analysis

Exhibit 35

Large enterprises in aspiring countries are also using Web technologies to reduce costs with another set of strategies

Company	Country	Web technology	Strategy to use Web technology to gain revenue
Jollibee	China, Vietnam	Cloud-based ERP	▪ **Increased resource management:** Jollibee is using Netsuite's Web technology to manage the company's expansion into China and Vietnam ▪ This technology gives Jollibee a way to "automate reporting … operate an international supply chain, consolidate international financials, and enforce corporate governance standards in its subsidiaries"
Haier	China	Data analysis from mobile devices	▪ **Increased productivity:** Haier gave all of its employees a mobile phone with which the company can give instructions on "where and what to work on" ▪ These devices are also tracked by GPS and linked to HR and payroll to understand how much time is spent working in a factory
Wizzair.com/ Audi	Hungary	E-invoices	▪ **Decreased cost of goods sold:** Wizzair, a low-budget airline provider, and Audi's Hungary subsidiary offer e-invoice options to customers to lower costs ▪ Wizzair expects to save $250,000 per year from this initiative ▪ In 2010, Audi issued 255,000 e-invoices

SOURCE: Sandra Ng et al., *2012 top 10 ICT predictions*, IDC, December 2011; Oncloudcomputing.com, "Jollibee embraces NetSuite OneWorld to manage subsidiaries, drives international growth," August 1, 2009; Hungarian press releases; McKinsey analysis

Multinational corporations capture benefits derived from Internet technologies by replicating solutions across their global operations; however, standardized solutions may face challenges in aspiring countries

Companies with effective solutions that produce tangible gains should consider replicating these solutions widely. However, the different socioeconomic and political environments in different countries can complicate the broad adoption of new Internet technologies.[72] Multinational companies that can overcome the challenges of implementation often reap large benefits.

Multinationals face a number of challenges related to differing regulatory, cultural, and environmental circumstances as they deploy standardized, Internet-based solutions throughout multiple countries:

- **Regulatory** barriers can prevent the use of some standardized solutions. For instance, public cloud solutions, in which data are stored by a third party, require modification in many countries where certain cross-border data transfers are prohibited.[73]

- **Cultural** differences stemming from differences in language, interests, customs, and social attitudes can also act as a barrier to the successful replication of a Web-based solution. When Colgate-Palmolive rolled out its ERP system, for example, the company had three systems "that could not be integrated: one for India, one for China, and one for the rest of Asia." Multiple versions of the product were needed because "Chinese could not be used with another complex language like Thai" on the same system.[74]

- **Internet foundation** variations, specifically the Internet readiness of each country, often dictate whether Web-based solutions are replicable. These variations include the levels of infrastructure, skilled labor, and natural resources within a country.[75] Even within the aspiring world and in BRIC countries, significant differences exist. Bandwidth speeds range from 0.7 megabits per second in Taiwan to 0.2 megabits in India.[76] With regard to individuals, household broadband penetration rates range from 57 percent in Taiwan to 7 percent in Morocco and 4 percent in Vietnam.[77]

For those MNCs able to overcome such challenges, standardization of Internet-based solutions can yield several benefits (see "Box 15, "Multinationals are benefiting from the standardization of Web technologies across countries"). These include increased effectiveness of resource management, greater strategic alignment across operations, and higher employee efficiency. The specific technologies used to capture those benefits can include wireless handheld devices, unified communications platforms, and centralized Web applications.

Web technologies have also enabled some companies in the aspiring world to innovate and grow into large enterprises, often by solving a constraint in the aspiring world

Web technologies open up a set of solutions that may have been otherwise inaccessible to entrepreneurs and innovators in the aspiring world. Occasionally, small start-ups that harness these technologies emerge as large domestic enterprises or even become multinational corporations. In many cases, a small company's growth into a large enterprise involves an innovative solution to a constraint in the domestic market.

MercadoLibre, an Argentine e-commerce marketplace started in 1999 by Marcos Galperin, is an example of an Internet-based start-up that later became a large multinational. By the end of 2000, MercadoLibre had launched in Argentina, Brazil, Mexico, and elsewhere in Latin America.[78] And in the last five years,

72 Anatoly Sachenko, "Enterprise and global management of information technology," www.scribd.com/doc/396854/Enterprise-and-Global-Management-of-Information-Technology (accessed December 1, 2011).

73 Miriam Wugmeister et al., "Global solution for cross-border data transfers: Making the case for corporate privacy rules," Morrison and Foerster LLP, 2007.

74 "Colgate-Palmolive: SAP system consolidation proves the benefits of an offshore delivery model," SAP customer success story, 2005, http://www.sap.com/turkey/services/consulting/pdf/CS_Colgate_Palmolive_Offshore.pdf (accessed December 1, 2011).

75 Janis R. Hilaricus, "Technology adoption by subsidiaries of a multinational corporation: An actor-network perspective," *Journal of Information and Knowledge Management*, Volume 9, Number 1, 2010.

76 World Economic Forum, "Global information technology report 2010–2011." Excludes Nigeria from analysis due to lack of reliable data.

77 Pyramid Research, Broadband—Household Data, 2010. Excludes Hungary, India, and Nigeria from analysis due to lack of reliable data.

78 MercadoLibre Form 10-K for the period ending December 31, 2010.

Box 15. Multinationals are benefiting from the standardization of Web technologies across countries

Cisco technology tools allow global collaboration as if executives "were in the same room" Cisco, originally based in California, has spent more than $1 billion to open a second headquarters in Bangalore. Because each location has its own center for innovation and development, the company attempts to use methods that ensure global alignment of strategies. "Much of this is accomplished through the use of Cisco TelePresence, Cisco Unified Communications, and other collaboration tools that allow company executives and ecosystem partners in different parts of the world to work as if they were in the same room."[80]

Xerox Global Services uses Web solutions to centralize many service delivery applications This Xerox business unit with 15,000 employees in 160 countries is an industry leader in document outsourcing activities.[81] Prior to 2003, employees of Xerox Global Services supported customers around the world through an "in-person, hands-on approach, with the necessary IT infrastructure and applications deployed at each customer site."[82]

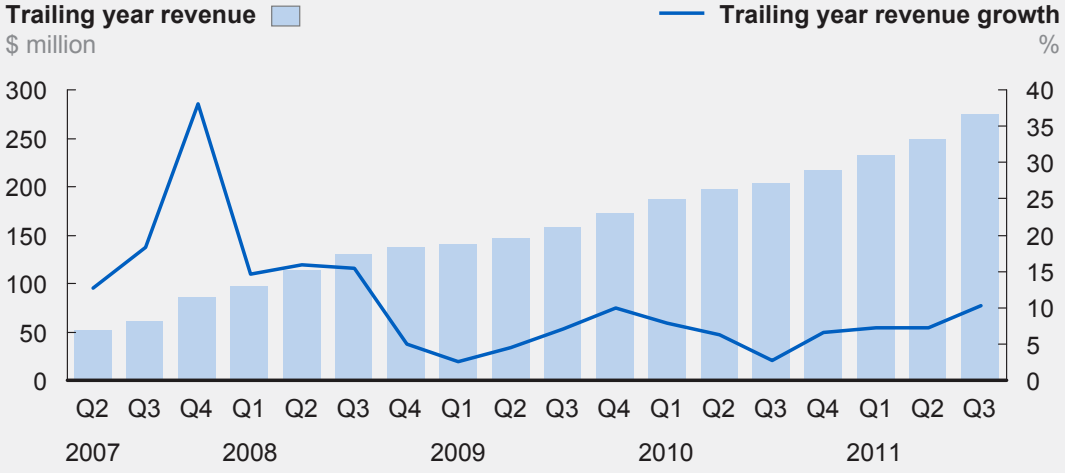
Given the cumbersome nature of this model, the company decided to implement a globally standardized Web solution that centralized the management of many functions. This solution allowed the company to shift resources toward providing better customer service and more effectively managing customer relationships. Today, the centralized Web solution houses 72 Web-based applications, "all of which are highly integrated."[83]

80 Mohsen Moazami and Eileen Lavergne, "Momentum now: Emerging markets," Cisco IBSG Emerging Markets, 2010.
81 Company Web site.
82 Microsoft Case Studies, "Web platform upgrade improves reliability and manageability for Xerox Global Services," www.microsoft.com/casestudies/Case_Study_Detail.aspx?casestudyid=4000004130, April 2009.
83 Ibid.

MercadoLibre has thrived, growing its user base 27 percent per year, opening operations throughout Latin America, and observing growth to its trailing four-quarter revenue in every quarter (Exhibit 36).[79]

Exhibit 36

MercadoLibre has experienced annual revenue growth every quarter since the second quarter of 2006



SOURCE: MercadoLibre financial statements; McKinsey analysis

79 MercadoLibre Annual Reports 2008-2010 as well as quarterly earnings releases from Q1 2011 to Q3 2011.

Determining the number of jobs associated with the Internet requires linking the Internet-associated output in an aspiring country to the productivity of laborers in that country. By using these two metrics, we can infer the number of jobs associated with the output for each industry in each country (see Box 16, "How many jobs are associated with the Internet?").

Box 16. How many jobs are associated with the Internet?

Under our two-metric approach, the first step is to determine how much output in an economy is associated with the Internet. Using Organisation for Economic Co-operation and Development (OECD) input-output tables, we can determine the level of output made in relation to input into an economy. Using Internet expenditure, measured through our index of the Internet's contribution to the economy, these tables subsequently produce the level of output associated with the Internet in each industry. In doing so, these tables reduce incremental output made within an economy by the additional level of imports made due to the Internet. This ensures the impact of the Internet is not overstated. Productivity data are publicly available by industry for OECD countries. Where data are not available, we make estimations based on publicly available sector data and known productivity data in other countries.

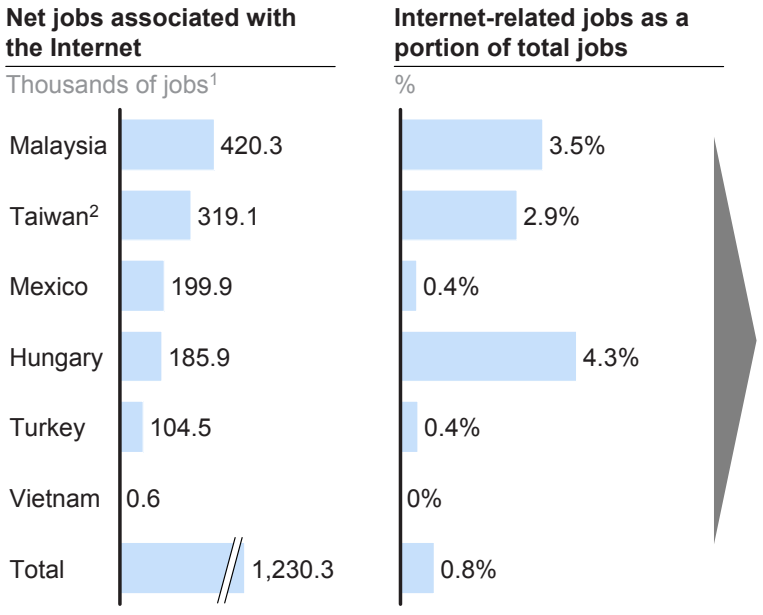
Once we have determined the level of output associated with the Internet by industry, as well as the amount of output each employee can make (productivity) by industry, the number of jobs associated with the Internet is implied. For example, if the Internet's existence creates $100 million in output, and each worker can produce $1 million in output per year, then 100 jobs are associated with the Internet.

This methodology assumes only job association. If the Internet did not exist, this methodology does not show whether or not the output currently associated with the Internet would disappear. It also does not show which jobs were created solely as a result of the Internet.

The results of this methodology align with expectations. Countries with low levels of Internet contribution to the economy have low numbers of jobs associated with the Internet. E-commerce is the main driver of job association, and countries that import the most observe fewer jobs associated with the Internet since Internet-related output is being produced elsewhere. In sum, 1.3 percent of total jobs in the aspiring world are associated with the Internet (Exhibit 37).

Exhibit 37

Jobs associated with the Internet account for 1.3% of total jobs within aspiring countries



1 Domestic jobs associated with the Internet-less jobs replaced with imports.
2 Total labor force estimated using the *CIA World Factbook*, as the World Bank does not provide data for Taiwan.

SOURCE: OECD input-output multiplier tables; McKinsey Global Insights Database; World Bank

Government

Governments are critical players in the development and use of Internet ecosystems. They can, and often do, play an active role in driving Internet access and use. Furthermore, they provide e-government services for the benefit of their citizens as well as for their own efficiency. For a discussion of the government's role as policy maker, see chapter 5.

Internet infrastructure and digital literacy

Governments have sometimes played a strong role in establishing ubiquitous access to the Internet for their citizens. Programa Conectar Igualdad in Argentina has already provided almost two million free laptops to schoolchildren, reducing the device access cost hurdle. Similarly, Saudi Arabia's Home Computer program, a public-private initiative, is seeking to bring one million PCs to homes across the country. The United Arab Emirates provides free WiFi in public locations such as airports, reducing cost to access from a data perspective.

Aspiring countries have also promoted the use of the Internet for enterprises. One strong tactic that governments commonly use is to promote the ICT sector as a major industry. From Morocco's Rabat Technopolis to Dubai's Internet City, aspiring countries are positioning themselves as low-cost hubs for ICT goods, with governments promoting clusters for both manufacturing and innovation. This is most clear in the establishment of "smart" cities, where competitiveness is driven by ICT-focused intellectual capital that complements robust Internet infrastructure. One such project is on the outskirts of the Indian city of Kochi, which was developed through a public-private partnership involving the state government of Kerala. Currently under construction, the smart city is to be built on almost nine million square feet, of which two-thirds will be specifically for IT and related services. The smart city is projected to create about 100,000 jobs.[84]

Digital literacy is a key hurdle in many aspiring countries, though the problem is naturally dissipating as young people grow up using Internet devices and applications such as social networking. The problem tends to be more entrenched within SMEs, which continue to trail larger companies in adoption of the Internet. Some programs, such as Hungary's Digital Renewal Action Plan, focus on spreading digital literacy. In Hungary's case, the target is 100,000 rural citizens, as they lag furthest behind in their ability to leverage the Internet for consumer and business utility.

E-government services

Governments deploy e-government services for four primary reasons: convenience and service for citizens, cost savings for citizens and businesses, revenue generation for the government, and cost savings for the government. While developed countries often have robust e-government offerings, there are wide variations in the government services that aspiring countries provide online. Nevertheless, their offerings span the spectrum of all four benefits of e-government.

The primary reason aspiring countries have deployed e-government offerings is to provide improved and more extensive services for their citizens. E-government services typically improve public service offerings because they provide a quicker resolution method with greater convenience than alternatives. Citizens can use e-government services any time of day and night, seven days a week, which allows them to avoid waiting in long queues in government offices during limited hours. In Dubai, for example, water and electricity bills can be paid online at all times. E-government services also offer benefits because electronic documents can be processed more quickly, with fewer errors, through automated processes. Furthermore, making services more convenient can be particularly helpful in repeat interactions with the government. Bahrain, for example, has eased the visa sponsorship process through the Bahrain e-visa scheme for registered companies.

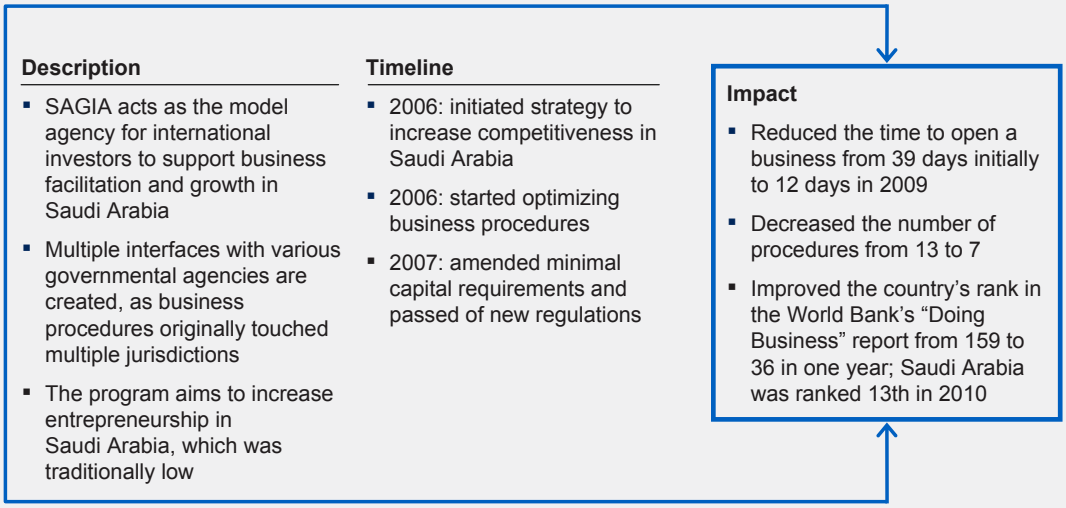
84 Rediff.com, "Smart City @ Kochi: 100,000 jobs likely," November 23, 2004, http://www.rediff.com/money/2004/nov/23smart.htm (accessed December 1, 2011).

E-government services can also reduce costs for individuals and businesses in dealing with the government (Exhibit 38). With no need to visit a government office for services provided online, travel costs are reduced. In many aspiring economies, online offerings allow citizens to stay home and apply for a visa. Citizens and businesses alike accrue lower mobility and service-related costs; the government benefits because online services can often be executed faster, as processes with digital data are more easily automated.

Exhibit 38

SAGIA, in Saudi Arabia, employs e-government services to help make it easier to open businesses

SAGIA is a one-stop service shop for applications to open a business. Leveraging the Internet, it significantly reduces red tape and lowers the cost of starting a business



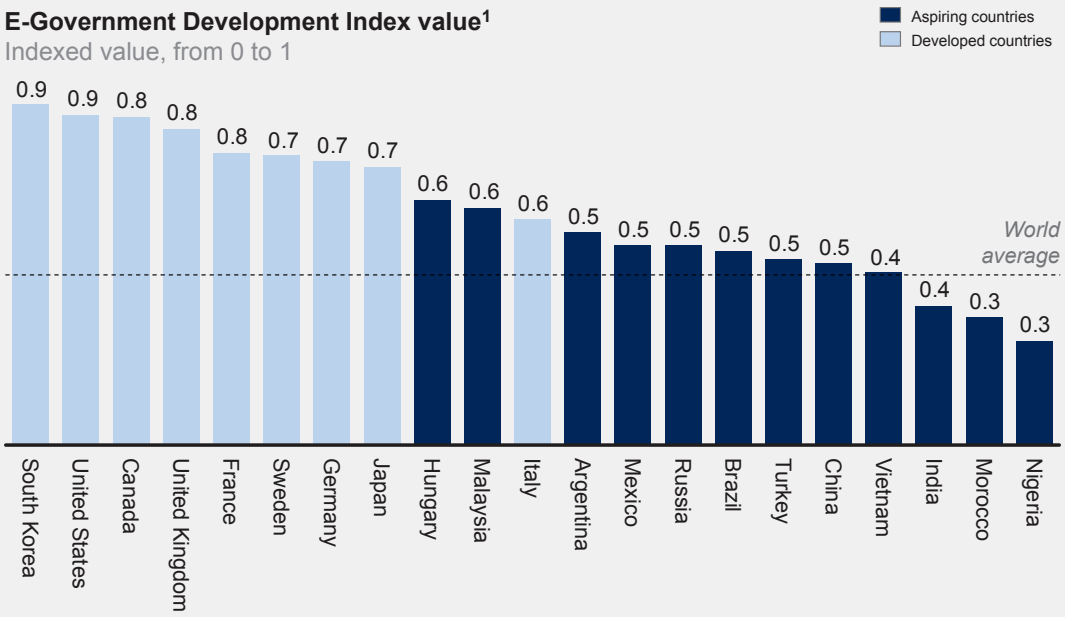
SOURCE: Literature review; expert interviews; McKinsey analysis

E-government services have also allowed aspiring governments to generate additional revenue by providing premium services. The E-gate card in the United Arab Emirates, for example, costs 200 UAE dirham (about $55) and allows for immigration processing without queuing at immigration desks. The UAE has also leveraged e-government services to improve cash management—for example, driving fines can be paid by mobile phone, which has sped up collection by several days. More broadly, e-government services can make a country more attractive to tourists by offering travel information Web sites and enabling local businesses to serve tourists.

In addition to benefiting citizens, services create efficiencies for the government. Manual processing costs are reduced where automated processes are deployed. For example, Hong Kong's Information Technology and Broadcasting Bureau has reduced costs of processing transactions from $1.90 apiece in person at a counter to $0.80 online.

Exhibit 39

Aspiring countries lag behind developed ones in the provision of e-government services



1 The E-Government Development Index is a "composite measurement of the capacity and willingness of countries to use e-government for ICT-led development." Taiwan is not ranked.

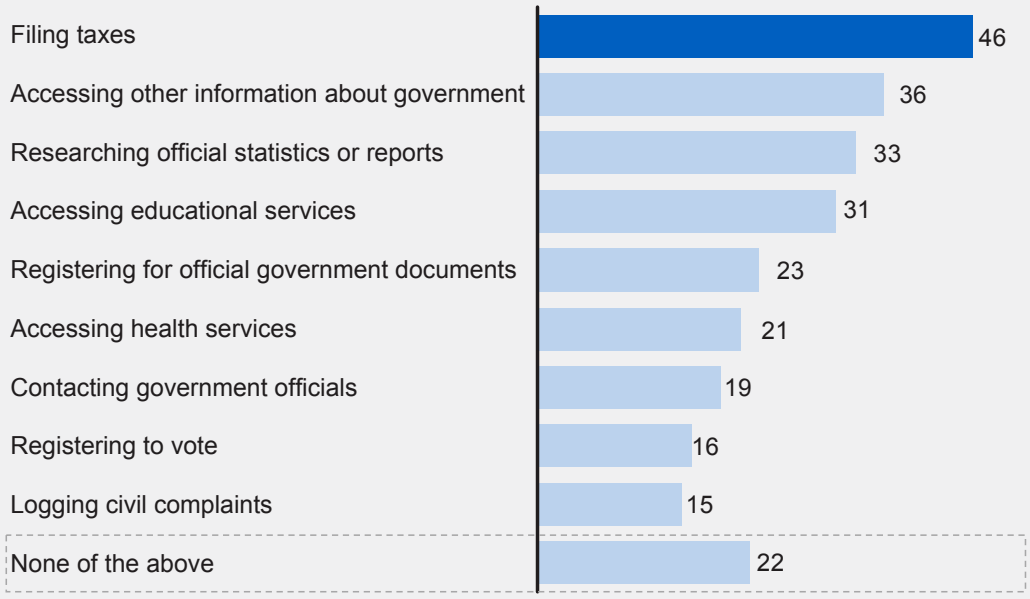
SOURCE: United Nations E-Government Survey 2010

While a significant number of e-government initiatives are under way, aspiring countries have yet to reach developed country levels in these services (Exhibit 39). This is due in part to lower digital literacy among citizens and to fewer, and potentially lower quality, e-government offerings. Our research demonstrated that, apart from filing taxes, most e-government services in aspiring countries are underused (Exhibit 40).

Exhibit 40

Tax filing is most popular e-government service in aspiring countries

% of SME respondents using each e-government online service in the last year.



SOURCE: 2011 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

An example of progress in e-government tax filing services can be found in Egypt. Up to the middle of the past decade, the Egyptian Tax Authority (ETA) faced several challenges. Filing taxes was a complicated process: it took an average of 14 visits to finalize a sales tax audit and payment. Income taxes took more than twice as long as that. Furthermore, the manual process made tracking and auditing of filings difficult. The ETA rolled out its e-government tax services in 2006. The first phase equipped tax collection units with computers, establishing integration of some business processes with other organizations. The second phase connected taxpayers with the ETA, allowing individuals and businesses to submit tax filings electronically.

The impact has included delivery of benefits to individuals as well, as to the government in the form of tax revenues. Electronic tax payments reached 50 million Egyptian pounds in 2010. Both large and middle-size taxpayer units have are now part of the program. This progress, coupled with other programs, has been recognized in international rankings: the World Bank's "Doing Business" project ranked Egypt 165th in the world in 2007. By 2011, Egypt's ranking had increased by 71 positions to 94th.[85]

85 N. Azab, "The Egyptian tax authority—Transforming relationship with taxpayers through electronic government," in Laudon, Kenneth C., and Jane P. Laudon, *Management Information Systems: Arab World Edition* (London: Pearson, forthcoming).

Country profiles

Argentina

Argentina, which has high individual wealth for an aspiring country in Latin America, leverages the Internet effectively for economic and social impact. More than 2 percent of Argentina's GDP is generated by the Internet. However, macroeconomic uncertainty has limited access to the capital needed for entrepreneurship and the adoption of Web technologies by SMEs. E-commerce is growing quickly but lags behind regional peers in absolute terms, with a primary constraint being a scarcity of online payment options. Entrepreneurs are unable to start Internet businesses as easily without seed funding, and SMEs under-leverage the Internet.

But Argentines are highly engaged users of the Web and garner a significant amount of consumer surplus from the Internet, as well as social benefits that cannot be quantified in monetary terms. They are avid social networkers and consumers of online media and news. Much of this activity takes place on mobile devices, as mobile penetration has grown quickly. Meanwhile, SMEs have not embraced Web technologies with the enthusiasm that individuals have. Those SMEs that have invested in Web technologies and Internet training for their employees have reaped benefits in terms of higher revenue and productivity and lower costs.

While some entrepreneurs have successful Internet businesses, entrepreneurship broadly remains constrained by difficulties in accessing capital. However, Argentina does have the human capital needed for Internet entrepreneurship, leading its regional peers in both the per capita number of R&D researchers and tertiary science graduates.

The Argentine government has initiated programs to promote the uptake of devices and broadband penetration, but e-government services have not found significant traction. Less than half of Argentines active online access e-government services, and those that do use these services largely to file their tax returns.

Country overview

Macroeconomic uncertainty has limited the impact of the Internet on Argentine growth. Inflation is very high, with estimates ranging from 11 to 25 percent.[86] In November 2011, the Argentine government introduced foreign exchange controls to stop the flight from the Argentine peso toward currencies deemed to be safer havens, including the US dollar.[87] With the 2001 economic crisis only in the recent past, inward FDI continues to be scarce in Argentina; Argentina receives 40 percent less foreign investment as a share of GDP than other Latin American countries.[88] This, combined with difficulty accessing loans, means that many Argentine businesses and entrepreneurs have problems securing the capital necessary for growth.

Yet, the costs of Internet access in Argentina are about 25 percent lower than the Latin American average.[89] These low access costs, coupled with a highly urbanized population, have helped to drive Internet

86 Economist Intelligence Unit, Argentina country profile (government-stated inflation). For academic consensus: Juan Forero, "A quiet battle over Argentina's inflation rate," *Washington Post*, October 31, 2011; Alexei Barrionuevo, "Soaring inflation makes a comeback in Argentina," *New York Times*, February 5, 2011; and Eliana Raszewski, "No one cries for Argentina embracing 25 percent inflation of Fernandez," Bloomberg, March 29, 2011.

87 Foreign exchange controls from Bill Faries and Silvia Martinez, "Argentina tightens foreign exchange controls to stem faster capital flight," Bloomberg, October 28, 2011; expert interviews.

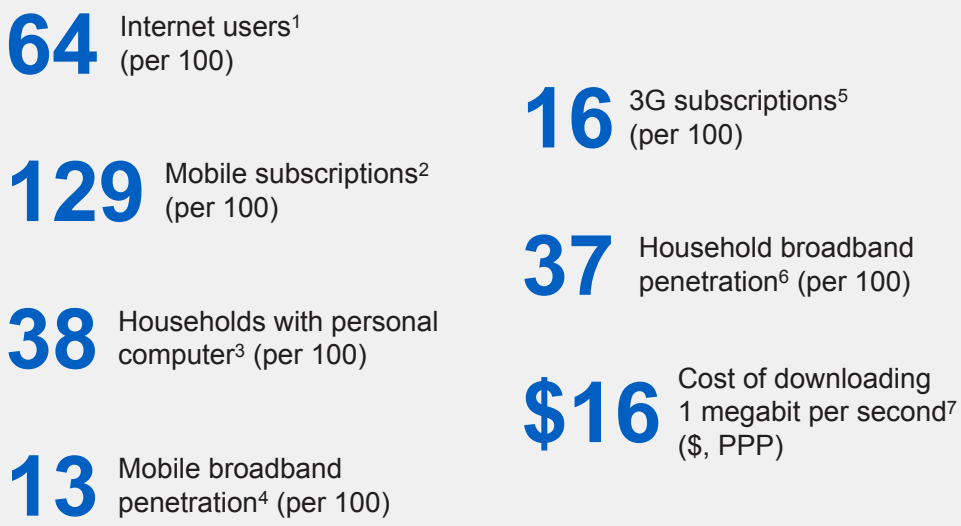
88 Economist Intelligence Unit.

89 Cost of Internet access from Speedtest.net; adjustment for PPP from World Bank.

penetration in Argentina—today this stands at 64 percent (Exhibit 41).[90] Residential use is healthy. The penetration of broadband into households is 37 percent, higher than the 33 percent in Chile and 22 percent in Brazil.

Exhibit 41

Argentina's Internet landscape statistics



1 Internet World Stats 2010.
2 EIU Telecoms and Technology Report data for 2010; published in June 2011.
3 WEF, Global Information Technology Report 2010-2011. Data for 2008.
4 ITU World Telecommunication/ICT Indicators database as provided by Wireless Intelligence, 2010.
5 World Cellular Information Service, December 2011.
6 Pyramid Research, 2010.
7 Cost of downloading 1 megabit per second from Speedtest.net pulled in November 2011; PPP adjustment to $ using World Bank 2010 conversion rate.

SOURCE: McKinsey analysis

Argentina has a relatively high number of mobile subscriptions compared with the rest of Latin America.[91] The popularity of mobile devices has led to a distinct Internet usage profile: high levels of social networking and the development of mobile applications are unique traits of Argentina's Internet ecosystem (see Box 17, "Crazy Weather mobile application teaches children about climate issues").

90 Internet World Stats, http://www.internetworldstats.com/sa/ar.htm (accessed December 1, 2011).
91 World Economic Forum, "Global information technology report, 2010–2011."

Box 17. Crazy Weather mobile application teaches children about climate issues

As mobile use has become more popular, mobile application developers such as Nhuma Expansion Technologies have flourished in Argentina. Nhuma's Crazy Weather application teaches children about climate change through a game featuring a child presented with interactive scenarios that revolve around climate issues. The application was a finalist in the Mobile Premier Awards in Barcelona, the largest global start-up competition in the world.[92]

92 Leila Ergo, "Nhuma: Creating useful mobile apps for daily life and showcasing Argentina's entrepreneurial promise," Altamirano.org, March 25, 2011, http://www.altamirano.org/technology/nhuma-mobile-apps-for-daily-life-from-argentina (accessed December 1, 2011).

Impact of the Internet

To measure the economic impact of the Internet, we have constructed the iGDP Index that measures the contribution of the Internet to a country's GDP. We have also separately measured a country's e-commerce platform, because it plays a seminal role for consumers and retailers alike in a country's Internet ecosystem. The eCP assesses the health of a country's e-commerce ecosystem.

- **iGDP.** Using the expenditure method, the contribution of the Internet is measured as the proportion of GDP that can be attributed to the Internet in private consumption, public expenditure, private expenditure, and trade.[93] This measure is ICT-related, as it aggregates the expenditure on all goods and services that are related to the Internet, from devices to access, the consumption of hardware and online consumption.

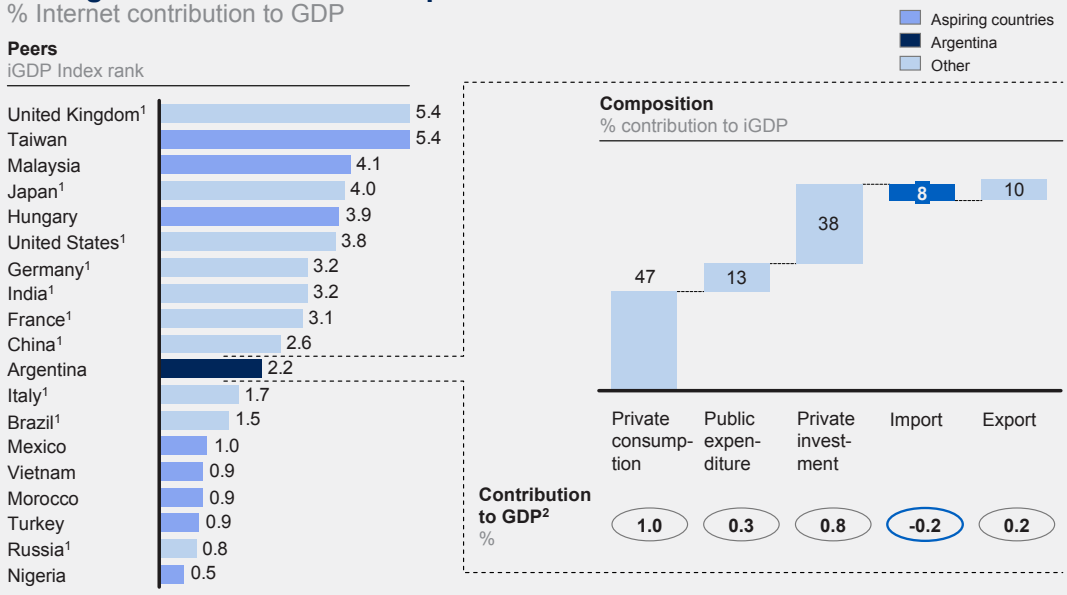
- **eCP.** The e-commerce platform demonstrates e-commerce enablement by scoring a country's online payment enablement, parcel delivery systems, and Internet readiness.[94]

The Internet contributes 2.2 percent of Argentina's GDP, higher than 1.5 percent in Brazil and 1.3 percent in Chile, but lagging behind developed countries with mature Internet ecosystems such as the United Kingdom, where the Internet contributes 5.4 percent to GDP, and the United States, where it contributes 3.8 percent (Exhibit 42).

Exhibit 42

Argentina's Internet share of GDP exceeds that of regional peers but lags behind that of developed countries

% Internet contribution to GDP



1 2009.
2 Numbers may not sum due to rounding.

SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; World Travel and Tourism Council; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

93 Internet contribution to GDP index components: private consumption (total consumption of goods and services by consumers via the Internet, or consumers' costs to obtain Internet access); private investment (private-sector investment in Internet-related technologies); public expenditure (public expenditure on Internet is estimated by adding government, public health care, and public education expenditures on the Internet); trade balance (exports of Internet-related goods and services, plus B2C and B2B e-commerce, net of all associated Internet-related imports).

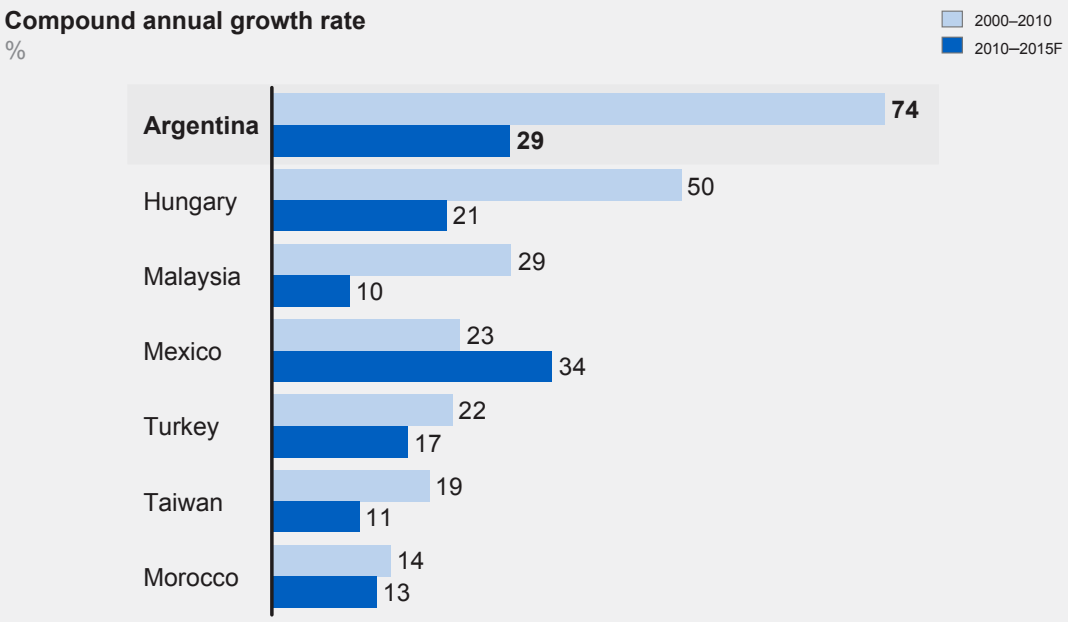
94 E-commerce platform index components: online payment enablement (number of financial cards in circulation, volume of cashless payments, legal protection provided to the e-consumer); parcel delivery (reliability of postal system, cost of domestic shipping, percent of a population with delivery to their homes); Internet readiness (volume of secure servers, Internet penetration, domain registration cost).

Argentina's high Internet contribution to GDP reflects high levels of personal consumption, especially growing e-commerce, consumer spending on broadband and mobile, and high private investment in ICT hardware, as well as computers and Internet-related activities.[95] Public expenditure on Internet-related goods and services has room to grow. With the low level of Internet-related imports and exports, the effect of trade on the Internet's contribution to GDP is modest.

E-commerce growth in Argentina has grown swiftly over the past decade and is projected to continue doing so (Exhibit 43). Today, this market is worth nearly $1 billion. E-commerce in Argentina increased by 40 percent in 2010 to $870 million. B2B e-commerce in Argentina lags behind the average of the aspiring countries on which we focus. However, B2C e-commerce in Argentina performs better than the average of aspiring countries, indicating that consumers are deriving more benefit from the Internet than are enterprises.

Exhibit 43

Growth in Argentina's Internet retailing has led that of many other developing countries and is set to continue its rapid pace



SOURCE: Euromonitor; McKinsey analysis

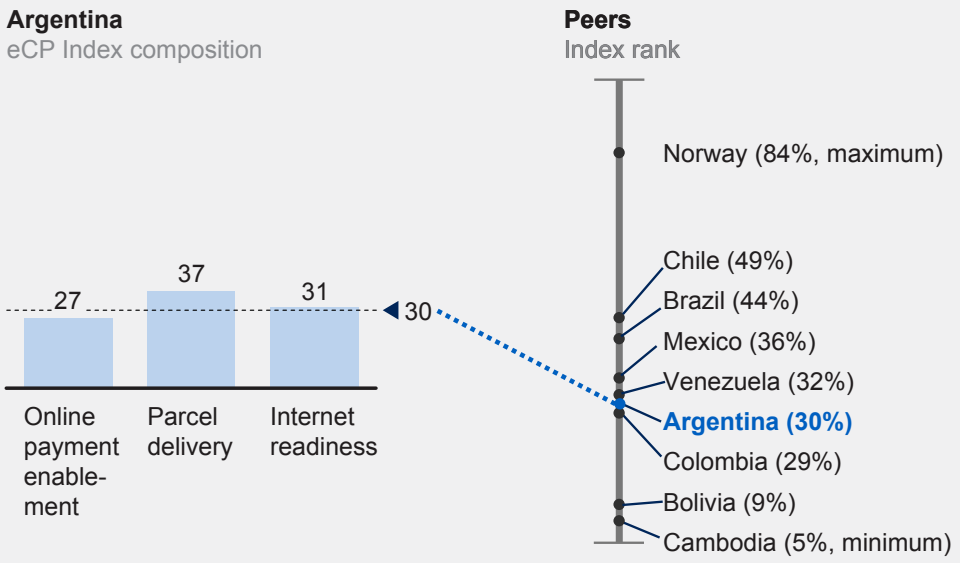
B2C e-commerce is projected to continue to grow strongly over the next five years and develop a larger share of Argentine retail activity.[96] E-commerce in Argentina has significant room to grow (Exhibit 44). Online retail as a proportion of all retail is 1.1 percent in Argentina, compared with 1.7 percent in Chile and 3.1 percent in Brazil.[97] Argentine e-commerce faces a number of constraints on its growth. Key constraints include low online payment enablement, largely due to the fact that there are few payment cards and parcel delivery is unreliable. On a per capita basis, Brazilians and Chileans make 1.5 times the card payments than do Argentines.[98] Enabling the development of a cashless payment infrastructure by providing greater protection to e-consumers could remove one constraint on the growth of e-commerce. Although Argentine's parcel delivery is not particularly reliable, it broadly compares with that of regional peers on cost. The cost of delivering a two-kilogram parcel domestically, for example, is 12 percent more expensive in Argentina than in Chile, but 25 percent cheaper than in Brazil.[99]

95 IHS Global Insight, World Market Monitor, DataInsight-Web, Capital Expenditures, High Technology Goods and Services, 2010.
96 Euromonitor International, retail sales, 2010.
97 Euromonitor International, online retail and retail sales, 2010.
98 McKinsey Global Payments Database.
99 Postal operator Web sites: Argentina, http://www.correoargentino.com.ar/, Chile, http://www.correos.cl, Brazil, http://www.correios.com.br/ (accessed December 1, 2011).

Exhibit 44

E-commerce in Argentina has significant room to continue growing

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Internet ecosystem

To assess the health of a country's Internet ecosystem, we constructed two indexes:

- **e3.** This index measures the current maturity of an Internet ecosystem according to three major drivers: environment, engagement, and expenditure.[100]
- **i4F.** This index measures the vibrancy of an Internet ecosystem—i.e., the preconditions for future growth—based on the four key foundations of financial capital, business environment, infrastructure, and human capital.[101]

Argentina's Internet ecosystem has room to mature in terms of consumer expenditure on the Internet, which is already growing quickly in e-commerce, and in business use of the Internet, which lags behind (Exhibit 45). The foundations for future growth in the Internet ecosystem also have room for improvement, most significantly on access to capital for entrepreneurs and SMEs (Exhibit 46).

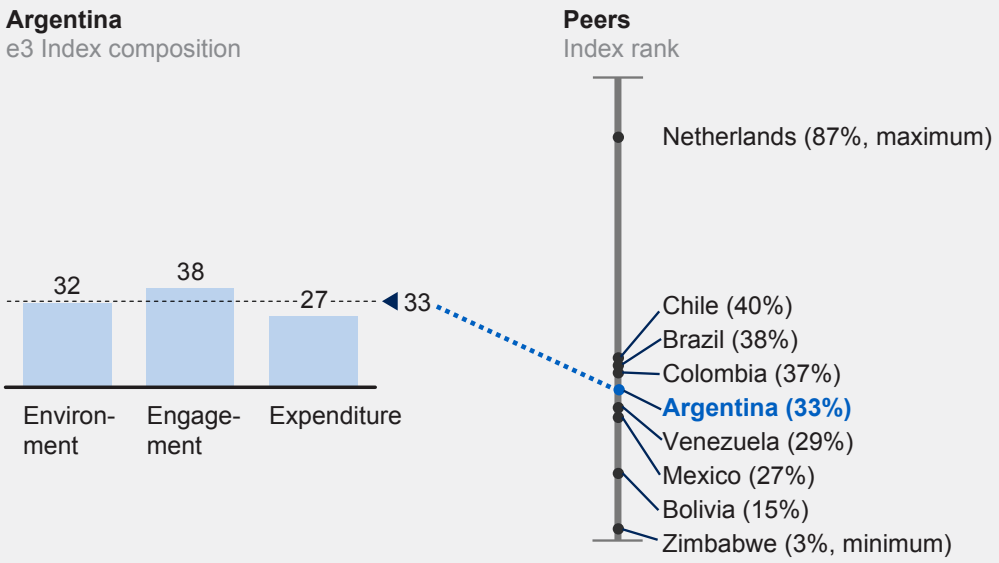
100 Internet ecosystem maturity index components: environment (existing Internet speed and penetration); engagement (usage of Internet by individuals, enterprises, and governments); expenditure (Internet spending such as e-commerce and online advertising).

101 Internet ecosystem foundations index components: financial capital (availability of financing for Internet and ICT companies); business environment (country's attractiveness to business due to regulatory and societal effects); infrastructure (penetration and quality of Internet-enabling infrastructure); human capital (education and research).

Exhibit 45

The maturity of Argentina's Internet ecosystem lags behind that of Brazil and Chile but is ahead of Mexico's

Percentile rank, 57-country set

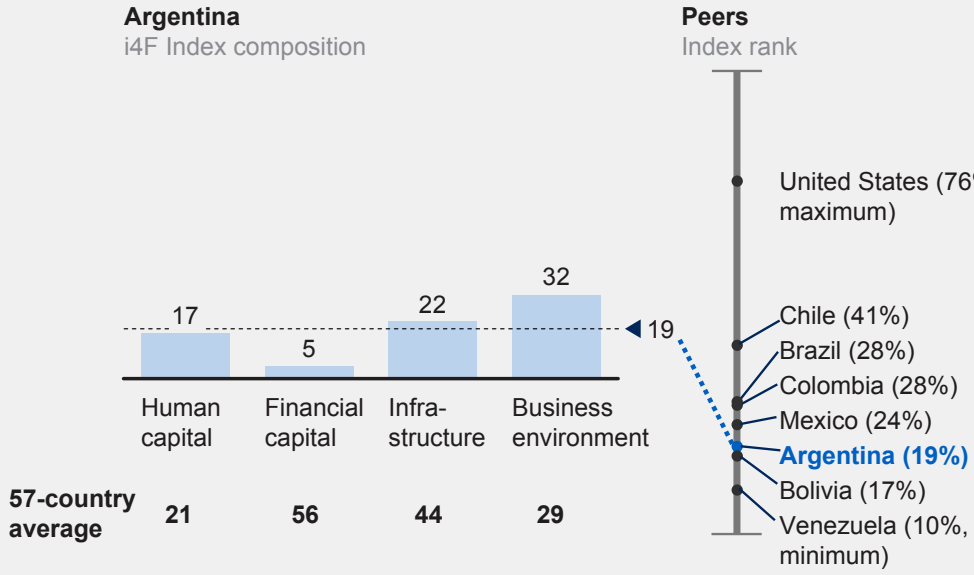


SOURCE: McKinsey analysis

Exhibit 46

Access to capital constrains Argentina's ecosystem foundations

Score relative to maximum of 57-country set in each index variable



SOURCE: McKinsey analysis

The maturity of Argentina's Internet ecosystem is about average for Latin America but trails more developed countries. Engagement—i.e., Internet usage—is a source of strength. For example, mobile subscriptions are more than double those of Brazil and Chile. The consumer-focused Internet infrastructure is also a strength. The penetration rate of household broadband of 37 percent is significantly higher than Chile's 33 percent or Brazil's 22 percent. However, business use of the Internet lags behind these regional peers. Expenditure, the third pillar of Internet maturity, is an area of opportunity. Argentine businesses spend double the share of their advertising budgets online as their counterparts in Mexico and Chile spend.

Nevertheless, less than 8 percent of Argentine businesses' share of total media expenditure is online, while it is more than 15 percent in the case of Brazilian businesses.[102]

Although Internet access is high in Argentina, there is a great deal of potential to improve quality of access. The penetration of PCs lags behind the Latin America average.[103] The penetration of 3G is above the Latin American average but trails more developed countries such as Germany and Taiwan by a significant margin.[104]

There is room to develop the foundations for future growth in the Internet ecosystem in comparison not only with more developed countries but also against Latin American peers. The areas of opportunity are today's low access to financial capital—Argentina's access to loans, the availability of venture capital, and financing through local equity markets all lag behind those of regional peers.

But Argentina's Internet ecosystem does have comparative strengths. For instance, the time needed to start a business is one of the shortest in Latin America. The number of R&D researchers per capita is 1.5 times that of Brazil and more than 2.5 times that of Mexico.[105] With about 18,000 graduates in tertiary science education, Argentina has slightly higher tertiary science graduates per capita than Mexico and 1.25 times the number in Chile and Brazil.[106] However, we should note that, because of the significantly larger populations in Mexico and Brazil, the absolute number of science graduates in these countries dwarfs that of Argentina.

There is a telling difference in Argentina's performance on the Internet contribution to GDP indicator compared with its performance on the historical-looking Internet ecosystem maturity index and forward-looking Internet ecosystem foundations index. Because of the strength of its consumer base, Argentina performs well on the Internet contribution to GDP. But the two Internet ecosystem indexes demonstrate the difficult ecosystem conditions in which the Internet has thrived, suggesting great potential for improvement. Consumers could derive significantly higher benefits from more robust e-commerce, and enterprises could experience improved productivity, reduced costs, and increased revenue opportunities by accessing new customers.

User groups

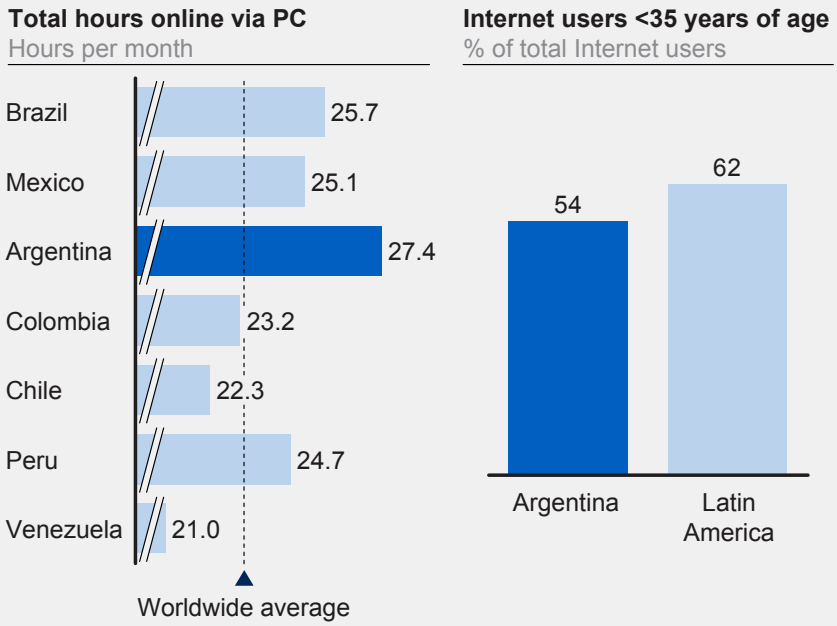
Individuals. Argentines are a highly engaged online audience, their major activities being social networking, search, media consumption, and news consumption. Despite a median age higher than their Latin American peers, Argentines spend more time online (Exhibit 47).

Online Argentines are using search and social networking features at high rates.[107] For example, 17 million Argentines are on Facebook.[108] Similarly, 71 percent of Argentines regularly visit news or information sites, compared with a Latin American average of 61 percent. The consumption of social networking and media has been an opportunity for companies (see Box 18, "Software lets users who lack 3G data plans access Facebook"). Media conglomerates such as Grupo Clarin have expanded online services and are attempting to increase the pool of Argentines online. Grupo Clarin's news site is the most widely circulated newspaper in Latin America and the most visited online news site in Argentina. Accordingly, Grupo Clarin invested 150 million Argentine pesos (approximately $35 million) in its Argentine broadband service to help drive residential access that will improve its reach and revenue.[109]

102 World Digital Media Trends, Online Media Expenditure, 2010. (http://www.wan-press.org/worlddigitalmediatrends/home.php)
103 Computer Industry Almanac, Number of computers per capita, update June 2011.
104 World Cellular Information Service, 3G penetration, 2011.
105 World Bank, World Development Indicators, Number of researchers in R&D per capita, 2010.
106 World Bank, World Development Indicators, Graduates in Science per capita, 2010.
107 International Data Corporation, Internet User Online Activities, 2010.
108 Socialbakers, Facebook users (measured in July-December 2011).
109 "Grupo Clarin SA launches broadband Internet service," Reuters, September 15, 2011.

Exhibit 47

Argentine users, despite being older, use the Internet more than their regional peers



SOURCE: comScore, "State of the Internet with a Focus on Argentina," November 2010

Box 18. Software lets users who lack 3G data plans access Facebook

Gemalto, a global digital security player, is working to capture value from Argentina's high mobile penetration. In October 2011, Gemalto announced a partnership with Telecom Personal, one of the three large Argentine mobile providers, to offer a SIM-based Facebook. This software will allow users to access core Facebook features from their mobile phone, even if that phone is not data-enabled. This will help Argentine consumers who do not have 3G data plans and smartphones but are active on Facebook.[110]

110 Business Wire, "Personal Argentina and Gemalto deploy SIM-based Facebook service," October 5, 2011.

We estimate the utility that individual Argentines obtain from using free Web services, net of annoyances such as spam, to be $13 per user per month, or $3.1 billion in total in 2010. We believe that this is a highly conservative number because it does not take into account broader, offline benefits of the Internet such as lower prices in department stores due to online competition.

Entrepreneurs. To assess the ease with which entrepreneurs can start Internet companies in a country, we built the ease of Internet entrepreneurship index. This is based on three components: the ease of starting a new business, the ease of financing a new business, and Internet accessibility.[111]

Internet entrepreneurship is slightly less easy in Argentina than it is in key neighboring countries (Exhibit 48). Low PC penetration, for example, constrains Internet accessibility. Nevertheless, Argentina does have strengths relevant to Internet entrepreneurship, including relatively strong private-equity investments in

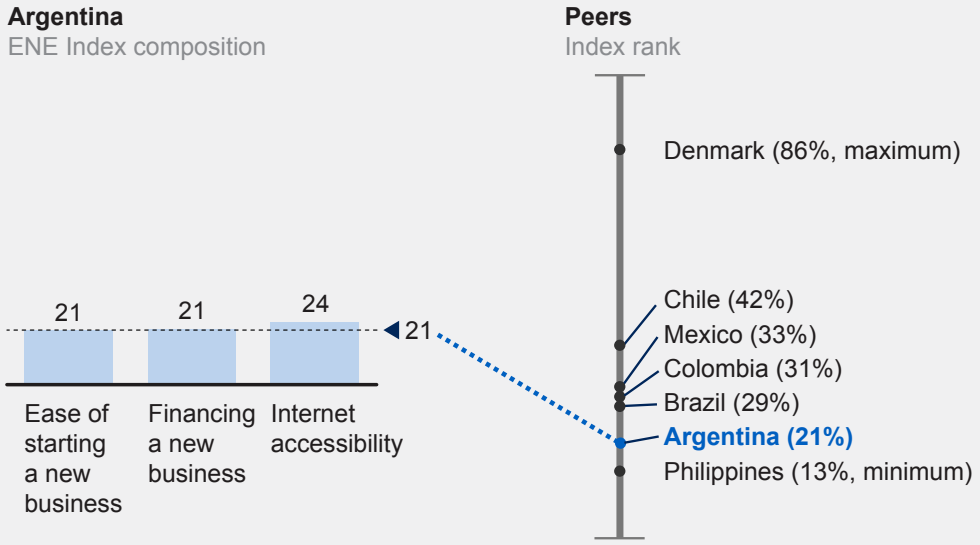
111 Ease of Internet entrepreneurship index components: ease of starting a new business (industry-agnostic view of the overall business ecosystem in a country), ease of financing a new business (availability and attractiveness of financing for ICT start-ups, as well as the cost of financing a new business), Internet accessibility (extent and cost of Internet access for both enterprises and their target consumers).

large-scale ICT projects. But such investments do not provide all the necessary seed funding needed for an entrepreneurial environment. Entrepreneurs in Argentina suffer from low access to financial capital, including an inability to access loans, finance through local equity markets, and venture capital. Inward FDI and inward portfolio investments are more than 30 percent below the Latin American average, indicating that foreign capital is difficult to obtain.[112] Without access to capital, new businesses find it difficult to sustain themselves and grow, and new Web products remain in the nascent stage.

Exhibit 48

Ease of Internet entrepreneurship in Argentina lags behind Chile, Mexico, and Brazil

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Nevertheless, the cost of starting a business in Argentina is approximately half the Latin American average.[113] With such low start-up costs, even limited amounts of capital can enable big strides in creating new businesses.

Enterprises. Internet-enabled growth is a significant opportunity for enterprises. While many Argentine businesses have Web sites, only about half of them have broadband, compared with almost 90 percent of businesses globally that have both.[114] Bringing more businesses online, especially SMEs, through broadband Internet access will help unlock benefits including revenue growth, cost savings, and higher productivity. Increased broadband use is also important for expanding Argentina's e-commerce environment for retailers, allowing them to provide faster and more efficient service.

Large enterprises in Argentina also have room to expand their use of Web solutions, such as eCRM and eERP, and their access to new suppliers and markets (see Box 19, "Wormhole IT leverages the Internet for large enterprises"). Multinational corporations that operate in Argentina tend to have the same Web technology systems as they do elsewhere in the world, helping those firms stay globally connected and efficient. To stay competitive, large domestic enterprises may need to follow suit.

112 Economist Intelligence Unit, Argentina country profile.
113 World Bank, "Doing Business" project, Cost of starting a business (percent of income per capita), latest round of data collected in June 2011.
114 UN Conference on Trade and Development (UNCTAD), Information Economy Report, 2010; Pyramid Research, Business access to broadband, 2010.

Box 19. Wormhole IT leverages the Internet for large enterprises

Wormhole IT is a provider of teleconferencing services for enterprises. Internet-using SMEs in Argentina purchase suites of services from the major telecommunications firms (routers, intranet, broadband, and so on). Wormhole IT partners with national networks, such as Telefónica, to increase access to these B2B telecommunications services. By providing IT solution packages, Wormhole IT is able to circumvent the fact that today's marketplace is nascent, limiting customers' ability to find information about a host of discrete Web services.

The potential for Internet-driven economic impact is significant among SMEs. Argentine SMEs provide fewer of their employees with access to Web technologies than the average of our sample set of aspiring countries. The average SME in Argentina provides 44 percent of its employees with access to e-mail and 32 percent access to social networks. This compares with 54 percent average access to e-mail and 37 percent access to social networks in other aspiring countries we surveyed.[115]

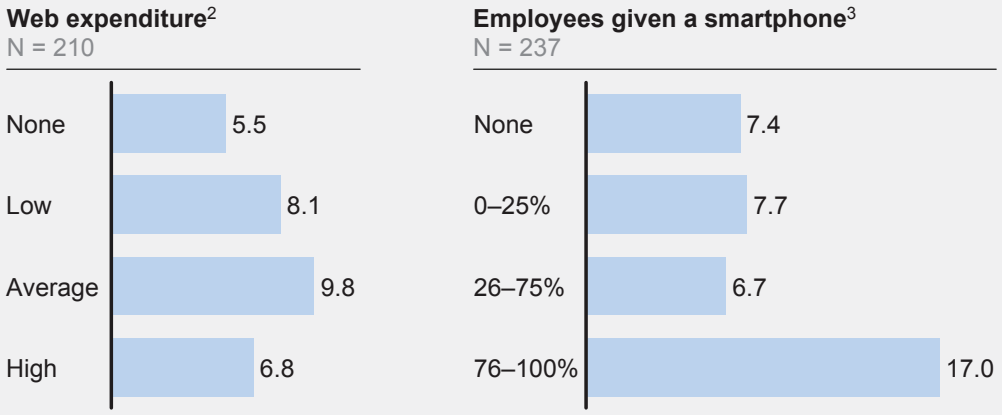
Our survey of Argentine SMEs shows that those that have leveraged the Internet have obtained significant benefits in both costs of goods sold and selling, general, and administrative expenses and revenue (Exhibit 49; see also Box 20, "Examples of innovative Argentine start-ups (as of December 2011)").

Exhibit 49

High growth in Argentina is correlated with Web expense and employee access to smartphones

Stated growth[1]

%



1 Excludes all respondents who did not know the growth rate of their company.
2 Low Web expenditure is less than 10% of total expenses. Average is 11–30% of total expenses. High is greater than 30% of total expenses. "What percentage of your expenses are digital, i.e., linked to Web technologies (electronic messaging, intranet, extranet, WiFi, Web sites, Web 2.0 tools, servers/routers, Web connection for employees, Enterprise Resources Planning (ERP), e-commerce, e-marketing, e-supply chain)?" Excludes "I don't know" responses.
3 "Do you have access to wireless Internet through a mobile broadband connection?" If so, "What percent of your employees have you given smartphones?"

SOURCE: 2011 McKinsey survey of 300 SMEs in Argentina; McKinsey analysis

Government. While the Argentine government offers a suite of e-government services for its citizens, only the tax-focused ones have had significant traction (Exhibit 50). The United Nations e-Government Development Index, which assesses e-government service offerings, places Argentina in the middle of the pack in Latin America for e-government services and in the top third globally.[116]

115 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.
116 United Nations, "e-Government survey 2010."

Box 20. Examples of innovative Argentine start-ups (as of December 2011)

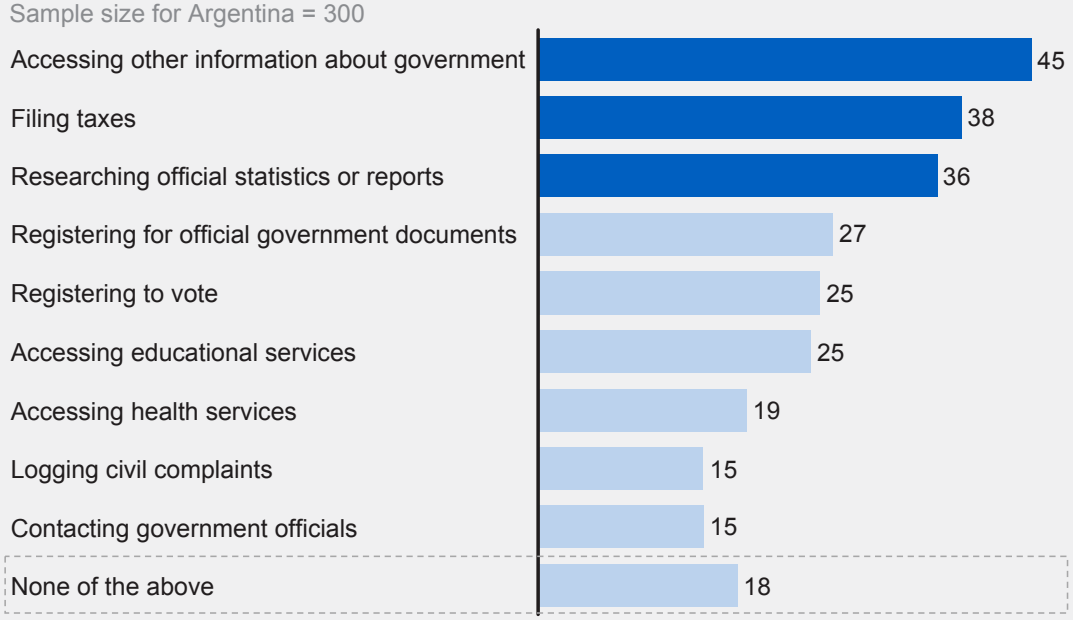
- **Wormhole IT.** Partners with telecommunications firms to sell B2B telecommunications services as part of a broader IT solutions package.
- **Globant.** Global software developing company with more than $50 million in revenue whose clients include global technology giants.
- **MercadoLibre.** Argentine e-retail player that enables Latin American businesses to put their products online and sell them from a collective location.

Argentina's information services are targeted at four user groups: citizens, companies, foreigners, and procedures. In the case of citizens, e-government resources are available for seniors (e.g., social and welfare benefits), youth (e.g., registering to vote, access to AIDS and STD directories), and other areas of consumer interest. Companies are able to select e-government resources based on their sector and the programs or subsidies that might apply to them. Resources include information on market development for each sector, a conference and event directory, and video and written training documents. These e-services allow companies to access consolidated information that might be useful to them and provide an easy way for companies to view relevant national events or programs.

Exhibit 50

Accessing information about the government and filing taxes are the most popular e-government services in Argentina

% of respondents using each e-government online service in the last year.
Sample size for Argentina = 300



SOURCE: 2011 McKinsey survey of 300 SMEs in Argentina; McKinsey analysis

With fewer than half of online users accessing any e-government service, there is significant room to expand the e-government services program. Along with promoting devices that give access to the Internet, Argentina's government set up Argentina Connectada in 2010, with the aim of expanding broadband coverage by an incremental 10 million homes by 2015; it has 8 billion pesos ($1.9 billion) earmarked for its use (see Box 21, "Programa Conectar Igualdad helps distribute laptops to students").

Box 21. Programa Conectar Igualdad helps distribute laptops to students

The Education Ministry and other government agencies launched Programa Conectar Igualdad (Connect Equality Program) in 2009. Under the program, each student is given a laptop from school computer labs, where students receive one to two hours of computer training per week. The program is now halfway toward its goal of providing 3.7 million laptops to students and teaching staff. The Programa Conectar Igualdad is being carried out by the Miami-based nonprofit One Laptop per Child Association, which aims to digitally empower youth in the Global South and has been expanded to countries on every continent.

Path forward

Argentina has a great deal of potential for enhancing the impact of the Internet. We identified Argentina as an aspiring country because it has a strong set of fundamentals and potential for growth. Nominal 2010 GDP was more than $369 billion, average GDP year-over-year growth from 2005 to 2010 was above 7 percent, and per capita GDP exceeded $9,100.[117]

Argentina can build on three relative sources of macroeconomic strength to develop its Internet ecosystem: its natural resources, trade, and local consumption (see Box 22, "Aspiring countries can draw on their strengths to drive their Internet ecosystem," for a summary of five macroeconomic strengths across aspiring countries). Argentina's resources and strength in trade are connected—for instance, strong soybean production drives trade.

Box 22. Aspiring countries can draw on their strengths to drive Internet ecosystem growth

We have identified five macroeconomic strengths that aspiring countries can leverage to drive Internet ecosystem growth. These strengths are not mutually exclusive, but they apply in varying degrees to each aspiring country. For a broader discussion of these strengths and a comparison of our 57-country set along them, see chapter 3.

- **"Resource-rich"** countries' economies are disproportionately dependent on exploiting highly profitable natural resources (e.g., oil, natural gas), giving them large sums of money to invest.
- **"Hub-of-trade"** countries' economies are driven by exports of goods and services. Local enterprises, or multinationals with local branches, have developed expertise in supply chain and international trade.
- **"Innovation-potential"** countries have large investments in R&D. They benefit from large pools of highly educated and creative individuals developing new products.
- **"Strong-local-consumption"** countries' economies are heavily reliant on domestic consumption. Furthermore, imports are low, meaning that most goods and services consumed are provided by local businesses.
- **"Strong-SME-sector"** countries have an SME sector that is a dominant force in the economy, e.g., SMEs employ a majority of the workforce.

117 World Bank, World Development Indicators; *CIA World Factbook*; IMF World Economic Outlook National Accounts Table, nominal per capita GDP in 2010.

Rents from natural resources can be applied to building the foundations of a thriving Internet ecosystem including infrastructure investment in rural areas and digital literacy training efforts. The development of Internet infrastructure can yield better coverage and more reliable service, particularly in rural areas, given the digital divide between Argentina's cities and villages.

Argentina's macroeconomic strength in strong local consumption is well poised to continue adding value to the Argentine Internet ecosystem. Argentina's Internet-related private consumption revenue has grown 27 percent over the past five years, driven by growth in mobile revenue and e-commerce. In view of Argentina's high number of mobile subscriptions as well as low 3G penetration and low growth in private spending on smartphones, gains still appear achievable. A higher penetration of smartphones would enable e-commerce, develop a more robust mobile data market, and serve as an avenue for Argentina's economic growth. To further enable e-commerce, Argentina will need to lower hurdles to online payments with solutions that account for high inflation and other uncertain macroeconomic conditions. Innovations, including making online purchases directly from bank accounts tied to mobile accounts, may be useful in Argentina. MercadoLibre now offers this service but if more e-tailers adopt such innovation, e-commerce should continue to grow quickly.

Argentine enterprises have the advantage of strong local consumption and can capture more impact from the Internet, specifically through a higher level of broadband access. For enterprises that already enjoy broadband access, allowing more employees to leverage Web technologies could yield productivity benefits. Our data show that SMEs that have invested in Web technologies have also grown the fastest. Argentina's B2B e-commerce, at only 4 percent of GDP, is just one-third the average for the aspiring countries on which we focus.[118] As businesses move toward using broadband and more robust ICT solutions, enhancing B2B e-commerce should become a strong component of enhancing the economic benefits available from the Internet. To overcome today's lack of access to financial capital access, Argentina needs to provide a more robust credit system and safety nets for investors wary of the country's macroeconomic environment.

Argentina has many of the building blocks for a robust Internet ecosystem—a population with sufficiently high income to pay, a high level of urban living that allows for low-cost and very broad Internet access, and high literacy rates among peer nations. As long as Argentina can tackle key constraints, it already has a very strong basis on which to develop the Internet and its economic impact even further.

118 International Data Corporation, B2B e-commerce, 2010.

Country profiles

Hungary

Hungary's Internet infrastructure is mature, with fixed-line and mobile broadband coverage reaching more than 90 percent of the population. The economic potential of this infrastructure, however, is highly underleveraged. First, actual usage of the infrastructure is relatively low with only 52 percent of households connected to the Internet. This is likely due to shortage of local or localized content and lack of applications with economic benefits for users. It is also attributable to the quality of the infrastructure, often providing poor speeds outside of major urban areas. Second, even for the those individuals who do use the Internet in Hungary, economic activities are limited with a low level of B2C e-commerce.

Not unlike other aspiring countries, mobile users in Hungary leapfrogged fixed-line users from 2006 to 2009. However, the growth in wireless broadband data services for computers has significantly decelerated, and users are increasingly relying on fixed-line access again. The incumbent fixed-line provider and many major cable operators have invested heavily in upgrading fiber infrastructures in urban areas, providing a much better quality access at typically lower rates than mobile operators. Mobile operators are taking up the challenge and rolling out upgraded 3G and 4G networks with speeds up to 60 Mbps. The Hungarian public, especially in the cities, has greatly benefited from this, with 93 percent of them having access today to broadband Internet.

User uptake of the network, however, still lags. With the network's currently limited and not very visible economic benefits to the general public, a large share of the population uses other sources of information and entertainment. With pay-TV subscriptions in 84 percent of households[119] and high-quality, free-air broadcast in all others, entertainment alternatives are ubiquitous. Broadband penetration is also extremely uneven within the country, with 10 Mbps coverage available in only 52 percent of rural areas.[120] This "broadband gap" could be explained with Hungary's distinct population distribution, with a large part of the population located in the greater Budapest area. The rural areas are characterized by small size, low population density, and decreased purchasing power. As a result, infrastructure investment by operators is mainly limited to the capital and major cities, leaving rural areas with subpar quality and more expensive Internet coverage.

Online retail as a share of overall retail in Hungary is low (1.1 percent).[121] B2C e-commerce is still nascent, with limited online offers with a relatively low number of people buying online. A few fledgling efforts are making attempts to break this mold, e.g., an eBay-like local auctioning site, vatera.hu, and an Amazon-like book retailer with expansions to other categories, bookline.hu. B2B trade and administration, especially for large enterprises and government-to-business segments, are more advanced, approaching developed country levels. These could serve as a driver of consumer and small business uptake in the longer term.

It is clear that there is significant room for growth in the Internet ecosystem in Hungary, given relatively high individual income levels and high literacy rates. The largest short-term tasks are to boost the use of the Internet among SMEs and foster higher digital literacy among individuals. In the medium term, Hungary needs to foster conditions to attract early-stage venture capital that can drive entrepreneurship. Hungary has many strengths that allow it to act as a trade hub, including civil infrastructure, the proximity to developed markets in Western Europe, relatively low labor costs, and flexible labor laws. All of these factors can enhance the economic impact of the Internet by being part of the global Internet hardware supply chain. However, these factors will not make a contribution to developing a robust internal Internet

119 National Media and Infocommunications Authority, Hungary, Report on Television market, November 2011.
120 National Media and Infocommunications Authority, Hungary, Market Regulatory Report, 2011.
121 Euromonitor International, online retail, 2010.

ecosystem alone. To achieve this development, Hungary needs to tackle key hurdles including low digital literacy among individuals, access to funding for entrepreneurs, and limited Web technology use by SMEs.

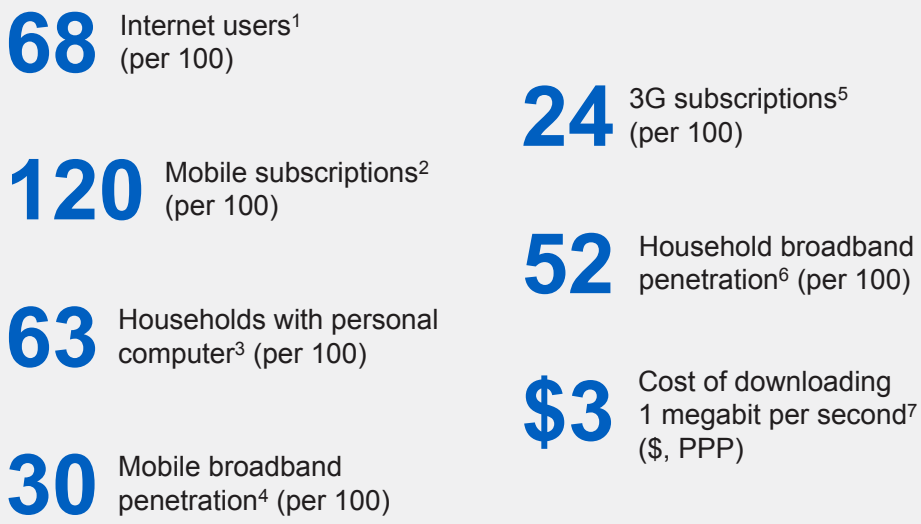
Country overview

Hungary has a relatively high per capita GDP of about $19,000 in 2010, adjusted for purchasing power parity,[122] and low income inequality. However, Hungary is a slower-growing economy with an older population than the rest of our target set of aspiring countries. The median age is 40, and just 35 percent of Hungarians are under 30 years old.[123] Moreover, Hungary is isolated in terms of its native language. Few non-native Hungarians speak Hungarian, and less than one-quarter of the population speaks multiple languages,[124] though this barrier is expected to slowly diminish as language education is compulsory in elementary schools. There is, therefore, a high premium on developing home-grown or localized digital content.

Compared with other aspiring countries we studied, Hungary's Internet ecosystem is fairly mature. However, in contrast to most aspiring countries where demand for the Internet exceeds the supply in terms of coverage and cost of access, Hungary is a country whose citizens underuse the Internet despite extensive broadband coverage at a reasonable cost of access (Exhibit 50). Hungary therefore has room to catch up with more developed EU countries such as the United Kingdom or Germany.[125]

Exhibit 50

Hungary's Internet landscape statistics



1 Hungarian Central Statistical Office, 2010.
2 Hungarian National Media and Infocommunications Authority, 2010.
3 WEF, Global Information Technology Report 2010–2011. Data for 2009.
4 ITU World Telecommunication/ICT Indicators database as provided by Wireless Intelligence, 2010.
5 World Cellular Information Service, December 2011.
6 Hungarian Central Statistical Office, 2010.
7 Speedtest.net, November 2011; PPP adjustment to $ using World Bank 2010 conversion rate.

SOURCE: McKinsey analysis

Impact of the Internet

To measure the economic impact of the Internet, we have constructed the iGDP Index, which measures the contribution of the Internet to a country's GDP. We have also separately measured a country's e-commerce

122 International Monetary Fund (IMF) World Economic Outlook Database, September 2011.
123 Economist Intelligence Unit, September 27, 2011; *CIA World Factbook*; Global Insight.
124 Hungarian Central Statistical Office, 2005. The 2000 census placed Hungarians speaking only Hungarian at 75 percent; the 2005 micro-census placed it at 77 percent. A new census is under way.
125 Pyramid Research; World Economic Forum, "Global information technology report, 2010–2011"; IDC; World Bank.

platform, because it plays a seminal role for consumers and retailers alike in a country's Internet ecosystem. The e-commerce eCP assesses the health of a country's e-commerce ecosystem.

- **iGDP.** Using the expenditure method, the contribution of the Internet is measured as the proportion of GDP that can be attributed to the Internet in private consumption, public expenditure, private expenditure, and trade.[126] This measure is ICT-related, as it aggregates the expenditure on all goods and services that are related to the Internet, including devices, access, the consumption of hardware, and online consumption.

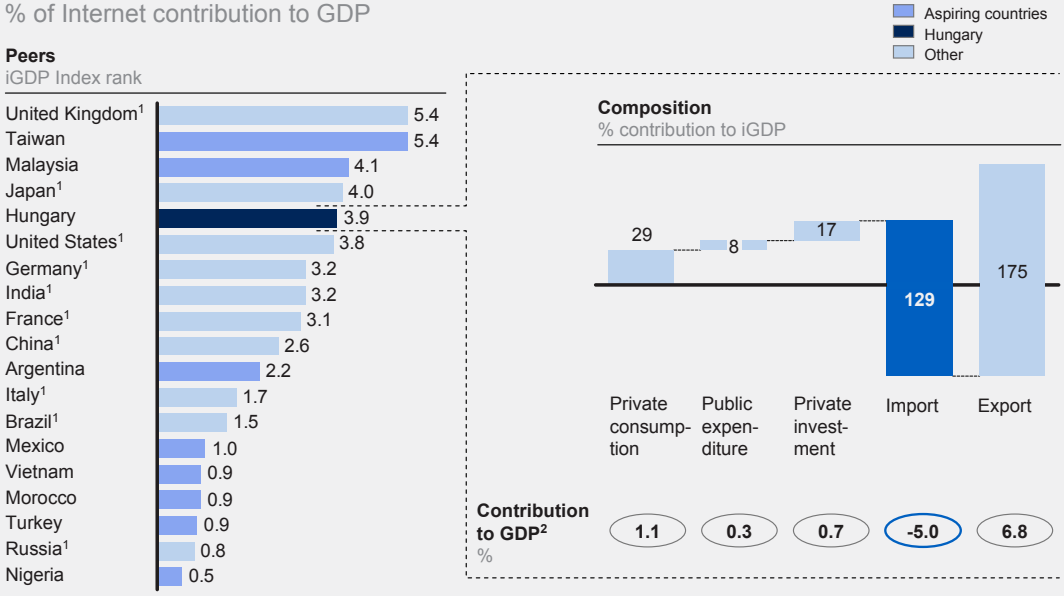
- **eCP.** The e-commerce platform demonstrates e-commerce enablement by scoring a country's online payment enablement, parcel delivery systems, and Internet readiness.[127]

Hungary's Internet contribution to GDP is high among its peers at 3.9 percent, with one of the main drivers being ICT manufacturing-related exports (Exhibit 51). This impact places Hungary in the top tier of the aspiring countries on which we focus and in similar territory to developed European peers including Germany, with an impact of 3.2 percent, and the United Kingdom with 5.4 percent.

Exhibit 51

Hungary is in the top tier of aspiring countries on its Internet contribution to GDP

% of Internet contribution to GDP



1 2009.
2 Numbers may not sum due to rounding.

SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; World Travel and Tourism Council; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

Hungary's Internet-related ICT exports represent 6.8 percent of Hungary's GDP, more than double the 3 percent average of the aspiring countries we studied. Some of these ICT exports are by multinational companies with locations in Hungary and span Internet access devices such as smartphones and

126 Internet contribution to GDP index components: private consumption (total consumption of goods and services by consumers via the Internet, or consumers' costs to obtain Internet access); private investment (private-sector investment in Internet-related technologies); public expenditure (public expenditure on Internet is estimated by adding government, public health care, and public education expenditures on the Internet); trade balance (exports of Internet-related goods and services, plus B2C and B2B e-commerce, net of all associated Internet-related imports).

127 E-commerce platform index components: online payment enablement (number of financial cards in circulation, volume of cashless payments, legal protection provided to the e-consumer); parcel delivery (reliability of postal system, cost of domestic shipping, percent of a population with delivery to their homes); Internet readiness (volume of secure servers, Internet penetration, domain registration cost).

hardware used for the Internet. Firms gravitate to Hungary for the relatively low labor costs and proximity to European markets.[128] According to the Hungarian Investment and Trade Agency, Hungary's key ICT export products include computer hardware, office equipment, data communication and network devices, telecommunication services, and professional IT services.[129]

Hungary has every prospect of continuing to serve as a low-cost hub of ICT hardware manufacturing for the EU. More than 80 percent of Hungary's trade is with the EU, including 25 percent with Germany.[130] Because the export sector serves as an engine for economic growth, increasing levels of ICT exports to other EU member countries may generate positive value and economic growth for Hungary. While many exporters are multinationals, their Hungarian operations contribute a significant amount to the economy.

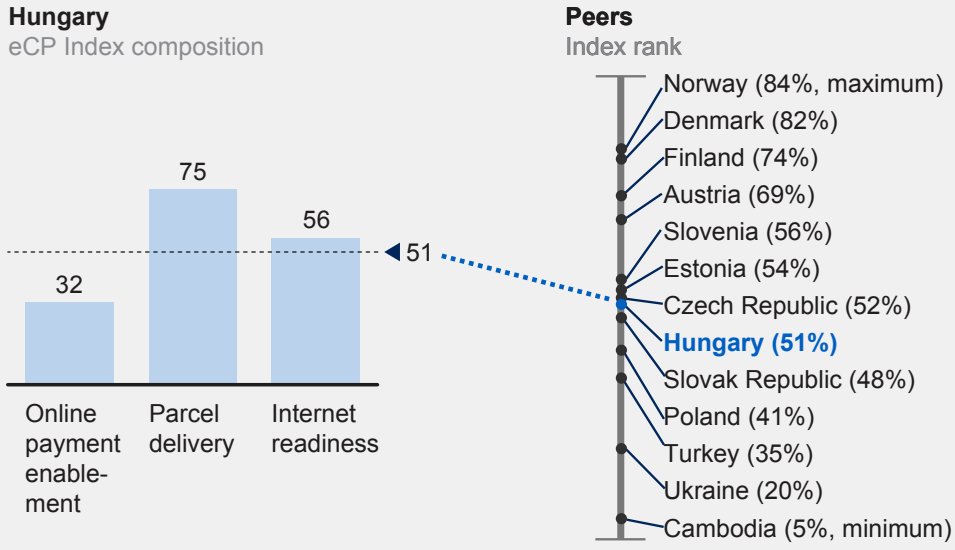
Domestic private consumption of the Internet—largely broadband revenue and e-commerce—contributes 1.1 percent to Hungary's GDP, more than twice the average of the aspiring countries we have studied. B2C Internet retailing in Hungary reached $340 million in 2010, up 44 percent from the previous year, and is expected to grow at an 18 percent compound annual rate over the next five years.[131] Further, B2B e-commerce reached approximately $22.6 billion in 2010. Total e-commerce sales as a percent of GDP is a high 23 percent. However, this still lags behind more developed economies such as the United States (38 percent) and Germany (27 percent).[132] Enterprises and consumers both benefit from the stronger purchasing options and greater price transparency of e-commerce.

Consumer surplus and economic growth can evolve by encouraging the level of trust necessary to facilitate online commerce. Efforts could include increasing online payments through credit cards. Cashless payments in Hungary lag 30 percent behind the Central and Eastern European average—Hungary has only 0.9 cards per person, with the gap particularly acute in credit cards (versus debit cards).[133] Short of higher credit card penetration, innovative solutions such as paying for e-commerce goods through a mobile phone could sidestep online security fears that are currently inhibiting e-commerce.

Exhibit 52

Hungary's e-commerce environment benefits from Internet readiness and parcel delivery but faces constraints on online payment enablement

Percentile rank, 57-country set



SOURCE: McKinsey analysis

128 Expert interviews conducted October 2011.
129 Hungarian Investment and Trade Agency, "ICT sector summary," July 29, 2011.
130 ITD Hungary ZRT, foreign trade, 2008.
131 Euromonitor Internet Retailing—Hungary, 2011.
132 E-comm turnover from IDC, GDP for each country from World Bank.
133 IMD, World Competitiveness Report; World Economic Forum, "Global information technology report, 2010–2011"; McKinsey Global Payments Database.

Hungary's e-commerce environment is on par with peers (Exhibit 52). There are significant constraints to online payments, including relatively few payment cards. However, strengths include secure parcel delivery systems and low domain-registration costs.

Internet ecosystem

To assess the health of a country's Internet ecosystem, we constructed two indexes:

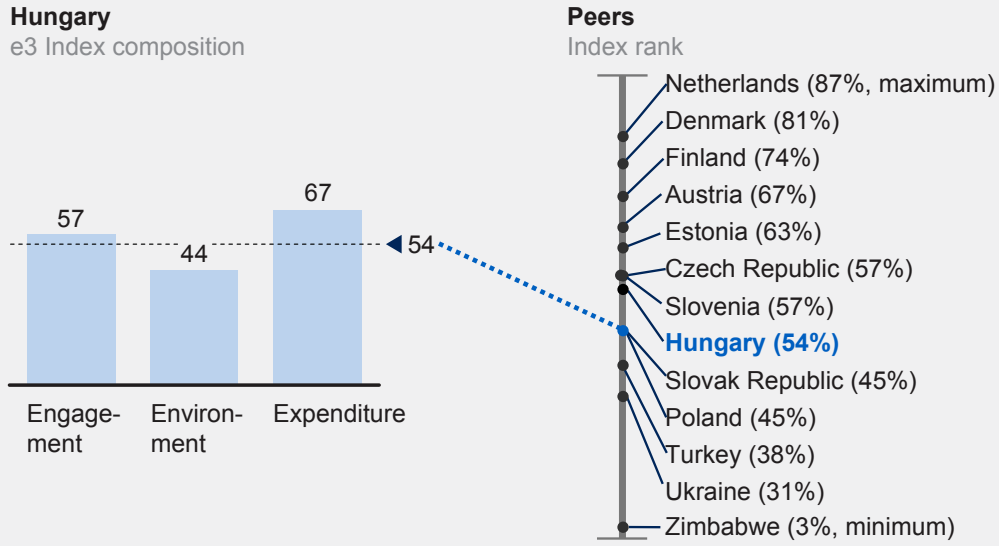
- **e3.** This index measures the current maturity of an Internet ecosystem according to three major drivers: environment, engagement, and expenditure.[134]
- **i4F.** This index measures the vibrancy of an Internet ecosystem—i.e., the preconditions for future growth—based on the four key foundations of financial capital, business environment, infrastructure, and human capital.[135]

Hungary's Internet ecosystem maturity is comparable with others in its region (Exhibit 53). Engagement and expenditure are constrained by the low use of fixed-line broadband by individuals, but buoyed by mobile connections, broadband availability, and e-commerce. Environment is especially constrained due to the low availability of Hungarian digital content.

Exhibit 53

Hungary's Internet ecosystem maturity is on a par with regional peers

Percentile rank, 57-country set



SOURCE: McKinsey analysis

The foundations of Hungary's Internet ecosystem are limited. Compared with its performance on McKinsey's Internet ecosystem maturity index, which measures current infrastructure and usage, Hungary's score on the Internet ecosystem foundations index, which tests for the preconditions for a successful Internet ecosystem and is a measure of elements that promise future growth, is low. In Hungary, the key constraints include low access to financial capital, stemming primarily from limited availability of

134 Internet ecosystem maturity index components: environment (existing Internet speed and penetration), engagement (usage of Internet by individuals, enterprises, and governments), expenditure (Internet spending such as e-commerce and online advertising).

135 Internet ecosystem foundations index components: financial capital (availability of financing for Internet and ICT companies), business environment (country's attractiveness to business due to regulatory and societal effects), infrastructure (penetration and quality of Internet-enabling infrastructure), human capital (education and research).

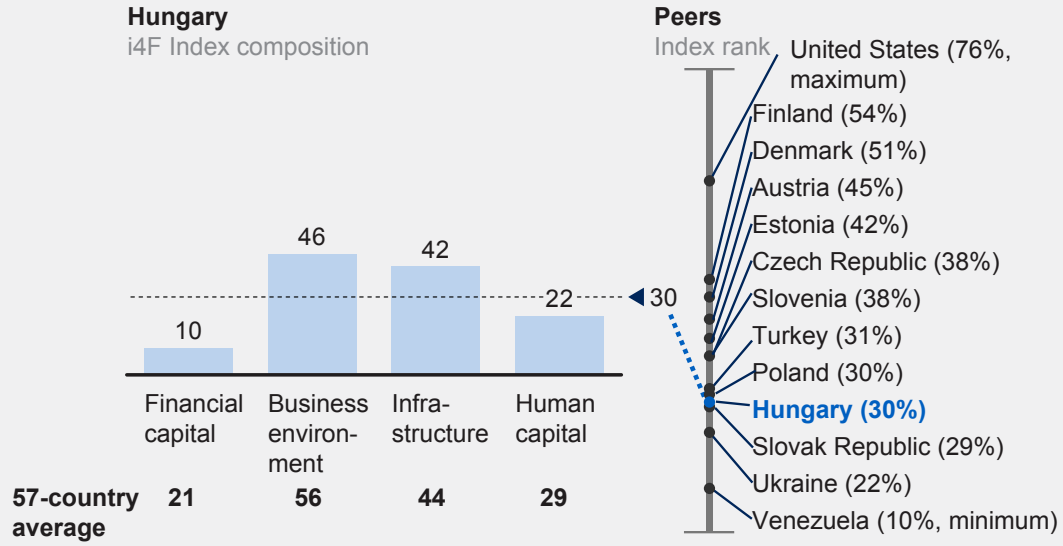
venture capital (Exhibit 54). Although there is significant inward FDI to the ICT sector, this is mostly for large projects rather than early-stage investments in Internet-related businesses. Entrepreneurs therefore find it difficult to access the capital needed to innovate. Hungary also has lagging human capital, partly driven by constrained levels of digital literacy. These shortcomings are balanced, however, by a good performance on infrastructure including near-ubiquitous coverage and reasonable access costs.

There is a marked gap between Internet use in cities and villages—the majority of households in Budapest have Internet access, but only a minority of households in Hungarian villages do.[136] The reason for this is not access to broadband—93 percent of Hungarians have access—but a perceived lack of need for digital services in rural areas as well as subscription prices deemed too high in rural areas. In a 2011 European Commission survey, about half of Hungarians stated that no one in their household had interest in being online while about one in four found the cost of broadband access to be high.[137] However, one in four Hungarians who are not online found the cost of devices to access the Internet—computers and modems—to be high, a much higher share than 18 percent in the case of Bulgarians and 3 percent in the case of Italians.[138]

Exhibit 54

The foundations of Hungary's Internet ecosystem are constrained by financial and human capital concerns

Score relative to maximum of 57-country set in each index variable



SOURCE: McKinsey analysis

User groups

Individuals. Hungarian B2C e-commerce has been growing. Between 2000 and 2010, 50 percent compound annual growth rate outpaced all of the aspiring countries on which we have focused except Argentina and was more than double the growth in more mature Internet ecosystems such as Malaysia and Taiwan (Exhibit 55).[139] High per capita GDP and a very reliable postal service have encouraged e-commerce growth in Hungary.[140] In 2010, there was a 12 percent increase in the number of businesses online.[141] The low use of cashless payments by Hungarians is a constraint on Internet retail that could be removed with the higher penetration of credit cards and a higher comfort level among Hungarians about online purchases.

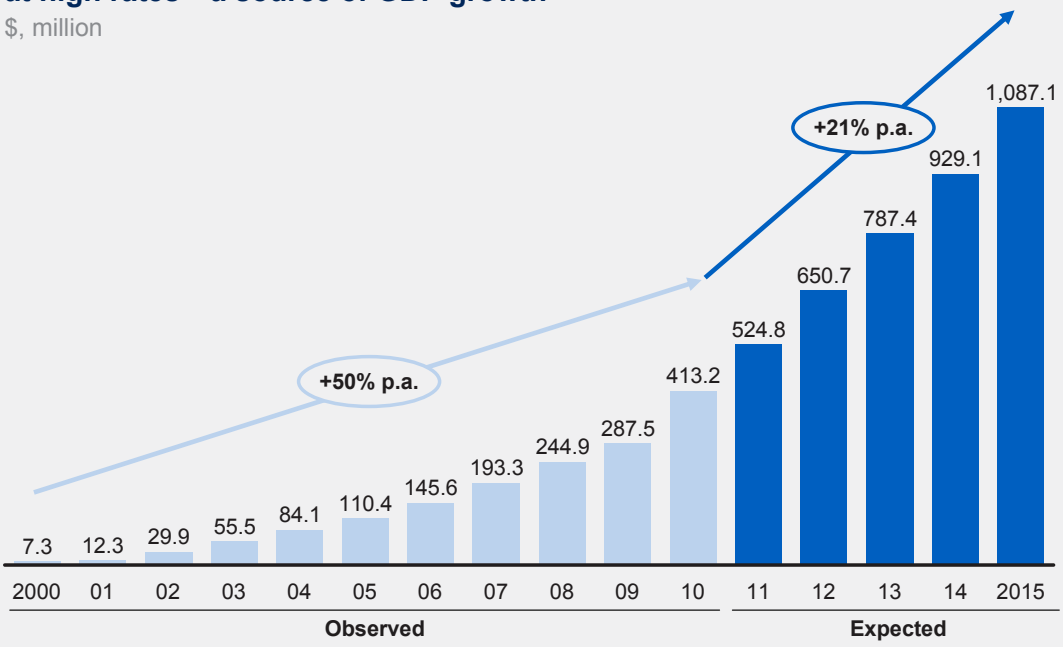
136 Hungary National Media and Infocommunications Authority, 2010.
137 European Commission, "e-Communications household survey," 2011.
138 Ibid.
139 Euromonitor Internet Retailing—Hungary, 2011.
140 Postal service reliability from postal operator Web site: Web sites; per capita GDP from IMF World Economic Outlook Database, September 2011.
141 Euromonitor Internet Retailing—Hungary, 2011.

Hungarians are heavy users of search, entertainment, communication, information, social networking, and education.[142] In fact, Hungarians rank in the top quartile of the aspiring countries on which we focus for their use of the Internet.

Exhibit 55

Hungary's Internet retail spending has been growing at high rates—a source of GDP growth

$, million



SOURCE: Euromonitor International; McKinsey analysis

Entrepreneurs. McKinsey has built an ease of Internet entrepreneurship index based on three components: the ease of starting a new business, the ease of financing a new business, and Internet accessibility.[143] The index shows that it is relatively easy to start a business online in Hungary—only a few days are necessary to start a business and the costs of doing so are low. In addition, bandwidth in urban areas is low-cost.[144] While the number of net new businesses in Hungary may overstate the entrepreneurial environment, since many individual contractors register their businesses for tax purposes, Hungary still appears to have many of the key pieces for a sound entrepreneurial foundation.

But financing is partially a problem, not so much for the funding of large projects by established players where a high number of private equity investments are helpful, but for early-stage financing, since the venture-capital environment is nascent (Exhibit 56).

Like its Central and Eastern European neighbors, Hungary suffers from the loss of talented human capital.[145] Hungary's membership in the EU means that Hungarians can easily migrate to other EU countries, and many do so because of the disparity between Hungary's per capita GDP of $19,000 and the EU average of about $30,500.[146] Policies that make the Hungarian market more appealing for foreign investors could be tailored

142 IDC, Internet User Online Activities, 2010.

143 Ease of Internet entrepreneurship index components: ease of starting a new business (industry-agnostic view of the overall business ecosystem in a country), ease of financing a new business (availability and attractiveness of financing for ICT start-ups, as well as the cost of financing a new business), Internet accessibility (extent and cost of Internet access for both enterprises and their target consumers).

144 New net businesses from World Bank; start-up business costs from International Finance Corporation; days required to start a business from International Finance Corporation; and Internet penetration from World Economic Forum, "Global information technology report, 2010–2011."

145 World Economic Forum, Global Competitiveness Report Executive Opinion Survey, 2010-2011.

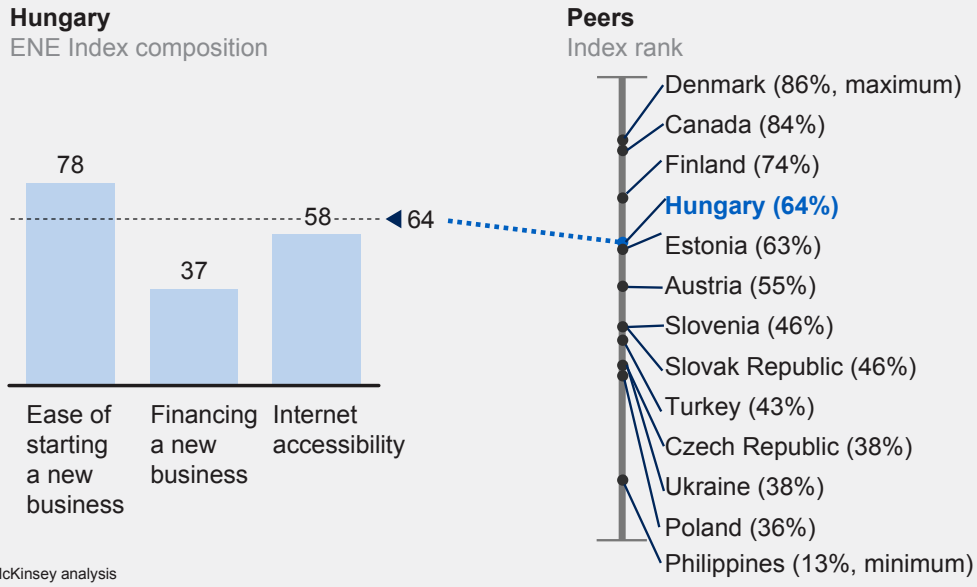
146 IMF World Economic Outlook Database, September 2011; World Economic Forum Executive Opinion Survey.

to retain entrepreneurial talent. Such an investment in talent is especially important for Hungary's Internet ecosystem, given the demographics of an older population that mostly speaks just Hungarian.

Exhibit 56

Financing is a problem for Internet start-ups in Hungary

Percentile rank, 57-country set



SOURCE: McKinsey analysis

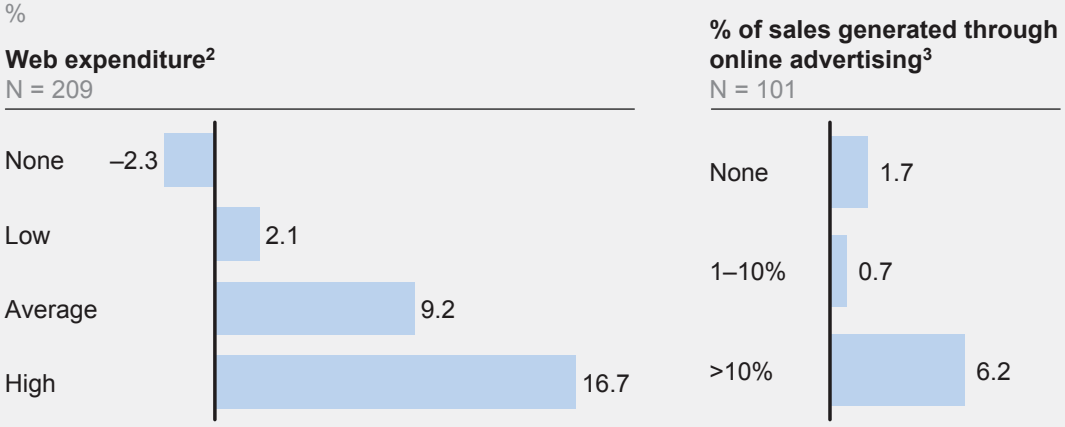
Enterprises. The average SME in Hungary provides more employees with access to broadband (69 percent) than the average across the aspiring countries on which we have focused (54 percent).[147] While a similar number of SMEs in Hungary as in other aspiring countries have online sales features on their Web sites—13 percent versus 15 percent. Hungarian country statistics show that 8 percent of the SMEs' total turnover comes from Internet sales.[148]

Exhibit 57

Hungarian SMEs that are investing the most in Web technologies and online sales are also growing the quickest

Stated growth[1]

%



1 Excludes all respondents who did not know the growth rate of their company.
2 Low Web expenditure is less than 10% of total expenses. Average is 11%–30% of total expenses. High is greater than 30% of total expenses. "What percentage of your expenses are digital, i.e., linked to Web technologies (electronic messaging, intranet, extranet, WiFi, Web sites, Web 2.0 tools, servers/routers, Web connection for employees, Enterprise Resources Planning (ERP), e-commerce, e-marketing, e-supply chain)?" Excludes "I don't know" responses.
3 "What percent of your revenues are driven by ONLINE advertising? 2010 (projected)." Excludes "I don't know" responses.

SOURCE: 2011 McKinsey survey of 302 SMEs in Hungary; McKinsey analysis

147 2011 Survey of 302 SMEs in Hungary, McKinsey analysis.
148 Eurostat: SMEs total turnover from e-commerce, 2010.

Hungarian SMEs that have leveraged Web technologies have grown faster than those that have not (Exhibit 57; see also Box 23, "Prezi cloud-based tool helps users tell stories," and Box 24, "Examples of innovative Hungarian start-ups (as of December 2011)"). Based on the 2011 McKinsey SME survey, the average SME in Hungary ascribed 3 percent revenue gains, 4 percent operations and administration expense decreases, and 2 percent decreases in cost of goods sold to the Internet.[149] Revenue gains across all SMEs in Hungary was particularly low as 73 percent of SMEs did not state benefit. However, SMEs that have webshops and are likely well engaged with Web technologies cited 26 percent higher turnover due to their online sales channel. These SMEs also managed to lower their operating cost by 24 percent due to the decreased shop rental and advertisement costs.[150]

Larger enterprises, such as Intel, have entered Hungary to take advantage of its strategic position in the EU and its relatively cheap labor costs and have helped develop Hungary into a lower-cost ICT manufacturing hub for the EU. The way large enterprises use Web technologies in Hungary tends to be similar to that in more developed Western European nations, partly because many of these large companies are local offices of multinationals and use the same Web technologies as the headquarters.

Box 23. Prezi cloud-based tool helps users tell stories

Founded in Budapest, Prezi is a cloud-based tool that enables users to create presentations as if they were on one large canvas rather than a series of slides. Prezis are created to tell stories, with the presentation zooming back and forth to different portions of the canvas. Developed in 2007, Prezi was awarded financing by TED conferences and Sunstone Capital. Prezi grants free access to its services to customers who allow Prezi to publish their work; for those who want private presentations, customers can opt to pay for the premium services.

Box 24. Examples of innovative Hungarian start-ups (as of December 2011)

- **Index.hu.** One of the most popular Internet portals in Hungary. Besides offering news coverage on significant national and international stories, the Web site regularly features tabloid articles. Offerings have been expanded to include blog.hu, the largest Hungarian blog provider; Indavideo, a UGC video sharing site geared toward Hungarians; and Indamail, an e-mail provider.
- **Vatera.hu.** This online marketplace and important player in Hungarian e-commerce business was established in 2000 and currently has 1.4 million subscribers. Its specialty is auctions.
- **Iwiw.hu.** The Hungarian social network Web site (originally wiw: who is who) started operations in April 2002 and was acquired by Magyar Telekom in 2006. By that time, iwiw.hu already had more than 1 million users, 10 percent of the total population.
- **Groby.hu.** The G'Roby Food Supermarket Chain has been working in Budapest since 1992. It set up the delivery service in 1999 and was the first to open a webshop store in spring 2000.

Government. The EU's Lisbon Strategy, part of a broader effort to make the EU the most competitive and dynamic knowledge-based economy in the world, included standards for e-government services that encouraged Hungary to develop strength in this area.[151] Hungary scores well on the e-government service index and on the United Nations e-Government Development Index, which ranks it in the top 15 percent of countries. These scores reflect the heavy use of information and transaction services. Hungary's main portal, magyarorszag.hu, offers Web services that can be divided into citizen services and enterprise services. In the first months of 2011, there were approximately 3.3 million unique visits and 17.3 million page views per month. Of the 10 million Hungarian citizens, 1.1 million are registered with usernames and passwords on the portal and about half of them are actually using the site.[152] According to the European

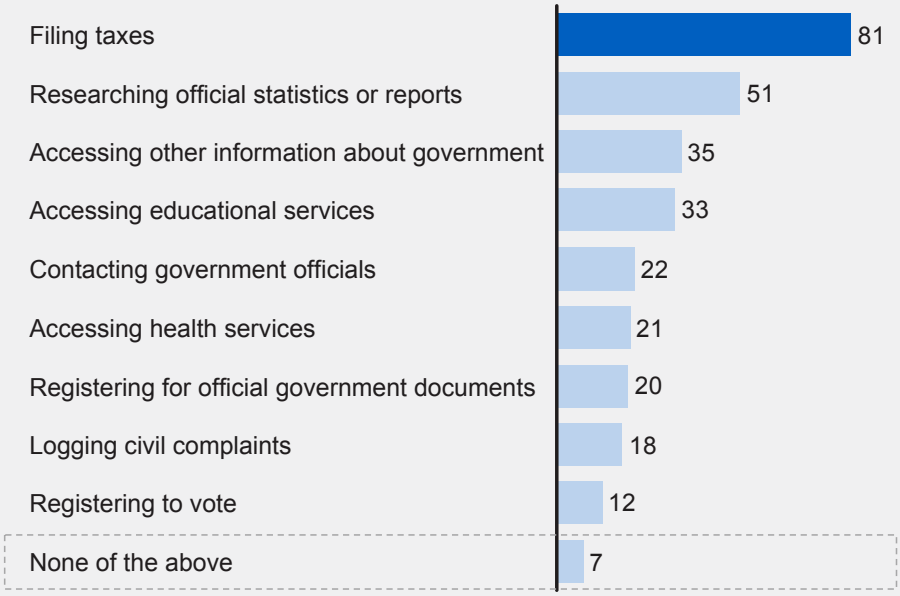
149 2011 McKinsey survey of 302 SMEs in Hungary.
150 Piac es Profit, January 3, 2012.
151 ICT and Lisbon Strategy, Europe's Information Society launched in 2005.
152 Segítség, Internet usage data, pulled October 2011.

Commission, seven in ten Hungarian businesses use e-government services.[153] The filing of taxes is the most popular service used by SMEs (Exhibit 58, see also Box 25, "Hungary pushes electronic filing of taxes.") Since 2010 registered users have been able to access the government's health care spending database. Today, participants can see what kind of health care treatments they have received since 1998 and how much those treatments cost.

Exhibit 58

Tax-filing is the most popular e-government service in Hungary

% of respondents using each e-government online service in the last year.
Sample size for Hungary = 302



SOURCE: 2011 McKinsey survey of 302 SMEs in Hungary; McKinsey analysis

Box 25. Hungary pushes electronic filing of taxes

The Hungarian Tax Authority introduced e-taxation in 2002, which originally intended to require the top 500 corporate taxpayers to submit their tax return declarations online. In 2004, the online obligation was broadened to include the largest 3,000 taxpayers and then, in 2005, expanded again to cover the 10,000 largest taxpayers, who account for more than 70 percent of tax revenue. Mandatory use of electronic tax filing has helped promote business uptake in Hungary and demonstrates how e-government benefits can be realized by "pushing" targeted populations with good Internet access to use electronic services.

Path forward

Hungary is a country with great potential for Internet impact, with strengths ranging from a strong ICT sector and a fairly developed broadband network, all the way to strong relationships with ICT manufacturers and diverse e-government services. It has, however, a long way to go to catch up with its developed European peers. Hungary was identified as an aspiring country because it displays a strong set of fundamentals while also exhibiting the potential for growth. Nominal 2010 GDP was $130 billion, and per capita GDP exceeded $13,000.[154] Hungary has room to grow on the Internet ecosystem's supply side. The lack of

153 Nokia Siemens Networks, Hungary Connectivity Scorecard 2011.
154 World Bank, World Development Indicators; IMF World Economic Outlook National Accounts Table; nominal per capita GDP in 2010.

Box 26. Aspiring countries can draw on their strengths to drive Internet ecosystem growth

We have identified five macroeconomic strengths that aspiring countries can leverage to drive Internet ecosystem growth. These strengths are not mutually exclusive, but they apply in varying degrees to each aspiring country. For a broader discussion of these strengths and a comparison of our 57-country set along them, see chapter 3.

- **"Resource-rich"** countries' economies are disproportionately dependent on exploiting highly profitable natural resources (e.g., oil, natural gas), giving them large sums of money to invest.
- **"Hub-of-trade"** countries' economies are driven by exports of goods and services. Local enterprises, or multinationals with local branches, have developed expertise in supply chain and international trade.
- **"Innovation-potential"** countries have large investments in R&D. They benefit from large pools of highly educated and creative individuals developing new products.
- **"Strong-local-consumption"** countries' economies are heavily reliant on domestic consumption. Furthermore, imports are low, meaning that most goods and services consumed are provided by local businesses.
- **"Strong-SME-sector"** countries have an SME sector that is a dominant force in the economy, e.g., SMEs employ a majority of the workforce.

high-quality, inexpensive access in rural areas is one of the major inhibitors. Because there are not enough commercial incentives for private operators to build infrastructure in these areas, government intervention might be needed to close the digital gap. Another, smaller, driver is that PC and smartphone penetration is significantly higher in urban areas than in rural areas. Penetration in rural areas could be increased with device purchase incentives; for example, by discounting devices upon signature of a new contract with a telecom operator.

Two relative sources of macroeconomic strength, which Hungary can leverage for the development of its Internet ecosystem, are its position as a hub of trade and its strong SME sector (see Box 26, "Aspiring countries can draw on their strengths to drive Internet ecosystem growth" for a summary of five macroeconomic strengths across aspiring countries). Hungary may be able to tap into relatively strong innovation potential over time, too.

Just like on the supply side, there are major implications for the demand side of the Hungarian Internet ecosystem. Hungary's strong SME sector has already adopted Web technologies to a significant level and experienced the benefits of doing so in terms of higher revenues and low costs. But the economic impact can be even greater if SMEs focus more on training employees and investing in the Internet. A high literacy rate and high per capita GDP are both strengths that Hungary can use to build up e-commerce. Hungary needs to increase the volume of cashless payments and encourage SMEs to move online and accept online transactions.

Since the export sector serves as an engine for economic growth, maintaining levels of ICT exports to other EU member states will be important for generating positive value and economic growth. As in the case of other successful hubs of trade such as Taiwan, Hungary can focus on climbing the value chain from low-cost manufacturing to design. This will require a long-term focus on R&D, digital literacy, and attracting the early-stage venture capital that is currently constraining Internet entrepreneurship.

Hungary is well positioned to achieve significant impact from the Internet. With developed broadband coverage at reasonable cost in most areas, an educated population, and strong ICT manufacturing sector, Hungary has many of the building blocks of a robust Internet ecosystem.

Country profiles

Malaysia

Malaysia is a mid-size, fast-growing economy, which has built on its resource-based strengths to become a major hub of ICT manufacturing. The Internet contributes around 4 percent to GDP—on a par with some developed countries—reflecting strong trade patterns and rising consumer demand.

But there is still a significant opportunity to enhance the Internet's economic impact by fully taking advantage of the domestic market. Strength in Internet-related ICT exports has not yet elevated Malaysia to developed-world levels of Internet-related infrastructure, access to financial capital, or costs of doing business. The average developed country, for example, has 25 times as many secure Internet servers per capita as Malaysia.[155] Domain-registration costs are $143 per year in Malaysia compared with $64 in another aspiring country, Taiwan, and $24 in more developed countries such as the United States.[156]

Nevertheless, consumer demand for Web technologies is relatively strong and growing rapidly. Social networking is nearly ubiquitous. The penetration rate of social networks across Malaysia is 91 percent, and one out of every three minutes spent online is on social networking.[157] Broadband penetration doubled between 2008 and 2010.[158]

While some entrepreneurs have started successful Internet businesses, this activity is still bound by obstacles. Similarly, SMEs have not embraced the Web as consumers have. The SMEs who have adopted Internet technologies have found benefits in revenue, costs, productivity, and growth.

The Malaysian government has implemented initiatives aimed at increasing access to capital, lowering the cost of creating an online business, and increasing broadband penetration in rural areas. The government has also invested in a range of e-government service offerings, but traction has been low compared with that in other aspiring countries.[159]

Country overview

Malaysia is fairly wealthy—within Southeast Asia, Malaysia ranks second only to Singapore in terms of per capita GDP, adjusted for purchasing power parity.[160] Malaysia's total GDP ranks 30th globally.[161] Some of the current strength of the Malay economy can be attributed to the country's abundant natural resources, including petroleum, natural rubber, and palm oil, as well as a developed industrial sector, which accounts for 41 percent of the overall economy.[162]

In 2010, GDP growth had rebounded from recessionary levels to reach 7.2 percent.[163] This growth partly reflected Malaysia's strong export economy, which grew 26 percent from 2009 to 2010 and was fueled by

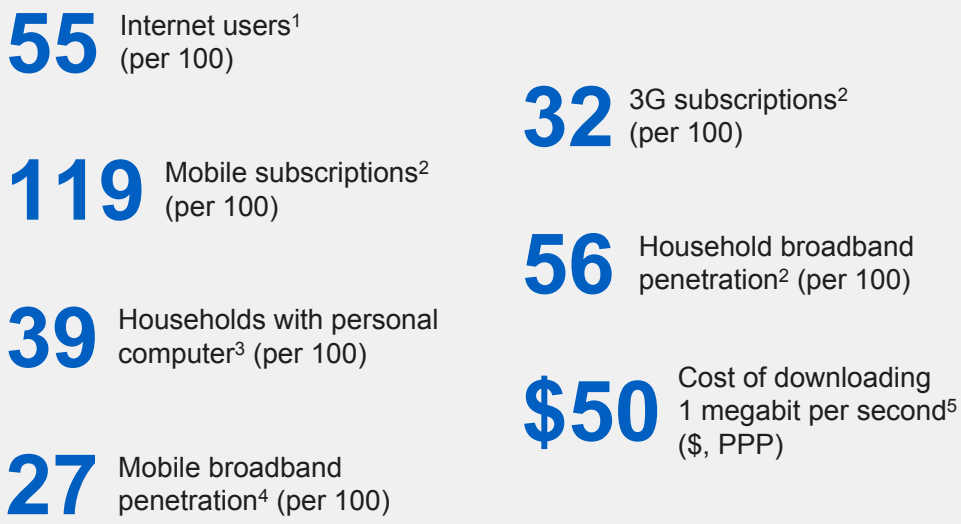
155 World Bank, World Development Indicators, "Secure Internet servers," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011.)
156 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.
157 ComScore Media Metrix (Panel Only), December 2010.
158 Pia Rufino, "Malaysia to reach 60 percent broadband penetration target," Futuregov.asia, March 11, 2011.
159 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.
160 IMF, 2010; statistic reflects PPP-adjusted per capita GDP.
161 *CIA World Factbook*, 2010.
162 Ibid.
163 World Bank, World Development Indicators, "GDP growth (annual %)," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).

tin (up 94 percent), copper (up 74 percent), and rubber (up 63 percent).[164] In total, Malaysia exported $197 billion in goods in 2010, ranking it as the 25th-largest exporter globally.[165]

Malaysia has urbanized rapidly over the past 20 years and the urbanization rate now stands at 72 percent.[166] In 2009, Internet penetration in urban households was 88 percent compared with 10 percent in rural households.[167] Malaysia is a young country, with a median age of 27 years and, reflecting this youthful profile, consumer demand for Web and communication technologies is relatively strong (Exhibit 60).[168] In 2010, Malaysia had more than 16 million Internet users and a household broadband penetration rate of 56 percent.[169] The penetration rate of mobile phones in the country was 119 percent.[170] This compared with 63 percent penetration across other aspiring countries and 46 percent penetration across South Asia.[171] In early 2011, there were also five million broadband subscribers, of which 60 percent were wireless-based.

Exhibit 60

Malaysia's Internet landscape statistics



1 ITU Malaysia 2010.
2 Malaysia Communications and Multimedia Commission data for 2010; published in 2011.
3 WEF, Global Information Technology Report 2010–2011. Data for 2008.
4 ITU World Telecommunication/ICT Indicators database as provided by Wireless Intelligence, 2010.
5 Speedtest.net pulled in November 2011; PPP adjustment to $ using World Bank 2010 conversion rate.

SOURCE: McKinsey analysis

Burgeoning use of Internet and mobile technologies has been facilitated by improved infrastructure, rising income levels, and government programs. Malaysia's stock of secure Internet servers has doubled per capita since 2007. As a result, Malaysia has nearly six times as many secure servers per capita as the average in the aspiring world and 25 times as many per capita as the rest of South Asia.[172] This partly reflects the facilitating role of the government, whose National Broadband Initiative aims to achieve universal Internet access. In parallel, the advent of mobile broadband technologies has helped individuals to shift from digital subscriber lines (DSL).[173]

164 International Trade Centre, "Trade Map," www.trademap.org (accessed December 1, 2011).
165 *CIA World Factbook*, 2010.
166 Ibid.
167 Malaysia Communications and Multimedia Commission 2011Q2.
168 *CIA World Factbook*, 2010.
169 Malaysia Communications and Multimedia Commission.
170 Malaysia Communications and Multimedia Commission data for 2010, published in 2011.
171 World Bank, World Development Indicators, "mobile subscriptions per 100," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).
172 World Bank, World Development Indicators, "Secure Internet servers," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).
173 Economist Intelligence Unit, "Telecoms and Technology report: Malaysia," June 2011.

Impact of the Internet

To measure the economic impact of the Internet, we have constructed the iGDP Index, which measures the contribution of the Internet to a country's GDP. We have also separately measured a country's e-commerce platform, because it plays a seminal role for consumers and retailers alike in a country's Internet ecosystem. The eCP assesses the health of a country's e-commerce ecosystem.

- **iGDP.** Using the expenditure method, the contribution of the Internet is measured as the proportion of GDP that can be attributed to the Internet in private consumption, public expenditure, private expenditure, and trade.[174] This measure is ICT-related, as it aggregates the expenditure on all goods and services that are related to the Internet, including devices, access, the consumption of hardware, and online consumption.

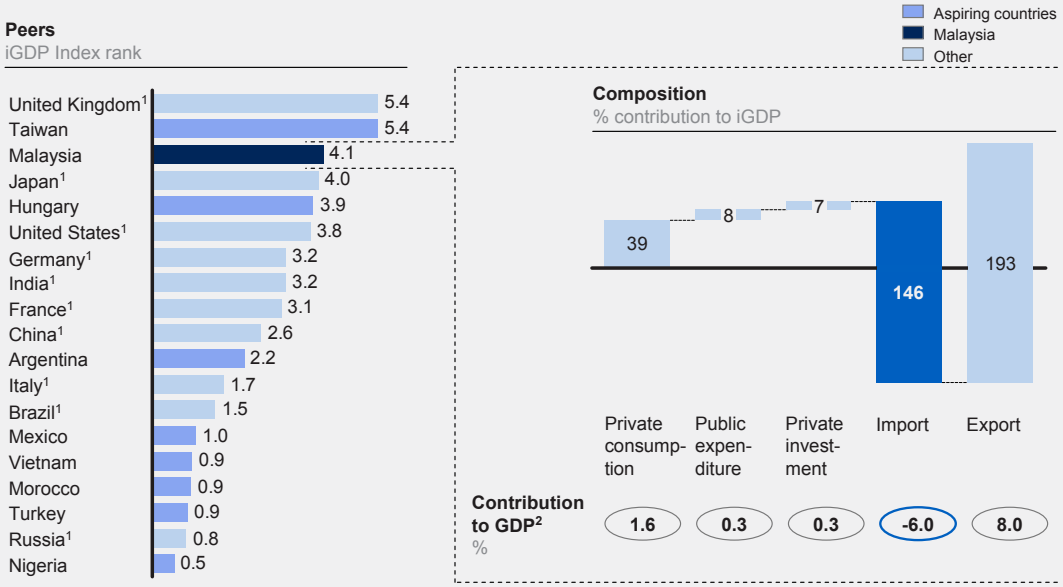
- **eCP.** The e-commerce platform demonstrates e-commerce enablement by scoring a country's online payment enablement, parcel delivery systems, and Internet readiness.[175]

The Internet's impact on the Malaysian economy is among the highest of the aspiring countries on which we have focused, at 4.1 percent of GDP (Exhibit 61). Much of this impact comes from Malaysia's positive ICT-related trade balance due to its strength in ICT manufacturing. However, private consumption of Internet goods and services, including e-commerce and other spending including broadband access fees, is growing rapidly and is forecast to increase through 2015.

Exhibit 61

Malaysia's ICT-related trade and private consumption are driving the Internet's strong impact on the economy

% contribution to GDP



1 2009.
2 Numbers may not sum due to rounding.

SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; World Travel and Tourism Council; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

174 Internet contribution to GDP index components: private consumption (total consumption of goods and services by consumers via the Internet, or consumers' costs to obtain Internet access), private investment (private-sector investment in Internet-related technologies), public expenditure (public expenditure on Internet is estimated by adding government, public health care, and public education expenditures on the Internet), trade balance (exports of Internet-related goods and services, plus B2C and B2B e-commerce, net of all associated Internet-related imports).

175 E-commerce platform index components: online payment enablement (number of financial cards in circulation, volume of cashless payments, legal protection provided to the e-consumer); parcel delivery (reliability of postal system, cost of domestic shipping, percent of a population with delivery to their homes); Internet readiness (volume of secure servers, Internet penetration, domain registration cost).

Malaysia has a great deal of potential to grow its Internet ecosystem. For instance, it seems that the composition of Malaysia's Internet contribution to GDP is under-indexed on private consumption, despite recent growth, as well as on private investment. In the other aspiring countries on which we focus, on average private consumption comprises 70 percent of the Internet's impact, but it is only 40 percent in Malaysia.[176] Despite recent gains in Internet and mobile adoption, few Malaysians currently own computers, with only 39 PCs owned for every 100 households. And Malaysians express little need for the Internet. In a survey of those who have not used the Internet in the past six months, 55 percent said they did not know how to use it and 40 percent said they did not need to access it.[177] Private Internet investment in Malaysia is half of that contributed across the rest of the aspiring world.

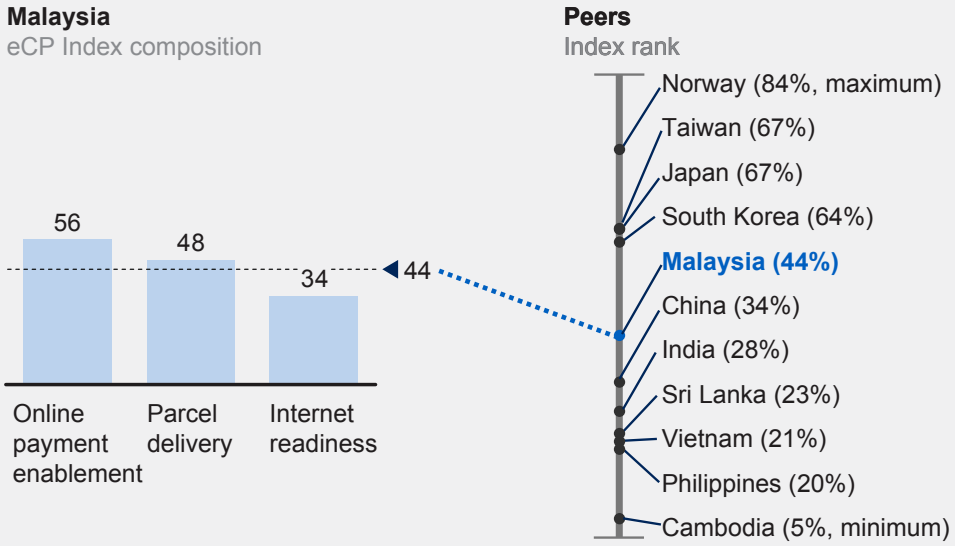
E-commerce grew at an average of 16 percent per year from 2005 to 2010 to reach $1.3 billion in 2010. From 2011 to 2015, we expect e-commerce activity to grow at 10 percent a year.[178] Domestic e-commerce players such as Lelong.com and Mudah.my are actively competing with international players.[179]

The foundations of Malaysian e-commerce have strengths and weakness. Malaysia is strong on online payment due to relatively high legal protection for the e-consumer.[180] There is also a high level of financial cards in circulation per capita.[181] Parcel delivery is relatively cheap compared with other countries.[182]

Exhibit 62

Malaysia's e-commerce environment is mixed, with high online payment enablement but relatively low Internet readiness

Percentile rank, 57-country set



SOURCE: McKinsey analysis

However, a relatively low share of Malaysians has mail delivered to their homes.[183] Moreover, Internet readiness is low and this is holding back e-commerce (Exhibit 62). While Malaysia compares favorably to other aspiring countries on security of data, the cost of creating local online content, and the level of Internet adoption, it has some work to do to match the performance of developed countries. The number of secure

176 Team analysis of Internet contribution to GDP. Aspiring countries: Argentina, Hungary, Malaysia, Mexico, Morocco, Nigeria, Taiwan, Turkey, and Vietnam.
177 McKinsey analysis; Digital Consumer Survey, 2010.
178 Euromonitor 2011.
179 Euromonitor International, "Consumer lifestyles in Malaysia," July 2011.
180 World Economic Forum, "Global information technology report, 2010–2011."
181 IMD, World Competitiveness Online.
182 Postal operator Web sites; expert interviews.
183 Universal postal union; expert interviews.

Internet servers in Malaysia per capita significantly lags behind that of the developed world.[184] And the annual cost of registering a site in Malaysia is also significantly higher than in other countries.[185] Ranked against 57 other countries, we find that Malaysia's Internet foundations are in an average state of health with the current business environment and infrastructure stock being positives but insufficient human and financial capital being negatives.

Internet ecosystem

To assess the health of a country's Internet ecosystem, we constructed two indexes:

- **e3.** This index measures the current maturity of an Internet ecosystem according to three major drivers: environment, engagement, and expenditure.[186]

- **i4F.** This index measures the vibrancy of an Internet ecosystem—i.e., the preconditions for future growth—based on the four key foundations of financial capital, business environment, infrastructure, and human capital.[187]

Malaysia's current Internet ecosystem is strong in comparison with those of other aspiring countries but low compared with more developed countries. Malaysia benefits from strong government promotion of ICT but is limited by low business expenditure on online advertising. The foundations for further growth of Malaysia's Internet ecosystem are moderate. Prospects would be brighter if improvements were made to financial and human capital, including boosting venture-capital activity and R&D spending. Ranked against a set of 57 countries, both aspiring and developed, Malaysia's Internet ecosystem is slightly below average for the environment it creates, slightly above average for the level of engagement across user groups, and average in terms of the expenditure made by individuals and businesses (Exhibit 63).

Today, Malaysia has relatively low accessibility to digital content and household broadband penetration.[188] However, the country has already begun to address these features of its Internet landscape by distributing one million locally manufactured laptops with broadband subscriptions to students in rural areas.[189] Engagement in the Internet by consumers is supported by the government's seemingly high use of the Internet. Malaysia ranks above average in terms of its success in ICT promotion and e-service offerings.[190]

Malaysia's expenditure score is supported by high levels of retail e-commerce as a percentage of total retail, but dampened by low levels of online advertisement. The area that seems to have the greatest room for improvement is business-related online expenditure. Only 1 percent of Malaysian businesses advertise online, ranking the country in the bottom 10 percent of the 57 countries we ranked for the index.[191] The average Internet-enabled SME in Malaysia derives only 14 percent of its revenue from online advertising compared with 17 percent in the rest of the aspiring world.[192]

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184 World Bank, World Development Indicators, "Secure Internet servers, "data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).

185 Domain registration sites: www.eurodns.com/prices/domain-names-price-list/; www.united-domains.de/domain-registrieren/preisliste/?SESSID=50fcee01fa637a6b57e4f1712ef4a720; www.europeandomaincentre.com/pages/price-list; www.marcaria.com/register/countrypricesdom.asp?cont=all; and www.rwgusa.com/prices.htm

186 Internet ecosystem maturity index components: environment (existing Internet speed and penetration), engagement (usage of Internet by individuals, enterprises, and governments), expenditure (Internet spending such as e-commerce and online advertising).

187 Internet ecosystem foundations index components: financial capital (availability of financing for Internet and ICT companies), business environment (country's attractiveness to business due to regulatory and societal effects), infrastructure (penetration and quality of Internet-enabling infrastructure), human capital (education and research).

188 World Economic Forum, "Global information technology report, 2010–2011," Pyramid Research.

189 Lee Wei Lian, "Broadband penetration target for 2010 exceeded, says Muhyiddin," The Malaysian Insider, October 28, 2010.

190 World Economic Forum, "Global information technology report, 2010–2011."

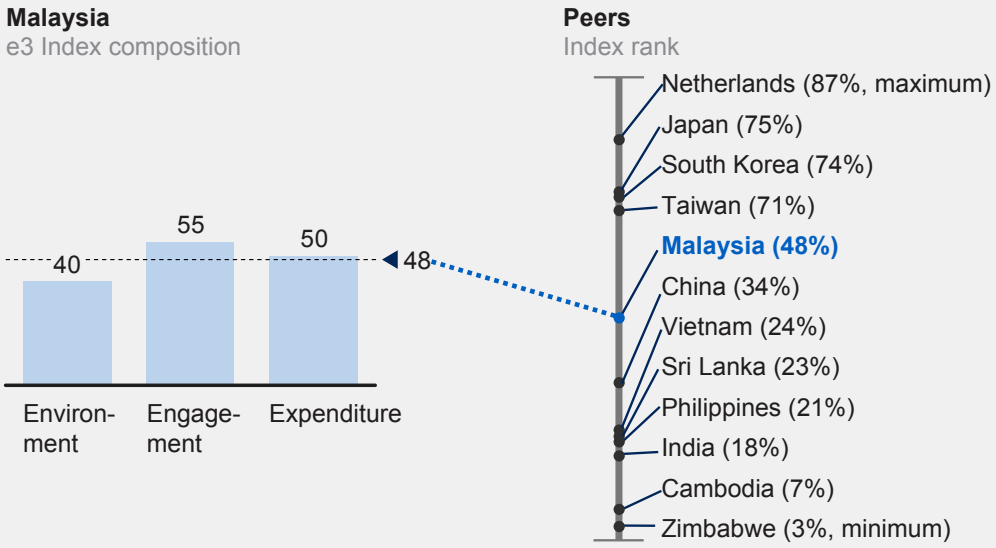
191 World Digital Media Trends.

192 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.

Exhibit 63

Malaysia's Internet ecosystem is more mature than that of other aspiring countries but lags behind that of developed countries

Percentile rank, 57-country set

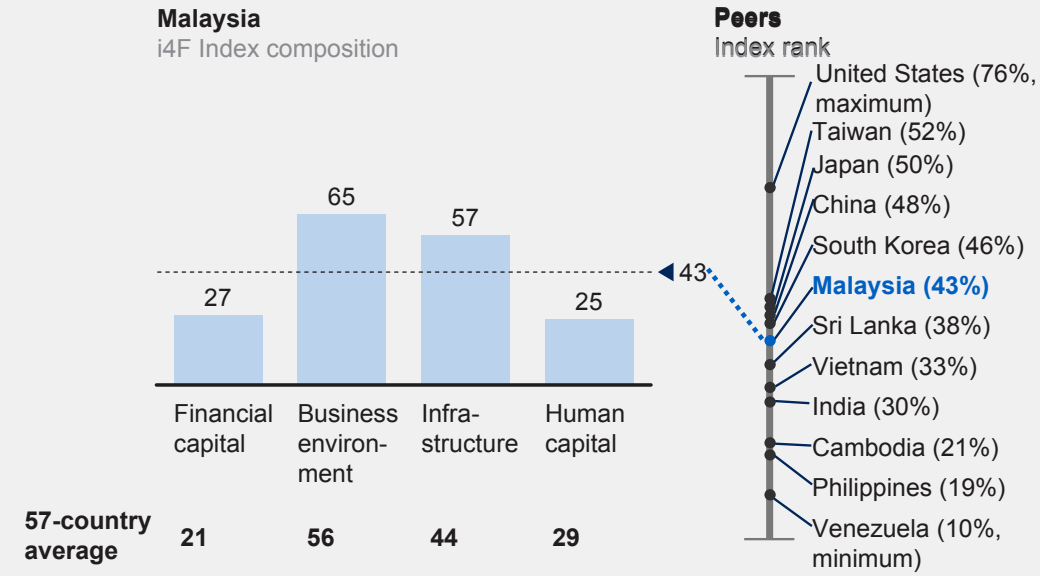


SOURCE: McKinsey analysis

Exhibit 64

There are opportunities to improve Malaysia's Internet ecosystem foundations

Score relative to maximum of 57-country set in each index variable



SOURCE: McKinsey analysis

There are opportunities to improve the prospects of Malaysia's Internet ecosystem foundations in the availability of financial capital and human capital (Exhibit 64). Malaysia's financial capital systems are constrained by the overall and per capita size of venture-capital investment. The country ranks below average in terms of deal volume across the 57 countries for which we created the index.[193] Malaysia's human capital could receive a boost from increasing R&D personnel per capita. In 2010, Malaysia had 505

193 Capital IQ.

R&D researchers per million people compared with 1,166 in fellow aspiring country Argentina and 5,615 in developed regional Asian counterpart Japan.[194] Even within the business environment ranking, an overall strength for Malaysia, additional improvement is achievable by reducing the overall burden of government regulations.[195]

User groups

Individuals. Use of the Internet in Malaysia is shifting away from more traditional forms in both the media and communications spaces. Malaysians with the greatest access to the Internet consume the most digital media (Exhibit 65). Plugging into social networks appears greater in Malaysia than in most other countries. Despite high growth in online consumption, room for continued gains by Internet-related technologies appears possible.

Malaysians now spend more time surfing the Internet than they spend consuming any other media, including watching television, listening to the radio, and reading newspapers. Malaysians in their 30s spend twice as long on the Internet than the next most popular media channel, television.[196] The greater the Internet technology provided, the more digital content is consumed. Those with mobile Internet consume nearly nine times as much digital media as non-Internet users without a PC.[197]

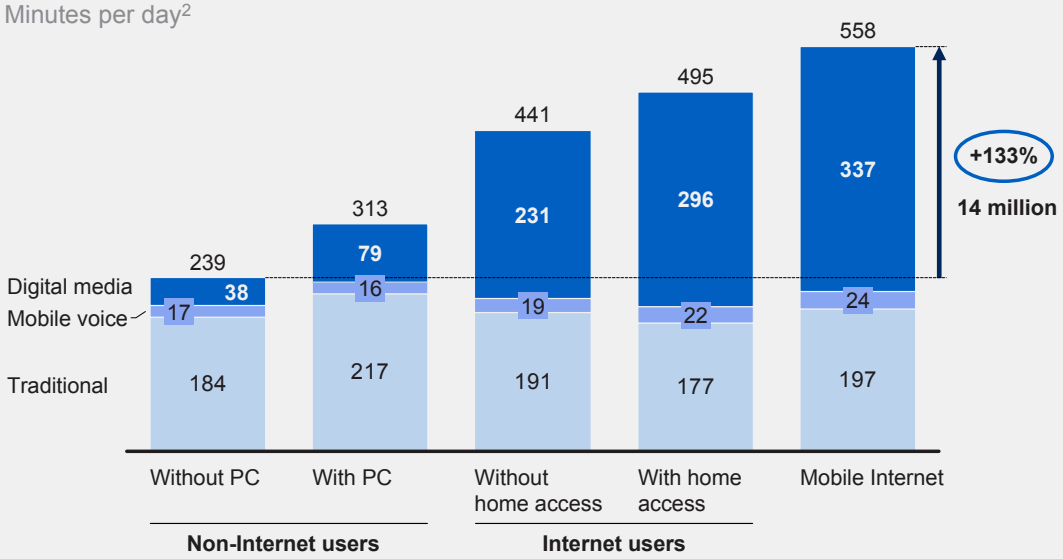
Despite increased consumption of digital media, Malaysians still spend the same amount of time on traditional media. As a result, Malaysians with Internet access spend up to 133 percent more time consuming media than individuals who do not have access to the Internet.[198]

Exhibit 65

Malaysian Internet users consume more media as a result of access to digital media[1]

Media time

Minutes per day[2]



NOTE: Numbers may not sum due to rounding
1 Digital media consumption includes PC, DVD/CD, mobile, and so on; traditional includes print, TV, landline radio.
2 Overlap in time spent can occur in situations when consumers use two media at the same time.

SOURCE: Firm digital consumer research; McKinsey analysis

194 IMD; World Bank, World Development Indicators, "Researchers in R&D (per million people)," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).
195 World Economic Forum, "Global competitiveness report," 2010–2011.
196 Nielsen, "The Malaysian digital consumer report 2011."
197 McKinsey digital consumer research.
198 Ibid.

Malaysia is one of the most saturated social network markets. One out of every three minutes spent online is on a social network (Exhibit 66).[199] Moreover, penetration of social networks is 91 percent. This is higher than the worldwide penetration of 70 percent and that of other Asian markets such as Hong Kong at 76 percent.[200]

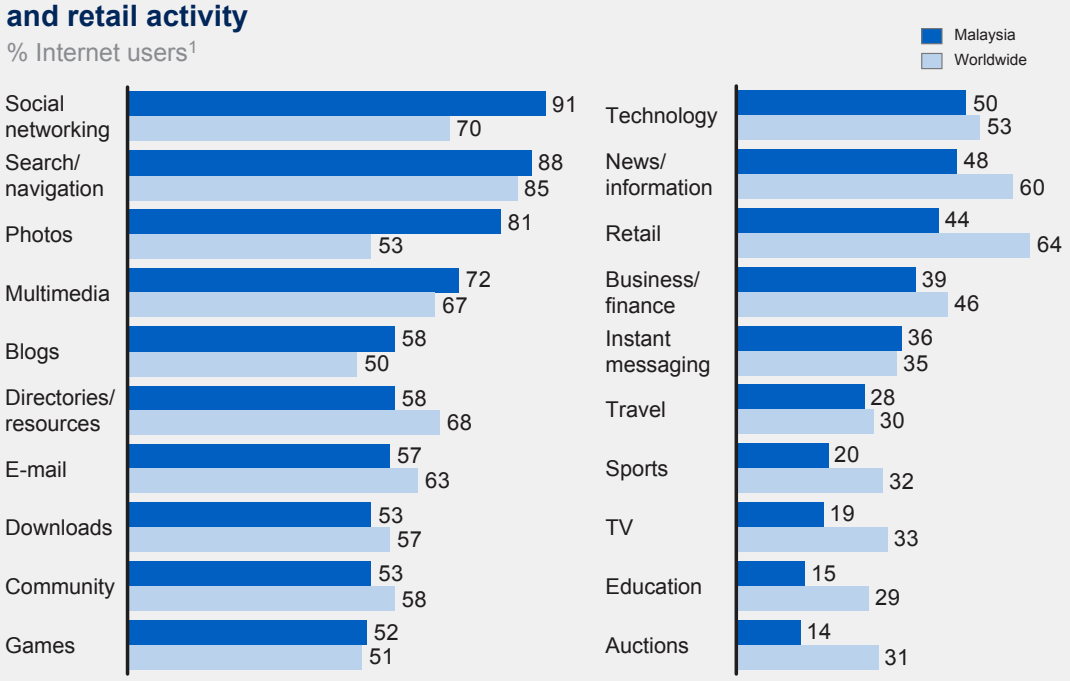
Additional growth of Internet-related consumption can come from two sources: higher usage or more use of higher-value activities. Malaysian Internet users spend less time online than peers in other Asian countries. Malaysian users spend 16 hours online per month compared with 17 hours in the Philippines, 23 hours in), Vietnam, and 22 hours in Singapore.[201] User penetration into news, financial services, retail, and other potentially high-value activities remains comparatively low.

To enable these higher-value activities, there needs to be a compelling Internet ecosystem. Malaysia has a tri-ethnic population composed of Malay, ethnic Chinese, and Indian populations. Development of online content and value-added activities, user-generated content, and local language content may spur more diversified online activities.

Exhibit 66

Malaysian users favor social networking over news and retail activity

% Internet users[1]



1 Internet audience ages 15+ accessing Internet from home or work.

SOURCE: comScore Media Metrix (Panel Only), December 2010; McKinsey analysis

Entrepreneurs. McKinsey built an ease of Internet entrepreneurship index based on three components: the ease of starting a new business; the ease of financing a new business; and Internet accessibility.[202] On this index, Malaysia ranks above many regional and aspiring counterparts in creating an easy entrepreneurial environment, but has room to grow when benchmarked against more developed countries. Areas of opportunity include reducing the cost of starting a business as well as the promotion of more financing opportunities. The current challenges within the Malaysian economy have not deterred all would-

199 ComScore, "Social networking accounts for one-third of all time spent online in Malaysia," October 2011.

200 ComScore, "State of the Internet with a focus on Southeast Asia," March 2011.

201 Ibid.

202 Ease of Internet entrepreneurship index components: ease of starting a new business (industry-agnostic view of the overall business ecosystem in a country); ease of financing a new business (availability and attractiveness of financing for ICT start-ups, as well as the cost of financing a new business); Internet accessibility (extent and cost of Internet access for both enterprises and their target consumers).

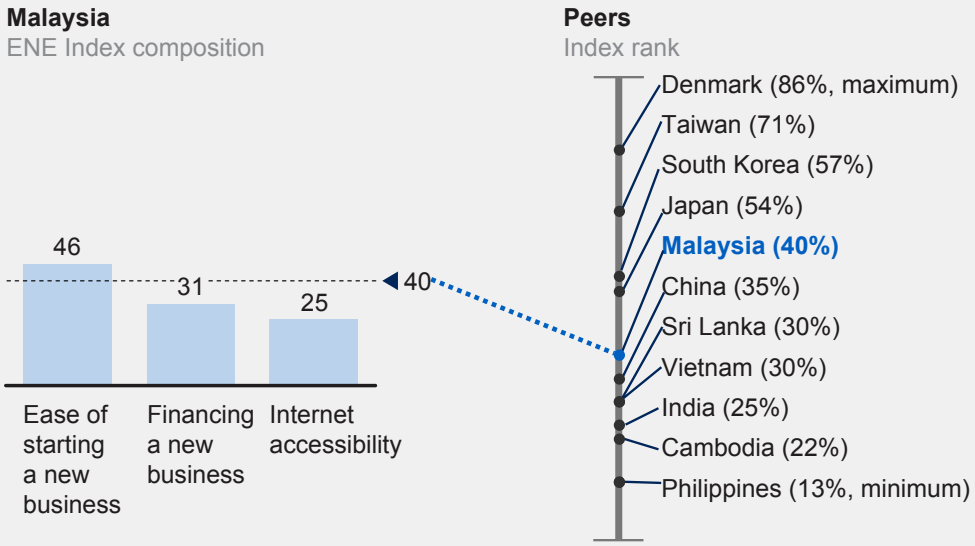
be investors, as many interesting start-up firms have emerged. (See Box 27, "Examples of innovative Malaysian start-ups (as of December 2011)" and Box 28, "Examples of innovative business models in Malaysia").

Starting a new business in Malaysia appears comparatively easy for several reasons, including the relatively short time it takes to set one up. Many factors still complicate the process, particularly the number of procedures needed to start a new business as well as the time necessary to enforce contracts. For instance, it takes 585 days on average to enforce a contract in Malaysia, but only 295 in Vietnam.[203] Financing a new business is hindered by several factors, including low private equity investments, few ICT start-ups being sold, and the high cost of starting a new business. In a survey of SMEs, the lever most often cited for improving entrepreneurship in Malaysia was reducing the cost of doing business.[204] Internet accessibility is depressed by costs associated with bandwidth and domain registration. Registering a domain in Malaysia in 2010 cost $143 compared with $29 in Mexico and $24 in the United States.[205] To spark more entrepreneurship, factors within each category can be improved (Exhibit 67).

Exhibit 67

Internet accessibility and finance hinder entrepreneurs in Malaysia

Percentile rank, 57-country set



SOURCE: McKinsey analysis

The Malaysian government continues to support the development of the ICT industry, including Internet entrepreneurs. Mavcap, the nation's largest venture capital firm, was founded in 2001 with public funds with an explicit mission to "empower entrepreneurs to create wealth."[206] It "commonly invests for a period of five to eight years in seed, start-ups, and early-stage companies."[207] Among Internet start-ups, the adaptation of existing models, such as group buying Web sites, is common. For example, there are currently more than 70 group buying Web sites.[208]

203 World Bank, World Development Indicators, "Start-up procedures to register a business (number)," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).

204 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.

205 Lowest found based on five different sources: www.eurodns.com/prices/domain-names-price-list/; www.united-domains.de/domain-registrieren/preisliste/?SESSID=50fcee01fa637a6b57e4f1712ef4a720;; www.europeandomaincentre.com/pages/price-list; www.marcaria.com/register/countrypricesdom.asp?cont=all; and www.rwgusa.com/prices.htm (accessed December 1, 2011).

206 Mavcap, www.mavcap.com/about.php (accessed December 1, 2011).

207 Ibid.

208 Dealshelve, 2011.

Box 27. Examples of innovative Malaysian start-ups (as of December 2011)

- **Cari.** One of the first Malaysian search engines and one of the country's most popular forum and discussion platforms. Cari aims to provide current, easy-to-find, and Malaysia-focused content.
- **Terato Tech.** A smartphone application development company that has MSC status from the National ICT Initiative. Winner of the Asia Pacific ICT award for best start-up in Malaysia. The company develops smartphone applications for consumers as well as Internet enterprise solutions.
- **Nuffnang and Advertlets.** Two local start-ups competing in the blog advertising space. They have a network of blogs through which they publish ads. They are expanding beyond the Malaysia and Singapore market to other countries in the Asia Pacific region.

Box 28. Examples of innovative business models in Malaysia

- **Blog shops.** Individuals use blogging platforms to sell products. This represents a popular form of C2C e-commerce. Users take pictures of their products and post them on sites such as blogspot or shoppy.com.my. Buyers and sellers can complete transactions online or offline through credit card payments or bank transfers.
- **Sophisticated online translation software.** Software from companies such as Asiaonline.com translate content from pages such as Wikipedia into Malay and other less common languages, giving Malaysian Internet users access to broader online content.

Enterprises. Similar to other aspiring countries, the use of Internet technologies in Malaysia differs between large enterprises and SMEs. Large, experienced enterprises appear to be reaping rewards by using Web technologies. Broadband penetration across the SME sector is low, yet SMEs using the Internet are witnessing productivity and profitability gains. Understanding the benefits achievable for SMEs using Web technologies, the Malaysian government has created a series of initiatives to promote their use.

Large enterprises and multinationals are generally situated in Malaysia's economic hubs and attempt to benefit from Web technologies by employing similar solutions across multiple regions. Large enterprises, particularly those in e-commerce, are also leveraging the ubiquity of social network usage among Malaysian Internet users in their marketing strategies (see Box 29, "Air Asia leverages social networking as a marketing strategy").

Box 29. Air Asia leverages social networking as a marketing strategy

Budget airline Air Asia has been one of the leading innovators in leveraging social networking platforms. The Malaysian airline sells tickets exclusively through online channels and uses sites such as Facebook and Twitter to promote deals, announce information on new airline routes, host contests, and blog about travel-related stories. As of November 2011, Air Asia had more than 1.2 million fans on its Facebook page and 250,000 followers on Twitter.

Air Asia's social media marketing strategy has been a contributor to its success. As part of its "Mind-Blowing Fare" campaign, Air Asia sold more than 500,000 tickets in 24 hours, setting a world record. Social media has been a core part of this and other Air Asia marketing strategies because it is a cost-effective way to target its audience.

By contrast, SMEs situated throughout Malaysia have yet to leverage the full benefit of the Internet.[209] Only 20 percent of Malaysian SMEs use IT extensively in their daily operations.[210] In 2010, broadband penetration among businesses was only 33 percent, approximately the same level as Vietnam, despite significant differences in per capita GDP.[211] Even within those businesses with broadband, the average Malaysian SME provided 69 percent of its employees with access to broadband while counterparts in Vietnam provide similar access to 76 percent of employees.[212]

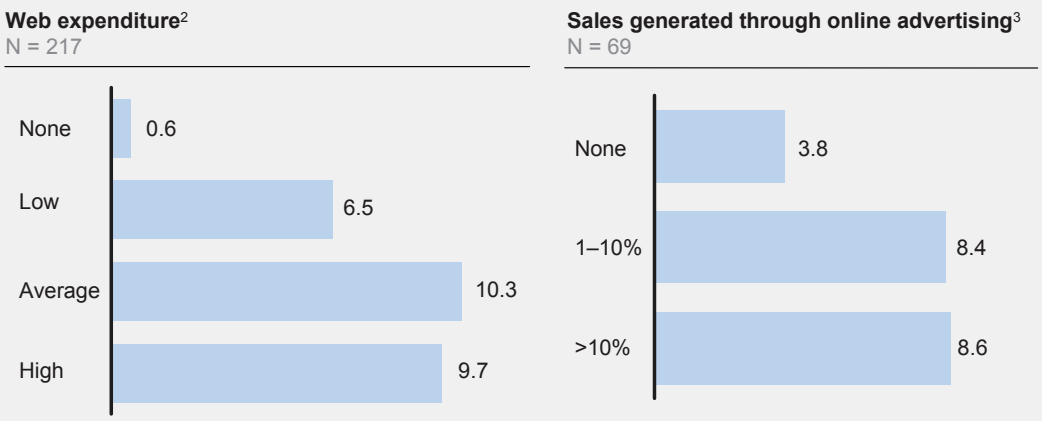
Those SMEs leveraging Web technologies have observed many benefits (Exhibit 68). SMEs in Malaysia report productivity gains of 13 percent attributable to Web technologies.[213] The average Malaysian SME also believes Web technologies have enabled revenue to increase by 9 percent and reduce the cost of goods sold by 7 percent.[214] These benefits also spur growth because increased Web expenditures and reliance on online advertisement positively correlate with growth.

Exhibit 68

High growth in Malaysia has a positive correlation with Web spending and online sales generation

Stated growth[1]

%



1 Excludes all respondents who did not know the growth rate of their company.
2 Low Web expenditure is less than 10 percent of total expenses. Average is 11–30 percent of total expenses. High is greater than 30 percent of total expenses. "What percentage of your expenses are digital, i.e., linked to Web technologies (electronic messaging, intranet, extranet, WiFi, Web sites, Web 2.0 tools, servers/routers, Web connection for employees, Enterprise Resources Planning (ERP), e-commerce, e-marketing, e-supply chain)?" Excludes "I don't know" responses.
3 "What percent of your revenues are driven by ONLINE advertising? 2010 (projected). Excludes "I don't know" responses.

SOURCE: 2011 McKinsey survey of 311 SMEs in Malaysia; McKinsey analysis

The government has created initiatives to boost SME usage of the Internet. For instance, the International Trade and Industry Ministry, Google, Multimedia University, and Universiti Tunku Abdul Rahman jointly launched a business stimulus initiative that enables students to design and build Web sites for SMEs and educates them on maintaining sites.

Government. The Malaysian government has promoted consumption by providing rural students with broadband-enabled laptops, entrepreneurship by facilitating the flow of seed money to entrepreneurs, and in promoting broadband access helped SMEs as well. As measured by the United Nations' E-government

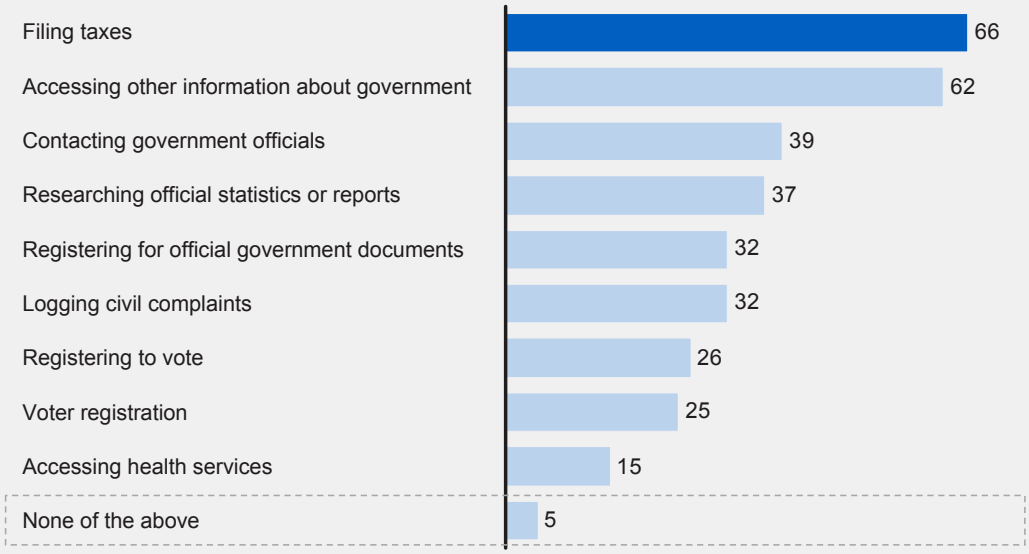
209 J. Hashim, "Information communication technology (ICT) adoption among SME owners in Malaysia," *International Journal of Business and Information*, Volume 2, Number 2, December 2007. M. A. Burhanuddin et al., "Barriers and challenges for technology transfer in Malaysian small and medium industries," International Conference on Information Management and Engineering, Kuala Lumpur, April 3–5, 2009.
210 Syed Shah Alam and M. Noor, "ICT adoption in small and medium enterprises," *International Journal of Business and Management,* Volume 4, Issue 2, February 2009.
211 Pyramid Research, 2010.
212 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.
213 Ibid.
214 Ibid.

Development Index, Malaysi a ranks second to Singapore in Southeast Asia for e-government services offered. This metric measures a government's use of technology to include citizens in the government decision-making processes.[215] Filing taxes seems to be the most used e-government service (Exhibit 69). However, there remains much room for growth in the sophistication of e-government services provided, and their adoption for uses as varied as health and education.

Exhibit 69

Filing taxes is the most popular e-government service in Malaysia

% of respondents using each e-government online service in the last year.
Sample size for Malaysia = 311



SOURCE: 2011 McKinsey survey of 311 SMEs in Malaysia; McKinsey analysis

Malaysia's government portal, www.malaysia.gov.my, provides links to a wide range of government-related information and services. During the most recent economic crisis Malaysia was able to leverage the Internet to provide relevant information on the government's response to the economic situation. The Rangsangan Ekonomi Malaysia Web site provided transparency about government actions by detailing stimulus spending plans with graphs, downloads, and an RSS Web feed.[216] Additional examples include the Electronic Labour Exchange, a portal for labor market information, and MyKad, an identity card for Malaysian citizens with smart card capabilities, including electronic payments and access to government services.[217]

Path forward

Malaysia is a country with great potential. Malaysia was identified as an aspiring country because it displays a strong set of fundamentals while also exhibiting the potential for growth: nominal 2010 GDP exceeded $230 billion; GDP growth from 2005 to 2010 was 12 percent; and 2010 per capita GDP was more than $8,400.[218] Malaysia's aspires to a GDP growth rate of 5 to 6 percent per year over the next ten years, partly by continuing to build on its strength in national resources, and partly by further diversifying the economy by expanding services and stimulating domestic demand. Malaysia also has favorable characteristics for continued Internet-driven growth, including strong consumer demand for Web technologies, relatively high legal protection for the e-consumer, and relatively small constraints to starting a new business.

215 United Nations, "e-Government survey, 2010."
216 Ibid.
217 MSC Malaysia, "More with MyKad," www.mscmalaysica.my/topic/more+with+mykad (accessed December 1, 2011).
218 IMF, World Economic Outlook Database, "National Accounts Table," 2010.

Two relative sources of macroeconomic strength that Malaysia can leverage for Internet ecosystem development are its natural resources and its trade sector (see Box 30, "Aspiring countries can draw on their strengths to drive Internet ecosystem growth," for a summary of five macroeconomic strengths across aspiring countries). Malaysia's resources and strength in trade are tied together—a strong resource base in petroleum, rubber, and plastics spearheads its trade. Moreover, Malaysia's macroeconomic strength in trade is poised to continue adding value to the Malaysian Internet ecosystem. Malaysian exports grew 26 percent from 2009 to 2010, with growth in the export of natural resources leading the way.[219]

Box 30. Aspiring countries can draw on their strengths to drive Internet ecosystem growth

We have identified five macroeconomic strengths that aspiring countries can leverage to drive Internet ecosystem growth. These strengths are not mutually exclusive, but they apply in varying degrees to each aspiring country. For a broader discussion of these strengths and a comparison of our 57-country set along them, see chapter 3.

- **"Resource-rich"** countries' economies are disproportionately dependent on exploiting highly profitable natural resources (e.g., oil, natural gas), giving them large sums of money to invest.
- **"Hub-of-trade"** countries' economies are driven by exports of goods and services. Local enterprises, or multinationals with local branches, have developed expertise in supply chain and international trade.
- **"Innovation-potential"** countries have large investments in R&D. They benefit from large pools of highly educated and creative individuals developing new products.
- **"Strong-local-consumption"** countries' economies are heavily reliant on domestic consumption. Furthermore, imports are low, meaning that most goods and services consumed are provided by local businesses.
- **"Strong-SME-sector"** countries have an SME sector that is a dominant force in the economy, e.g., SMEs employ a majority of the workforce.

One growth strategy that is possible because of Malaysia's strong export economy is converting profits made through international trade to investment in the domestic economy. This may be imperative if Malaysia is to overcome today's main barriers to achieving developed-world levels of Internet consumption. Constraints to Malaysia's growth that could be overcome by capturing export-related rents for investment include increasing the current levels of Internet-related infrastructure, domestic research and development personnel, and access to financial capital.

Malaysia can also enhance its Internet-related consumption by pursuing initiatives that mitigate the high costs of doing business and encourage small businesses to pursue online activity. From high domain registration cost, to the long time it takes to enforce contracts, entrepreneurs are faced with greater challenges than many of their counterparts around the world. Moreover, small businesses are not using Web technologies despite likely advantages. Malaysian SMEs spend significantly less on online advertising than SMEs in other aspiring countries.

Overall, Malaysia has many of the building blocks for a robust Internet ecosystem including strong consumer demand for Web technologies, growing e-commerce activity, an export industry to leverage, and a multitude of initiatives aimed to improve the ecosystem. With key constraints to a robust Internet ecosystem resolved, Malaysia should be well on its way to further leveraging the Internet for greater economic impact.

219 International Trade Centre, "Trade Map," www.trademap.org (accessed December 1, 2011).

Country profiles
Mexico

Mexico is a large economy with a young, urban consumer base. Demographics that favor the adoption of the Internet coupled with increased competition in the telecommunications industry suggest that Mexico could be on the verge of a technological boom. With the Internet contributing just 1 percent to Mexico's GDP today, Mexico falls within the middle of the range of aspiring countries on economic impact from the Internet. Opportunities for growth in Internet impact appear achievable and possibly imminent. Reduced costs of Internet access and increased usage are forecast through 2015.

Obstacles to a strong Internet ecosystem remain. Mexico's Internet infrastructure, business engagement, and financial systems appear limited. Bandwidth speeds in Mexico are significantly slower than they are in regional counterparts. Mexico has 1.5 percent the amount of secure Internet servers per capita as the United States.[220] In addition, only 3 percent of Mexican businesses advertise online.[221] Only 8 percent maintain a Web site.[222]

Yet, forecasts are optimistic that these obstacles can be overcome. Consumer demand for Internet technologies is expected to continue grow. For instance, 3G subscriptions are seen growing from 23 percent of all mobile subscriptions today to 57 percent by 2015.[223] Additionally, mobile commerce is anticipated to grow at 41 percent per year, potentially jump-starting Mexico's e-commerce and telecommunications activity. The future of SME adoption of Web technologies appears bright. SMEs anticipate large future gains from the Internet. Mexican SMEs believe they will capture 1.6 times more revenue increases and cost reductions from the Internet than SMEs in other aspiring countries.[224]

The Mexican government has promoted the Internet through its e-government offerings and the stance that it has taken on access costs—87 percent of Mexican respondents to McKinsey's SME survey stated that they used some e-government services compared with 76 percent in the rest of the aspiring world.[225] Furthermore, the government is working to address high Internet access costs.[226]

Country overview

Mexico is a large, growing economy with a mostly young, urban consumer base. Mexico enjoys the largest GDP among the aspiring countries on which we focused. Its $9,500 per capita GDP is comparable with other emerging Latin American economies.[227] Mexico's economy grew more than 5 percent in 2010.[228] The average age in Mexico is 27, with more than half of the population under 30.[229] Seventy-eight percent of Mexico's population lives in urban areas, with that figure expected to rise through 2015.[230]

220 World Bank, World Development Indicators, "Secure Internet servers," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).
221 World Digital Media Trends.
222 UNCTAD.
223 TeleGeography.
224 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.
225 Ibid. McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.
226 Economist Intelligence Unit, "Mexico: Telecoms and technology report," September 2011.
227 IMF World Economic Outlook National Accounts Table; nominal per capita GDP in 2010.
228 Economist Intelligence Unit, "Mexico," September 2011.
229 *CIA World Factbook*, 2011.
230 United Nations Statistics Division, Indicators on Human Settlements http://unstats.un.org/unsd/demographic/products/socind/hum-sets.htm.

Mexico is also the 15th-largest exporter in the world.[231] Assisted by open trade agreements, particularly the North American Free Trade Agreement (NAFTA), more than 80 percent of Mexico's exports are sent to regional partners.[232] Among these partners, Mexico's relationship with the United States dominates: more than 70 percent of Mexico's total exports are sent to the United States.[233]

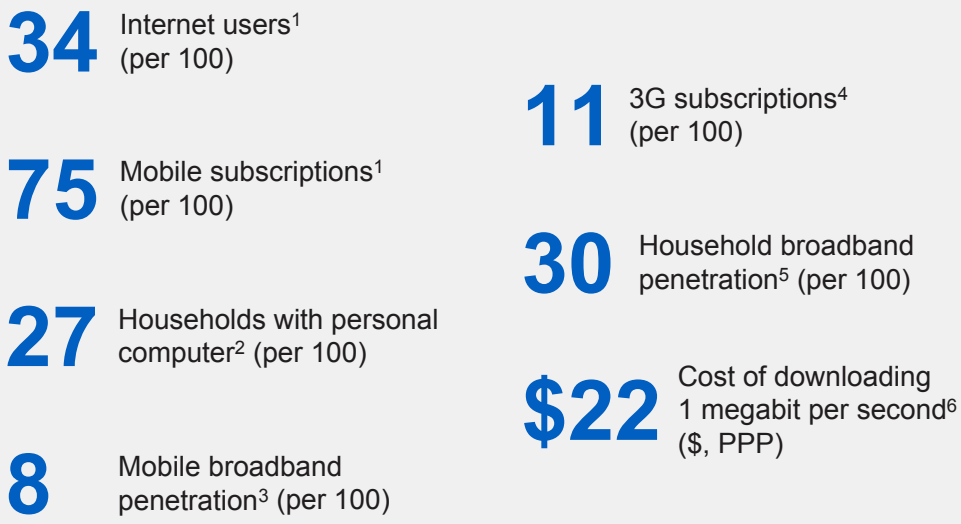
Compared with other aspiring countries, broadband and communication consumption has been relatively low (Exhibit 70). Turkey has five times the wireless broadband penetration rate of Mexico, and Hungary has twice the fixed broadband penetration rate.[234] In 2009, Mexico had only 75 mobile subscriptions per 100 people, compared with 89 across the rest of Latin America and 129 in Argentina.[235]

Internet and telecommunications adoption to date have been limited by income inequality, relatively weak underlying infrastructure, and high cost of access.[236] Mexico's Gini index, which measures the distribution of income in a country and indicates perfect equality with a score of zero, is much greater than that measured in regional and aspiring counterparts. The Gini index in Mexico in 2008 was 52, compared with 46 in Argentina in 2009, 38 in Vietnam in 2008, and 31 in Hungary in 2007.[237]

When asked "How would you assess general infrastructure (e.g., transport, telephony, and energy) in your country? [1 = extremely underdeveloped; 7 = extensive and efficient by international standards]," Mexicans scored their country at 3.3, compared with 3.9 in Brazil, 4.1 in Chile, and 4.7 in Taiwan.[238] This constraint is likely to be most pronounced in rural areas and consequently affects Internet penetration greatest in these areas.

Exhibit 70

Mexico's Internet landscape statistics



1 EIU Telecoms and Technology Report data for 2010, published in September 2011.
2 WEF, Global Information Technology Report 2010–2011. Data for 2009.
3 ITU World Telecommunication/ICT Indicators database as provided by Wireless Intelligence, 2010.
4 World Cellular Information Service, December 2011.
5 Pyramid Research, 2010.
6 Cost of 1 megabit per second Speedtest.net pulled in November 2011; PPP adjustment to $ using World Bank 2010 conversion rate.

SOURCE: McKinsey analysis

231 *CIA World Factbook,* 2011.
232 Ibid.
233 Ibid.
234 OECD Directorate for Science, Technology, and Industry, Broadband Portal, 2011.
235 World Bank.
236 Economist Intelligence Unit, "Mexico: Telecoms and technology report," September 2011; expert interviews.
237 World Bank, World Development Indicators, "Gini index," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).
238 World Economic Forum, "Global competitiveness report, 2010–2011."

The high cost of access is the third factor affecting Internet adoption, in both the fixed and mobile spaces. The recent entrance of new players into the Mexican telecommunications market, however, has started to put downward pressure on prices, while boosting broadband access.[239] Recent auctions of the country's 3G+ spectrum may also drive down the cost of access.[240]

The future for Web and communications technologies appears bright in Mexico. By 2015, 3G subscriptions are predicted to grow from 23 percent of all mobile subscriptions to 57 percent.[241] Additionally, by 2015, almost 60 percent of Mexican households are predicted to have broadband connections, up from 37 percent in 2010.[242]

Impact of the Internet

To measure the economic impact of the Internet, we have constructed the iGDP Index that measures the contribution of the Internet to a country's GDP. We have also separately measured a country's e-commerce platform, because it plays a seminal role for consumers and retailers alike in a country's Internet ecosystem. The e-commerce platform index (eCP) assesses the health of a country's e-commerce ecosystem.

- **iGDP.** Using the expenditure method, the contribution of the Internet is measured as the proportion of GDP that can be attributed to the Internet in private consumption, public expenditure, private expenditure, and trade.[243] This measure is ICT-related, as it aggregates the expenditure on all goods and services that are related to the Internet, from devices to access, the consumption of hardware and online consumption.

- **eCP.** The e-commerce platform demonstrates e-commerce enablement by scoring a country's online payment enablement, parcel delivery systems, and Internet readiness.[244]

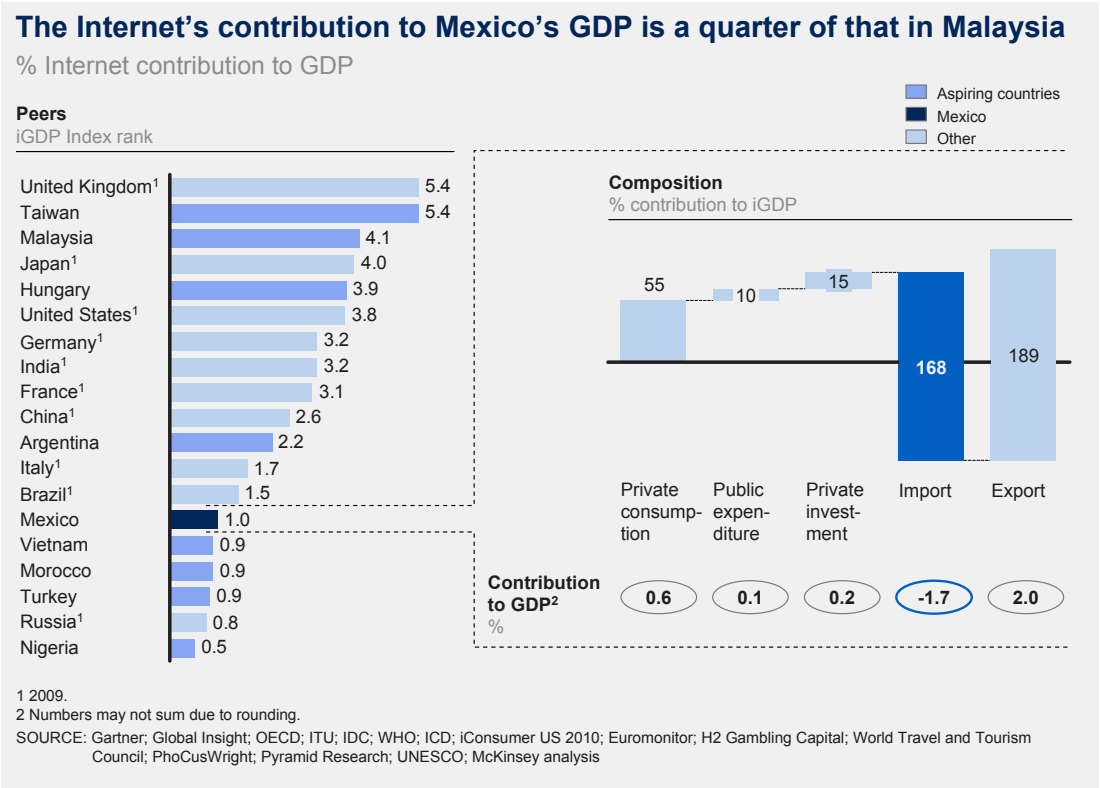
The economic impact of the Internet in Mexico falls within the middle of the range of our sample of aspiring countries. The Internet's contribution to GDP in Mexico is twice the contribution made in Nigeria, but less than 25 percent of the contribution made in Malaysia (Exhibit 71). Private consumption and exports drive Mexico's Internet contribution to GDP, but imports weigh down the overall contribution. The Internet contributes 1 percent to Mexico's GDP. Private consumption accounts for 55 percent of this contribution, while a positive ICT-related trade balance accounts for an additional 21 percent of the total contribution to the economy. Despite the positive impact made by technological imports on society, Internet penetration, and elsewhere, imports negatively affect the Internet's economic impact on Mexico. The Internet's contribution to Mexico's GDP is also apparently under-indexed on private consumption. Mexico's most imported category of goods is electrical equipment, including ICT-related goods.[245] Private consumption across all aspiring countries accounts for 70 percent of overall Internet contribution to GDP. Contribution of private consumption to Mexico's iGDP may return to this average in the coming years if projections for mobile and broadband access come to fruition.

Internet-related private consumption can grow by promoting greater levels of B2C e-commerce. Despite recent growth, B2C e-commerce accounts for only 4 percent of total e-commerce in Mexico, compared

239 Economist Intelligence Unit, "Mexico: Telecoms and technology report," September 2011; expert interviews.
240 Economist Intelligence Unit, "Mexico: Telecoms and technology report," September 2011.
241 TeleGeography.
242 Pyramid Research, Mexico Profile 3Q2011.
243 Internet contribution to GDP index components: private consumption (total consumption of goods and services by consumers via the Internet, or consumers' costs to obtain Internet access); private investment (private-sector investment in Internet-related technologies); public expenditure (public expenditure on Internet is estimated by adding government, public health care, and public education expenditures on the Internet); trade balance (exports of Internet-related goods and services, plus B2C and B2B e-commerce, net of all associated Internet-related imports).
244 E-commerce platform index components: online payment enablement (number of financial cards in circulation, volume of cashless payments, legal protection provided to the e-consumer); parcel delivery (reliability of postal system, cost of domestic shipping, percent of a population with delivery to their homes); Internet readiness (volume of secure servers, Internet penetration, domain registration cost).
245 International Trade Centre, "Trade Map," www.trademap.org (accessed December 1, 2011).

with 20 percent in Brazil and 23 percent in Argentina.[246] Promotion of B2C in Mexico may be achievable by increasing consumer online payment enablement while leveraging strong parcel delivery systems and a relatively Internet-ready population.

Exhibit 71



1 2009.
2 Numbers may not sum due to rounding.
SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; World Travel and Tourism Council; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

B2C e-commerce activity grew by 46 percent per year from 2005 to 2010, partly fueled by Internet-related private consumptions.[247] Continued growth of B2C appears achievable by increasing the Mexican consumer's ability to engage in the e-commerce marketplace. In particular, Mexico has the opportunity to increase consumers' ability to use online payment systems.

Online payment enablement, or the ability of consumers to purchase online, is a key hurdle to e-commerce in Mexico (Exhibit 72). Mexico has fewer financial cards in circulation than aspiring peers and low levels of legal protection for the e-consumer. The average consumer in Mexico has one financial card, compared with consumers in Brazil who have an average of three and US consumers who have an average of seven.[248] Consumers surveyed on the existence of legal protection for the e-consumer in Mexico [1 being nonexistent protection, 7 being a well-developed legal system] scored the country at 3.9, on a par with countries such as Vietnam, but lower than Brazil (4.5) and the United States (5.4).[249]

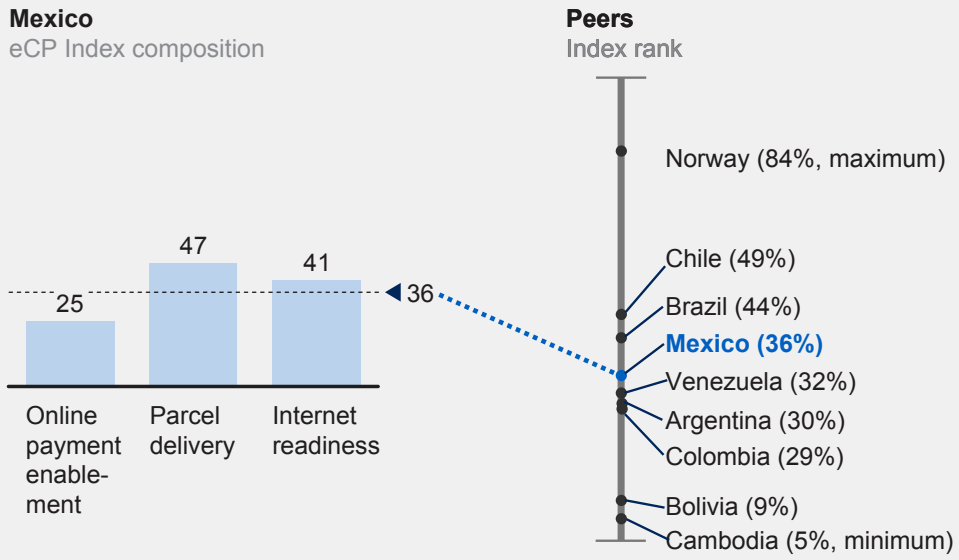
Parcel delivery and Internet readiness are strengths that Mexico can leverage, but each has subcomponents that can be improved. The cost of domestic shipping in Mexico was in the top quartile of all countries studied, though many consumers are unable to have goods shipped directly to their homes. With regard to Internet readiness, Mexico benefits from low domain registration costs but is limited by a below-average stock of secure Internet servers per capita, which may be overcome by efficient use of cloud-based services.

246 IDC.
247 IDC.
248 IMD, World Competitiveness Online.
249 World Economic Forum, "Global information technology report, 2010–2011."

Exhibit 72

Payment options constrain online purchasing in Mexico

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Internet ecosystem

To assess the health of a country's Internet ecosystem, we constructed two indexes:

- The Internet ecosystem maturity index (e3) measures the current maturity of an Internet ecosystem according to three major drivers: environment, engagement, and expenditure.[250]
- The Internet ecosystem foundations index (i4F) measures the strength of Internet foundations— i.e., the preconditions for future growth—along the four dimensions of financial capital, business environment, infrastructure, and human capital.[251]

Mexico's current Internet ecosystem lags behind those of major Latin American peers partly due to low digital accessibility and business expenditure on Internet-related goods (Exhibit 73). Ranked against a set of 57 countries, both aspiring and developed, Mexico's Internet ecosystem is below average. Improvement is possible in the Internet environment Mexico creates as well as the level of engagement and expenditure observed across consumers and business.

The Internet environment in Mexico is ranked below the average in other countries because of low levels of accessibility to digital content and low bandwidth speeds. When surveyed on the accessibility of digital content, Mexicans scored the country at 4.5 (on a scale to 7), compared with 4.9 in Brazil, 5.2 in Chile, and 5.5 in aspiring, counterpart Malaysia.[252] Mexican bandwidth speeds averaged 3.1 Mb/second when tested, seven times slower than those tested in Argentina and 13 times slower than those tested in Chile.

250 Internet ecosystem maturity index components: environment (existing Internet speed and penetration); engagement (usage of Internet by individuals, enterprises, and governments); expenditure (Internet spending such as e-commerce and online advertising).

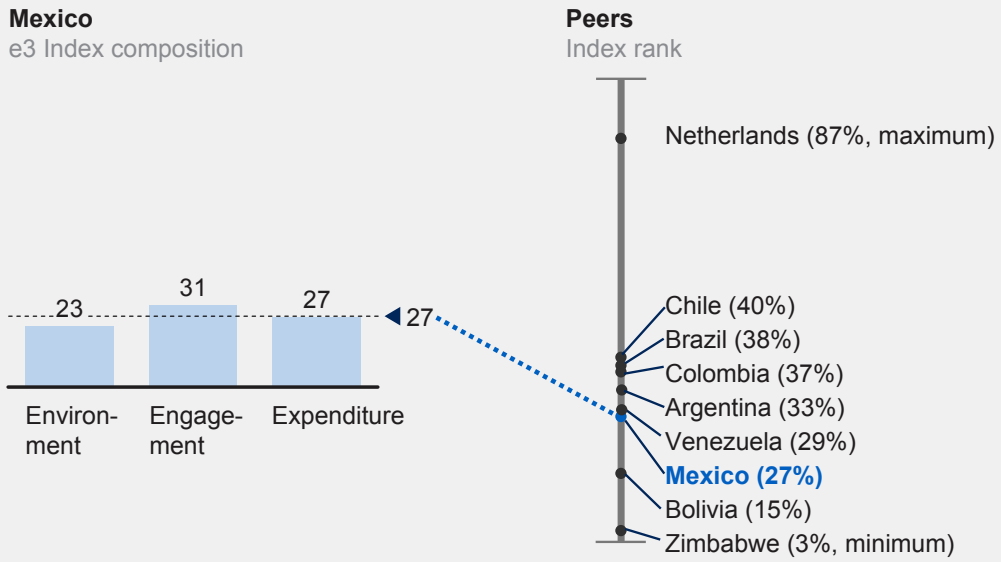
251 Internet ecosystem foundations index components: financial capital (availability of financing for Internet and ICT companies); business environment (country's attractiveness to business due to regulatory and societal effects); infrastructure (penetration and quality of Internet-enabling infrastructure); human capital (education and research).

252 World Economic Forum, "Global information technology report, 2010–2011."

Exhibit 73

Mexico's Internet ecosystem lags behind major peers in Latin America

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Current indicators for growth potential suggest Mexico has significant opportunities to create better preconditions for a thriving Internet ecosystem. Mexican businesses have lower access to financial and human capital than counterparts in other countries. Increased penetration of mobile and broadband created by the expansion of services into rural areas as well as greater competitiveness in these markets should increase consumer and business engagement with the Internet. With more users online, businesses may follow suit. Increased usage, coupled with investments in infrastructure and R&D personnel, could help create a more bullish outlook on Internet ecosystem development.

Engagement could also be improved across Mexican user groups. Mobile and broadband penetration rates are low among individuals, and few businesses have Web sites. The changes to mobile and broadband markets that we have mentioned will assist in increasing penetration and helping Mexico achieve its potential. Increased broadband penetration may even spur more businesses to create Web sites. However, only 8 percent of Mexican businesses currently have Web sites, placing Mexico well below most peer aspiring countries.[253]

The expenditure score, reflecting total expenditure made for Internet-related goods across consumers and businesses, lags behind because few businesses advertise online while retail purchasers are nearly completely offline. Roughly 3 percent of businesses in Mexico advertise online, less than half the proportion that does so in Argentina and less than a fifth the share that does so in Brazil.[254] Similarly, only 0.5 percent of total retail in Mexico is carried out online.[255]

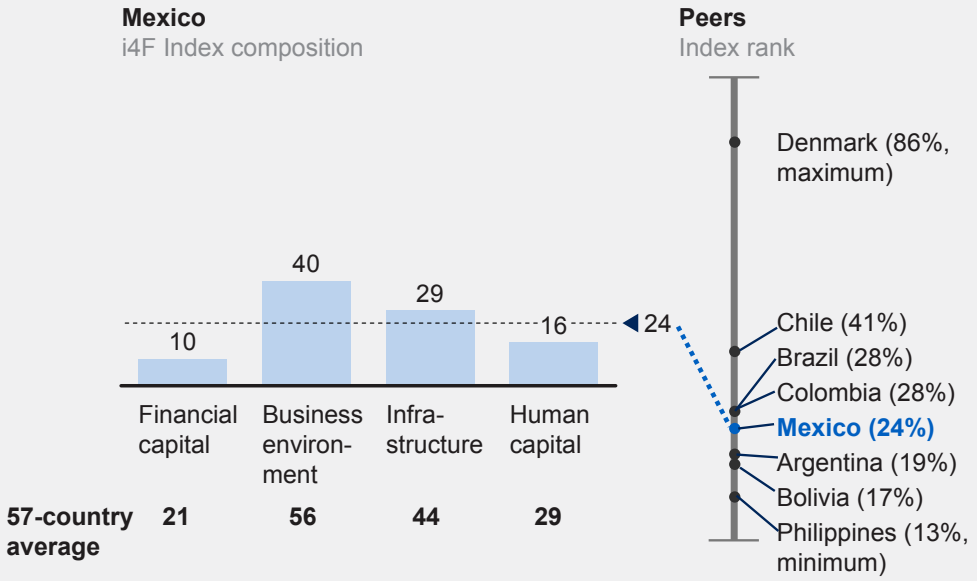
Despite high potential, the foundations of Mexico's Internet ecosystem lag behind those of regional peers Chile and Brazil, but exceed those of Argentina (Exhibit 74). The reasons for this include low access to financial capital, a constrained business environment, limited Internet-related infrastructure, and low levels of human capital. Increasing these prospects can help ensure the growth of the Internet's impact on Mexico's economy.

253 United Nations Council on Trade and Development, "Information Economy Report," 2010.
254 World Digital Media Trends.
255 Euromonitor.

Exhibit 74

There are opportunities to improve Mexico's Internet foundations

Score relative to maximum of 57-country set in each index variable



SOURCE: McKinsey analysis

There are several opportunities to improve the growth prospects of Mexico's Internet ecosystem foundations. Improving venture capital availability and the ease of access to loans would make financial capital less of a constraint for Mexico. This issue is trenchant. For example, when asked "How easy is it to obtain a bank loan in your country with only a good business plan and no collateral? [1 = very difficult; 7 = very easy]," Mexicans scored their country at 2.4, compared with 2.8 in Brazil, and 3.7 in Chile.[256]

Opportunities to enhance the business environment include creating greater capacity for innovation as well as reducing the burden created by some government regulations.[257] Innovation improvement could be accomplished in part by improved human capital, which is held back by low investments in R&D. Mexico ranks in the bottom decile of our 57-country sample with regard to the number of researchers in per capita R&D.[258]

Potential improvements in infrastructure include more broadband coverage and secure Internet server stock. Mexico has 21 secure Internet servers per million people, which is roughly at par with Argentina but half the rate of Brazil and 1.5 percent of the rate in the United States.[259] Mexico may have opportunity to circumvent some of these current shortcomings. For example, mobile Internet, perhaps 4G, can provide quicker high-quality access to rural Mexicans.

User groups

Individuals. The Mexican consumer base is composed of demographics that are generally favorable to Internet consumption. However, current consumption of many Web technologies is still low because of the

256 World Economic Forum, "Global competitiveness report, 2010–2011."

257 World Economic Forum, "Global competitiveness report, 2010–2011": "In your country, how do companies obtain technology? [1 = exclusively from licensing or imitating foreign companies; 7 = by conducting formal research and pioneering their own new products and processes]"; World Economic Forum, "Global competitiveness report, 2010–2011": "How burdensome is it for businesses in your country to comply with governmental administrative requirements (e.g., permits, regulations, reporting)? [1 = extremely burdensome; 7 = not burdensome at all]."

258 World Bank, World Development Indicators, "Researchers in R&D (per million people)," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).

259 World Bank, World Development Indicators, "Secure Internet servers," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).

high cost of Internet access and a large digital divide. These constraints are reflected in e-commerce and online purchase activity. Mexican consumers who have overcome the constraints spend much of their time instant messaging, e-mailing, and social networking. Given likely industry changes, penetration is expected to grow rapidly through 2015.

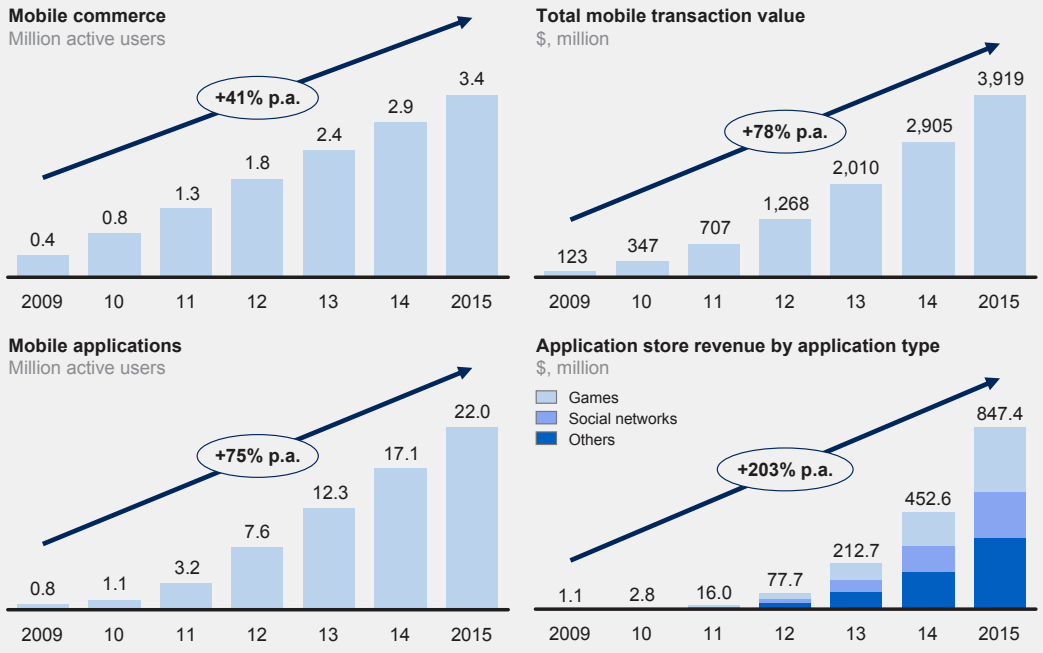
Nearly half of Mexicans surveyed cited the cost of equipment, Internet access, or mobile data plans as the primary constraint to Internet use.[260] Additionally, "only 3 percent of the smallest rural villages have public access to the Internet …11 percent of mid-sized rural localities have public Internet access … half (45.6 percent) of the large rural communities have public Internet access compared with 74.3 percent of larger communities."[261]

These constraints seem to trickle through to e-commerce and online purchase activity. As we have noted, B2C e-commerce as a share of total e-commerce is disproportionately low in Mexico compared with regional counterparts.[262] Few Mexican consumers have purchased products online, owing to the constraints that we have discussed and the mistrust of sharing personal financial information online. In fact, 47 percent of Mexican consumers interviewed by the Mexican Internet Association cited security as a barrier to performing online banking operations.[263]

Of consumers who do consume Internet technologies today, search, social networking, and communications technologies are particularly popular. As a share of time spent on the Internet, social networking has grown from 18 percent in December 2010 to 28 percent in June 2011. Instant messaging, e-mail, and social networking comprise more than half of Mexican users' time spent on the Internet. Entertainment sites are also growing significantly across Mexico; hours spent being entertained online is almost 20 percent higher in Mexico than in the rest of Latin American.[264]

Exhibit 75

Mobile penetration growth will also drive the consumption of new mobile applications and wireless services in Mexico



SOURCE: Yankee Group, September 2011; McKinsey analysis

260 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.

261 Geo-Mexico, "Access to services is worst in the smallest rural localities of Mexico," www.geo-mexico.com/?p=4128 (accessed December 1, 2011).

262 IDC.

263 AMIPCI Asociación Mexicana de Internet, Banca Electronica 2011.

264 ComScore, "State of the Internet in Mexico," August 2011.

More competitive markets and lower prices create a positive outlook for consumption in Mexico. For instance, over the next five years, 3G access is expected to increase significantly and mobile commerce is anticipated to grow at 41 percent per year, potentially jump-starting Mexico's e-commerce and telecommunications activity (Exhibit 75). Application revenue is also projected to spike and outpace all the other target aspiring countries as more Mexicans are pulled into the Internet market.[265]

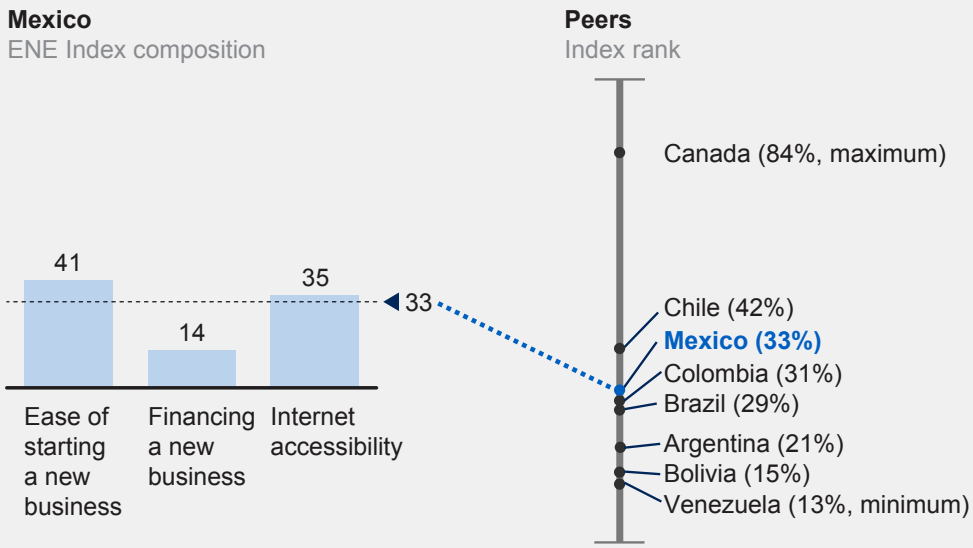
Entrepreneurs. McKinsey built an ease of Internet entrepreneurship index based on three components: the ease of starting a new business; the ease of financing a new business; and Internet accessibility.[266] On this index, Mexico ranks on a par with peer countries in Latin America, although below developed countries in the preconditions of Internet ecosystem. Mexico's standing can be improved by promoting access to capital and loans while also creating a more Internet-accessible environment for entrepreneurs. Some entrepreneurial companies have developed to help consumers circumvent the prominent constraints currently faced in Mexico. The environment for starting a new business in Mexico is about average against our 57-country sample. However, Internet accessibility is below average while the ability to finance a new business in Mexico ranks in the bottom quartile of all countries.

To improve the ease of starting a new business, Mexico can create more flexible employment practices and promote business registration (Exhibit 76). When asked "How would you characterize the hiring and firing of workers in your country? [1 = impeded by regulations; 7 = flexibly determined by employers]," Mexicans rated their country at 3.0.[267] Mexico is also registering 20 percent fewer new net businesses per capita than are its Latin American peers.[268]

Exhibit 76

More lenient employment practices and access to loans would benefit Mexico's online entrepreneurs

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Promoting more private equity and venture capital activity and creating easier access to loans would ameliorate the ease of financing a new business in Mexico. This is important, as Mexico ranks in the bottom

265 Economist Intelligence Unit, "Telecoms and technology report," September 2011.

266 Ease of Internet entrepreneurship index components: ease of starting a new business (industry-agnostic view of the overall business ecosystem in a country); ease of financing a new business (availability and attractiveness of financing for ICT start-ups, as well as the cost of financing a new business); Internet accessibility (extent and cost of Internet access for both enterprises and their target consumers).

267 World Economic Forum, "Global competitiveness report, 2010–2011."

268 World Bank, World Development Indicators, "New businesses registered (number)," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).

quartile of countries for the number and value of private equity investments per capita.[269] Similarly, Internet accessibility will continue to improve as the cost of access decreases in mobile and broadband markets.

Efforts to begin some of these improvements are already underway. Innovation clusters in Mexico—such as Tequila Valley—are working with American and foreign venture capitalists to prepare for the projected growth in broadband and communications technologies. Besides building a network and a knowledge base for entrepreneurs, the innovation clusters have created an online community where their thousands of members from across Mexico can engage in Twitter conversation, create blog posts around innovation, and discuss Web programming languages or innovative uses of social media (see Box 31, "Innovative business model helps address postal and payment constraints").[270]

Box 31. Innovative business model helps address postal and payment constraints

To address the lack of trust in Mexico's postal system and online payment system, some companies have become innovative. PlazaVIP, a Mexican e-commerce retailer, allows customers to purchase goods online while paying for those goods at a nationwide convenience store where the consumer can also pick up the product. To circumvent a lack of credit card penetration and an uneasiness of inputting information online, PlazaVIP also allows customers who have paid their phone bill on time for the last six months to purchase products and charge it to their phone bill (through partnership with Telmex).[272]

272 PlazaVIP company Web site.

Enterprises. Enterprise engagement with the Internet in Mexico is low. Few businesses have created Web sites or currently advertise online.[271] Costs to access the Internet or register a Web site are greater than average, while overall access across the population, which is linked to potential revenue gains, is below average.

Adoption is still occurring in both large and small businesses despite the constraints. Mobile banking is becoming more widespread, while SMEs adopting Web technologies are observing the benefits of their investments (see Box 32, "Mexico's largest banks adopt mobile solutions").

Box 32. Mexico's largest banks adopt mobile solutions

Banorte, one of Mexico's largest domestically owned banks, recently captured the "Best Solution in the Mobile category" award for its new Banorte Mobile application.[273] The application, available for Android, Blackberry, and iPhone, is a fast, secure mobile banking solution that allows users access to their balance and the ability to pay bills, transfer funds, and more.

In response, other large banks operating in Mexico have offered, or will soon begin offering, similar solutions. In Q1 2012, Grupo Financiero Inbursa, another Fortune 2000 bank operating in Mexico,[274] plans to launch Transfer, which will act as a processing company, enabling mobile users the ability to access similar services to that offered with Banorte Mobile.[275]

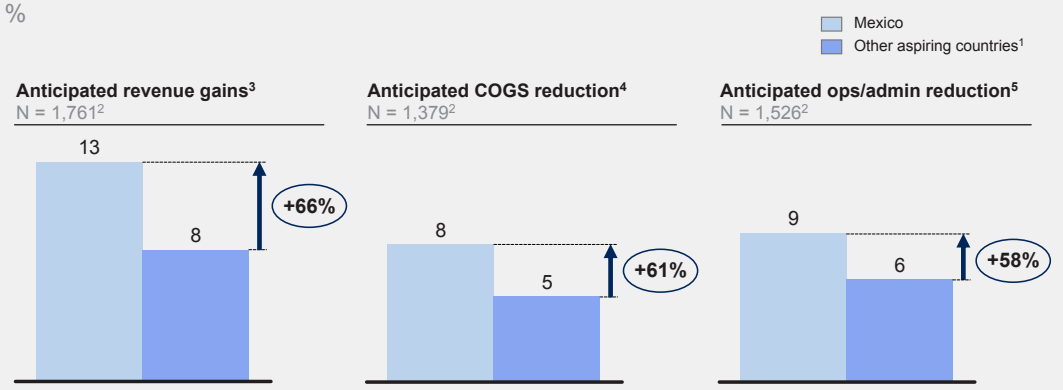
273 Grupo Financiero Banorte 4Q10 press release, "For the sixth consecutive quarter, Gfnorte's profits increase, growing by 17 percent YoY at closing 4Q10."
274 Economy Watch, "Forbes companies in Mexico," July 17, 2010.
275 Anthony Harrup, "America Movil joins Citigroup, Inbursa in mobile-banking venture," *Wall Street Journal,* October 2011.

269 Capital IQ, "Transaction Screening Report," 2000-2011.
270 Ruy Cervantes, "Infrastructures to imagine—The Mexican Internet industry." www.ics.uci.edu/~ruy/papers/infrastructures_to_imagine_poster.pdf (accessed December 1, 2011).
271 United Nations Council on Trade and Development, "Information Economy Report," 2010; World Digital Media Trends.

Mexican SMEs that use the Internet benefit in terms of profitability, productivity, and growth (Exhibit 77). Internet-enabled SMEs report 5 percent revenue gains, 3 percent reductions in the cost of goods sold, and 4 percent reductions in operations and administration due to Web technologies. These SMEs also report 18 percent productivity gains from the Internet, which is the highest among our target set of aspiring countries.[276] Web-related expenditure and Internet access provided to employees are also positively correlated with growth (Exhibit 78).[277]

Exhibit 77

Mexican SMEs anticipate greater gains from Web technologies than SMEs in other aspiring countries



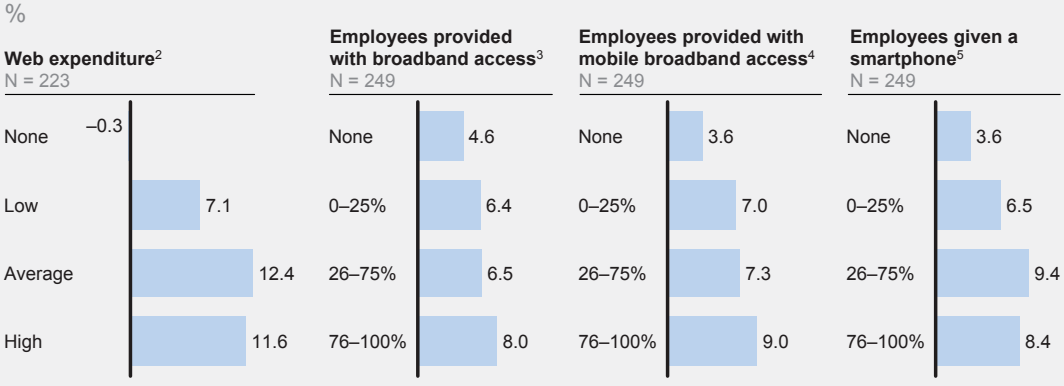
1 Other aspiring countries are Argentina, Hungary, Malaysia, Morocco, Taiwan, Turkey, and Vietnam.
2 These analyses exclude respondents who did not anticipate the respective benefit or answered "I don't know" when asked to quantify benefit.
3 Potential/future performance related to the Internet: "Will [Web technologies] make it possible for your company, within the next three years, to increase your revenue compared to its current rate? If yes, how would you quantify the increase in revenue?"
4 Potential/future performance related to the Internet: "Will [Web technologies] make it possible for your company, within the next three years, to further reduce your cost of goods sold [COGS] compared with its current rate? If yes, how would you quantify the reduction of the cost of goods sold?"
5 Potential/future performance related to the Internet: "Will [Web technologies] make it possible for your company, within the next three years, to reduce expenses related to administrative, organizational and general costs, compared with the current rate? If yes, how would you quantify the reduction in expenses related to administrative, operational and other general costs?"

SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

Exhibit 78

High growth in Mexico has a positive correlation with Web spending and access to broadband, mobile broadband, and smartphones

Stated growth[1] percentage



1 Excludes all respondents who did not know the growth rate of their company.
2 Low Web expenditure is less than 10 percent of total expenses. Average is 11–30 percent of total expenses. High is greater than 30 percent of total expenses. "What percentage of your expenses are digital, i.e., linked to Web technologies (electronic messaging, intranet, extranet, WiFi, Web sites, Web 2.0 tools, servers/routers, Web connection for employees, Enterprise Resources Planning (ERP), e-commerce, e-marketing, e-supply chain)?" Excludes "I don't know" responses.
3 "Do you have a broadband Internet connection available to your employees?" If so, "What percentage of your employees have access to it?"
4 "Do you have access to wireless Internet through a mobile broadband connection? If so, "What percentage of your employees have access to it?"
5 "Do you have access to wireless Internet through a mobile broadband connection?" If so, "What percent of your employees have you given smartphones?"

SOURCE: 2011 McKinsey survey of 300 SMEs in Mexico; McKinsey analysis

276 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.
277 Ibid. McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.

As the broadband and communication market dynamics change, there is a strong belief among SMEs that Web technologies will also enable even more profitability benefits. Mexican SMEs believe they will capture 1.6 times the revenue increases and cost reductions due to Web technologies as SMEs in other aspiring countries (see Box 33, "Examples of innovative Mexican start-ups (as of December 2011)").[278]

Box 33. Examples of innovative Mexican start-ups (as of December 2011)

- **PlazaVIP.** This online shopping site aspires to become the Mexican Amazon. It is creating a B2C marketplace where stores from any size can sell their goods online through PlazaVIP, which provides a centralized customer service and checkout procedure.
- **Callpicker.** Using "big data," Callpicker determines which advertisements from various mediums (billboards, TV, Web) are driving traffic to company sales centers. The marketing optimization research allows companies to better use their marketing budget. Callpicker notes a 140 percent growth in digital media budgets since 2008.
- **Adnetik.** This digital marketing targeting and trading company performs data management and aggregation that help clients customize their marketing strategy.
- **Latin3G.** Latin 3G creates iPad, iPhone, and Android, and Blackberry mobile applications. Its services are offered to SMEs and larger enterprises that wish to enter the mobile market and target new customers.

Government. Mexican citizens use e-government services more than citizens in other aspiring countries (Exhibit 79). The government uses its strong Internet presence to help promote SMEs. Additionally, the government is finding innovative ways to promote ICT technologies while working to reduce the cost of access.

Mexican e-government services are strong by regional and global standards. Based on the United Nations's measure of e-government development, Mexico ranks in the top third of countries worldwide and top 20 percent of countries in Latin America. Mexico's high score is driven by strong human capital and online service metrics. Various Mexican federal agencies, including the Ministry of Finance, Ministry of Economy, and Ministry of Education, offer online services. These services provide tools for information requests, transparency services, statistical data, and e-payments.[279] Mexicans appear to be taking advantage of the additional access to services. Individuals in the aspiring world are twice as likely as Mexicans to not use any e-government services.[280]

Mexico Emprende is one example of an e-government service offered in Mexico that provides SMEs with a centralized location for government services and resources. Emprende offers business and consulting trainings, and allow SMEs to register online for the program.[281] Emprende also hosts a Technology Innovation Fund, which is a public trust created by the Ministry of Economy, the Secretariat for SMEs, and the National Council for Science and Technology. Its goal is to support SME technology companies whose projects generate jobs, technological advancement, and innovation.[282]

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278 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.

279 Mexican government Web site; United Nations, "e-Government survey 2010."

280 Ibid. McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.

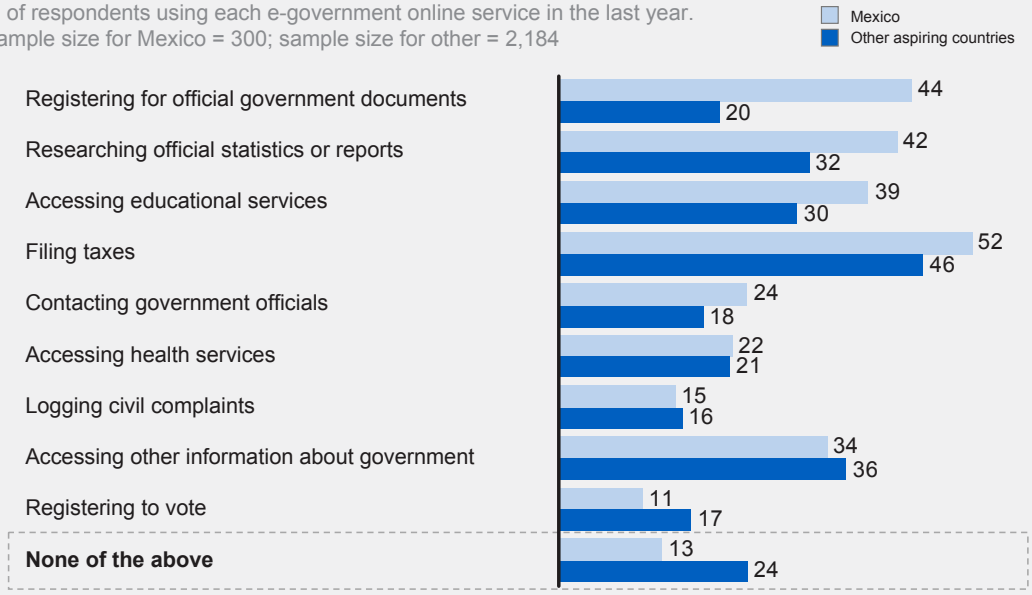
281 Mexican government Web site.

282 Mexico Emprende Technology Innovation Fund, www.mexicoemprende.org.mx/index.php?option=com_content&task=view&id=34&Itemid=140 (accessed December 1, 2011).

Exhibit 79

Mexican citizens use more e-government services than citizens in other aspiring countries

% of respondents using each e-government online service in the last year.
Sample size for Mexico = 300; sample size for other = 2,184



SOURCE: 2011 McKinsey survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam; McKinsey analysis

Mexico is also an innovator in ICT use in schools. Through the Red Escolar Mexico program, the Mexican government standardized Linux operating systems across educational institutions in an effort to save on software licensing fees.[283] The Mexican e-Educacion initiative seeks to use ICTs to help primary and secondary school dropouts finish their education.[284]

Mexico's telecommunications regulator, the Federal Commission of Telecommunications (Cofetel), has been addressing Internet cost of access issues. To date, Cofetel has reduced interconnection fees by 66 percent and changed metering of time from minutes to seconds, which has reduced the real cost of switching to other service providers.[285]

Path forward

Mexico is a country with great Internet potential. Mexico was identified as an aspiring country because it displays a strong set of fundamentals while also exhibiting the potential for growth: nominal 2010 GDP was greater than $1 trillion; GDP growth from 2005 to 2010 exceeded 3 percent; and per capita GDP was more than $9,500.[286] Mexico also has favorable characteristics for continued growth, including a young consumer base and a strong trade relationship with the United States and other North American economies.

Mexico has two other sources of macroeconomic strength that it can leverage to help propel the country's growth of the Internet: it is a resource-rich country with a large consumer base (see Box 34, "Aspiring countries can draw on their strengths to drive Internet ecosystem growth," for a summary of five macroeconomic strengths across aspiring countries). Mexico is the world's seventh-largest producer of oil and 26th-largest producer of coal.[287] Mexico is also the world's 11th-largest country.

283 Press searches; Red Escolar Mexico homepage, www.redescolar.ilce.edu.mx/ (accessed December 1, 2011).
284 Karen Coppock, "Mexican networked readiness index," www.cyber.law.harvard.edu/itg/libpubs/Mexico.pdf (accessed December 1, 2011).
285 Fox News Latino, "Mexico Sets Interconnection fees for AT," March 17, 2011.
286 IMF World Economic Outlook National Accounts Table; nominal per capita GDP in 2010.
287 US Energy Information Administration, www.eia.gov (accessed December 1, 2011).

Box 34. Aspiring countries can draw on their strengths to drive Internet ecosystem growth

We have identified five macroeconomic strengths that aspiring countries can leverage to drive Internet ecosystem growth. These strengths are not mutually exclusive, but they apply in varying degrees to each aspiring country. For a broader discussion of these strengths and a comparison of our 57-country set along them, see chapter 3.

- **"Resource-rich"** countries' economies are disproportionately dependent on exploiting highly profitable natural resources (e.g., oil, natural gas), giving them large sums of money to invest.
- **"Hub-of-trade"** countries' economies are driven by exports of goods and services. Local enterprises, or multinationals with local branches, have developed expertise in supply chain and international trade.
- **"Innovation-potential"** countries have large investments in R&D. They benefit from large pools of highly educated and creative individuals developing new products.
- **"Strong-local-consumption"** countries' economies are heavily reliant on domestic consumption. Furthermore, imports are low, meaning that most goods and services consumed are provided by local businesses.
- **"Strong-SME-sector"** countries have an SME sector that is a dominant force in the economy, e.g., SMEs employ a majority of the workforce.

Yet, Mexico's Internet ecosystem is currently constrained by weak Internet infrastructure, high cost of access, and low access to financial capital. Mexico may be able to leverage its strengths to overcome these challenges, though specific policy and actions must account for other investments that may warrant consideration.

The development of Internet infrastructure can yield better coverage, more reliable service, and more cost-effective prices. Currently, low levels of secure data servers, coupled with below-average electrification across the country, hinder both business and consumer usage of the Internet. This is particularly prominent in rural areas, causing a digital divide between Mexico's cities and rural villages.

High cost of access, lack of financial cards, and lack of legal protection for the e-consumer constrain consumer usage of the Internet. Additionally, Mexicans report difficulty in acquiring bank loans while venture capital activity is relatively low compared with other countries. Plans are in place to address some of these issues. Increased openness in the telecommunications industry and continued government promotion of ICT and its related activities should help facilitate improvement.

Mexico has taken the initial steps to build a robust Internet ecosystem. Ensuring the trends currently observed continue may be crucial: growing consumer demand, e-commerce activity, and competitiveness within ICT industries spur Internet usage. With key constraints to a robust Internet ecosystem resolved, Mexico should be well on its way to boosting the Internet's economic impact.

Country profiles
Morocco

Morocco is one of the front-runners in terms of Internet usage in North Africa with a burgeoning online population. Recent Internet penetration growth has been encouraged by a national strategic plan, Maroc Numeric 2013, to develop Morocco's information technology capabilities, and by a competitive mobile broadband sector that has lowered access costs. The growing number of Internet users has created a domestic market for the first generation of entrepreneurs.

Morocco's Internet ecosystem is still held back by three constraints: the cost of Internet access, Internet infrastructure development; and digital literacy. Each of these is more of a trenchant problem in rural areas than urban ones, and among senior citizens. Low-income populations similarly lag behind, although the increasing popularity of mobile Internet is eroding these divides through lower cost of access and more widespread coverage.

Looking forward, Morocco has the potential to further leverage the Internet for its economic and social benefits. Key levers to pull will include increasing quality Internet access, especially in rural areas; promoting private investment in Web technologies, particularly in small businesses; and developing Morocco's ICT sector by providing more ICT training and increasing the amount of financial capital available, with a focus on riskier early-stage companies. Morocco's emerging presence as a source of low-cost ICT manufacturing for European firms, as well as the Maroc Numeric Fund, the government's venture capital fund for new technologies, are strong steps in the right direction.

Country overview

Exhibit 80

Morocco's Internet landscape statistics

49 Internet users[1] (per 100)

101 Mobile subscriptions[2] (per 100)

32 Households with personal computer[3] (per 100)

4 3G subscriptions[2] (per 100)

25 Household broadband penetration[4] (per 100)

10 Mobile broadband penetration[5] (per 100)

Note: Only available information depicted. Not all metrics available for Morocco.
1 Agence Nationale de Réglementation des Télécommunications (ANRT), 2010.
2 ANRT, Tableu de Bord, June 2011. Statistic is based on December 2010 statistic and World Bank 2010 population.
3 WEF, Global Information Technology Report 2010–2011. Data for 2009.
4 ANRT Information Technology Observatory 2010.
5 ITU World Telecommunication/ICT Indicators database as provided by Wireless Intelligence, 2010.

SOURCE: McKinsey analysis

Morocco is becoming an increasingly competitive economy on the African continent. Despite a per capita GDP of $2,796 in 2010, its economy is stable and projected to have a real GDP growth rate of 3 percent in 2010.[288] In recent years, adoption of the Internet has also grown rapidly (Exhibit 80). With 49 percent of Moroccans online in 2010, Morocco has higher Internet penetration rates than neighboring Tunisia, Algeria, and Egypt, as well as wealthier sub-Saharan countries such as South Africa, Angola, and Gabon.[289]

Impact of the Internet

To measure the economic impact of the Internet, we have constructed the iGDP Index that measures the contribution of the Internet to a country's GDP. We have also separately measured a country's e-commerce platform, because it plays a seminal role for consumers and retailers alike in a country's Internet ecosystem. The e-commerce platform index (eCP) assesses the health of a country's e-commerce ecosystem.

- **iGDP.** Using the expenditure method, the contribution of the Internet is measured as the proportion of GDP that can be attributed to the Internet in private consumption, public expenditure, private expenditure, and trade.[290] This measure is ICT-related, as it aggregates the expenditure on all goods and services that are related to the Internet, from devices to access, the consumption of hardware and online consumption.

- **eCP.** The e-commerce platform demonstrates e-commerce enablement by scoring a country's online payment enablement, parcel delivery systems, and Internet readiness.[291]

The Internet's contribution to Morocco's GDP is measured at 0.9 percent (Exhibit 81). Nearly two-thirds of this economic impact is contributed by private consumption, driven by rapidly growing revenue from mobile Internet and online travel, which combined were close to $500 million in 2010.[292]

In addition to private consumption, Morocco is becoming a hub for offshoring of IT and business process outsourcing services. This development is made possible by improvements in Internet infrastructure, cultural and geographical proximity to the European Union, wages for white-collar workers that are half those in the EU, and a relatively high proportion of university graduates. The government has put in place a comprehensive plan for the development of those services by launching special development zones including the Casablanca Nearshore Park and Rabat Technopolis, offering tax breaks, less cumbersome administrative procedures, more flexible labor rules, and quality infrastructure and services for companies operating in the sector.

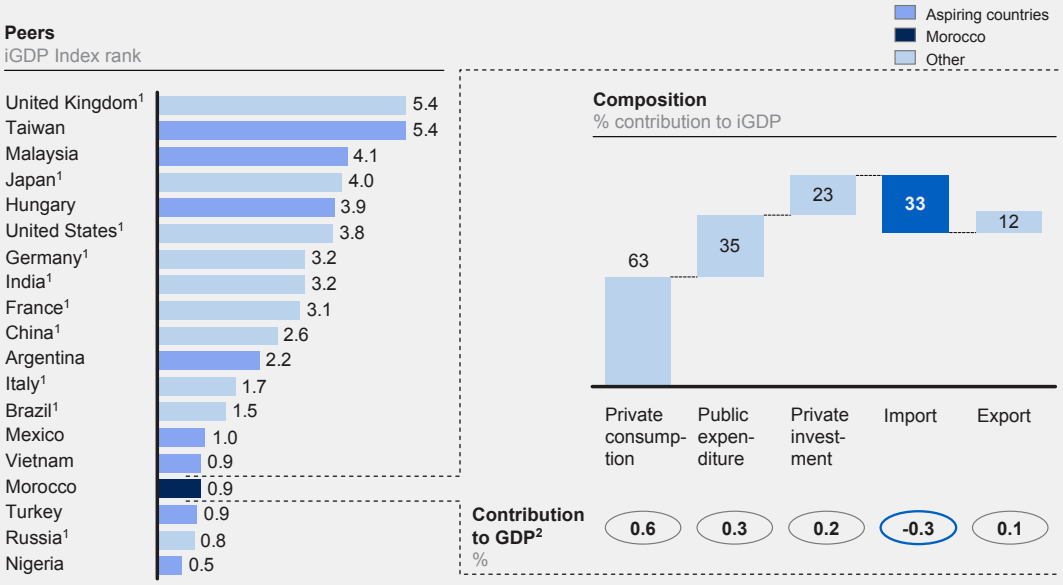
Although Morocco's e-commerce is currently nascent, online retail is growing along with improvements in the supporting payment systems (Exhibit 82). From very few online transactions in 2008, three years later Morocco has its own versions of online auction and group buying sites. Traditional retailers, such as Royal Air Maroc, have also begun to build online sales channels.

288 World Bank, "National accounts," 2010; Global Insight World Market Monitor, 2010 to 2011.
289 Agence Nationale de Réglementation des Télécommunications (du Maroc), 2010; ITU, 2010.
290 Internet contribution to GDP index components: private consumption (total consumption of goods and services by consumers via the Internet, or consumers' costs to obtain Internet access); private investment (private-sector investment in Internet-related technologies); public expenditure (public expenditure on Internet is estimated by adding government, public health care, and public education expenditures on the Internet); trade balance (exports of Internet-related goods and services, plus B2C and B2B e-commerce, net of all associated Internet-related imports).
291 E-commerce platform index components: online payment enablement (number of financial cards in circulation, volume of cashless payments, legal protection provided to the e-consumer); parcel delivery (reliability of postal system, cost of domestic shipping, percent of a population with delivery to their homes); Internet readiness (volume of secure servers, Internet penetration, domain registration cost).
292 Pyramid Research; Euromonitor International.

Exhibit 81

Private consumption drives Morocco's Internet contribution to GDP

% Internet contribution to GDP



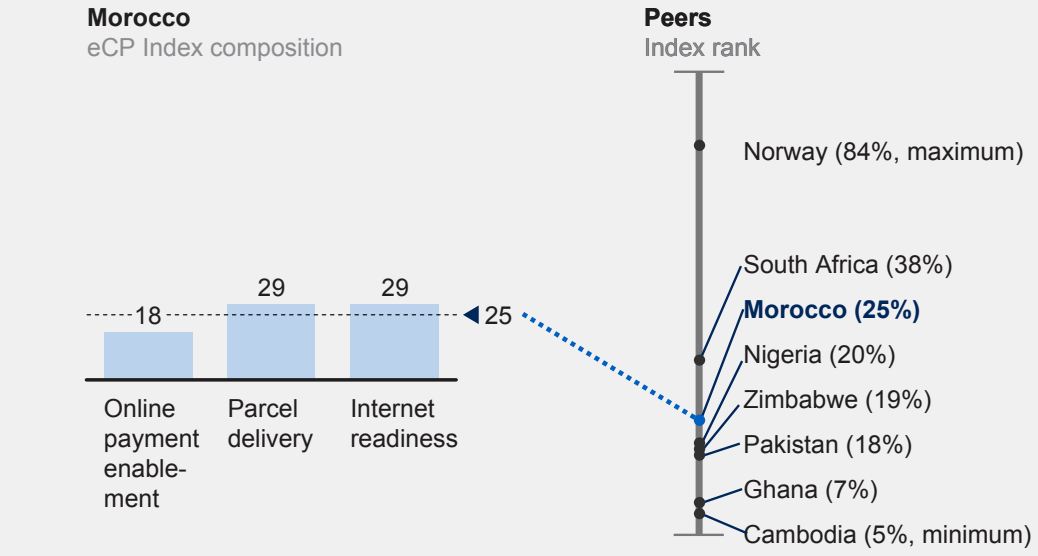
1 2009.
2 Numbers may not sum due to rounding.

SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; World Travel and Tourism Council; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

Exhibit 82

Online payment enablement constrains e-commerce in Morocco

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Morocco's score on McKinsey's e-commerce platform index, which measures a country's foundations for e-commerce, is low in comparison with developed countries but high within Africa. Significant opportunities exist to further address these constraints. Arguably, the largest of them is to improve Morocco's online payment ecosystem by encouraging consumers to own financial cards (e.g., debit or credit cards) and making online transactions secure. Indeed, Morocco's debit and credit card ownership,

while having grown 25 percent per annum from 2005 to 2010, is still relatively low.[293] In addition to growth in penetration of financial cards, initiatives such as the introduction of a secure online payment platform by the Centre Monétique Interbancaire (CMI) help make secure online payment more ubiquitous and bolster consumers' confidence in online payment systems.

While e-commerce penetration currently lags behind other online activities in Morocco, with only 6 percent of users buying online, recent improvements in the preconditions for e-commerce (including online penetration) have led to rapid growth. For instance, the number of online transactions grew 114 percent in 2010, reaching a total of 192,000.[294] Beyond increased Internet penetration and improvements in the online payment infrastructure, it is the blossoming of online products and services, and sometimes the innovative business models behind them, that are responsible for that growth. For example, Royal Air Maroc, the national airline, has successfully established online retail channels, while financial institutions are providing more e-banking and e-trading solutions. In addition to large enterprises improving their online offer, a first generation of Internet start-ups is coming to life, to address the growing online consumer market.

Some Moroccan entrepreneurs have found innovative solutions to address the constraints around the payments infrastructure. For example, given low prevalence of credit card usage, some e-commerce Web sites will accept cash on delivery or payment through SMS platforms. Another innovative solution was adopted by Knooz.com, a private sale e-commerce shop that has partnered with a network of local shops to process their customers' payment (see Box 35, "Group buying model makes inroads in Morocco").

Box 35. Group buying model makes inroads in Morocco

The group buying model is well suited for aspiring countries, since consumers can print out vouchers to redeem goods and services and do not need to rely on the postal service to deliver physical goods. The first group buying Web site in Morocco, Mydeal.ma, was established in 2010. Consumers can access daily deals in Morocco's major cities such as Casablanca and Marrakesh and pay for vouchers via credit or bank card, PayPal, or Amanty, a Moroccan payment service. Mydeal.ma is currently one of Morocco's largest e-commerce retailers by revenue, and the US group buying company LivingSocial is a shareholder. Other prominent examples include local Web site Hmizate and Groupon, which is about to enter the market.

Internet ecosystem

- The Internet ecosystem maturity index (e3) measures the current maturity of an Internet ecosystem according to three major drivers: environment, engagement, and expenditure.[295]

- The Internet ecosystem foundations index (i4F) measures the strength of Internet foundations—i.e., the preconditions for future growth—using the four key foundations of financial capital, business environment, infrastructure, and human capital.[296]

Morocco's performance on McKinsey's Internet ecosystem maturity index is above those of regional peers but trails more developed nations (Exhibit 83). Low Internet bandwidth, low household broadband

293 McKinsey Payment Practice.
294 Maroc Telecommerce, www.maroctelecommerce.com (accessed December 1, 2011).
295 Internet ecosystem maturity index components: environment (existing Internet speed and penetration); engagement (usage of Internet by individuals, enterprises, and governments); expenditure (Internet spending such as e-commerce and online advertising).
296 Internet ecosystem foundations index components: financial capital (availability of financing for Internet and ICT companies); business environment (country's attractiveness to business due to regulatory and societal effects); infrastructure (penetration and quality of Internet-enabling infrastructure); human capital (education and research).

penetration, nascent e-government services, moderate use of Internet by businesses, and small penetration of online retail drive this lag.

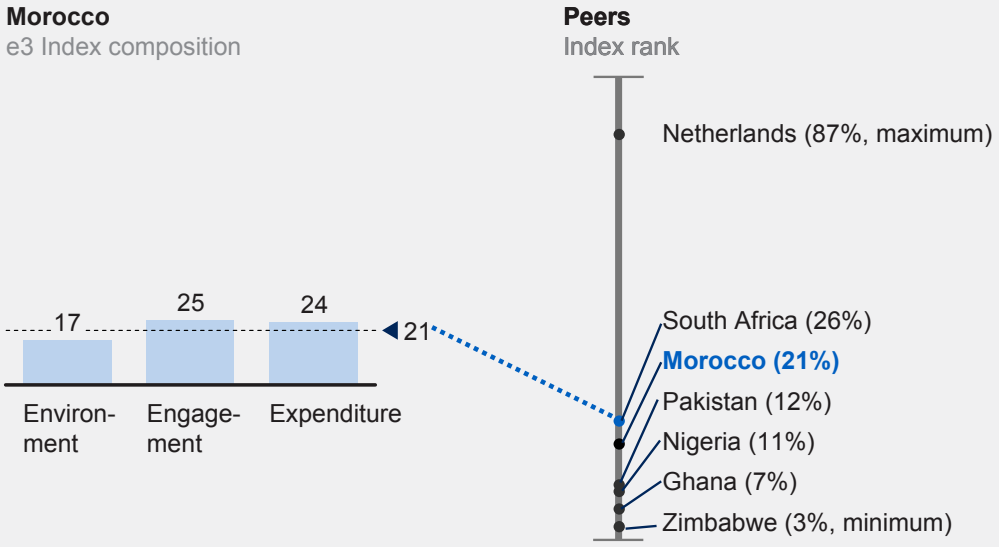
The competitive mobile broadband sector has driven growth in Internet penetration. Besides the incumbent Maroc Telecom, two operators received 3G licenses in 2006, which encouraged mobile broadband's rapid development. Today, roughly 73 percent of Internet subscriptions are 3G and there was a total of 2.3 million broadband subscriptions as of December 2010.[297] Consumers have benefited from multiple operators in the market because they compete not only on price, but also with adapted offers that include prepaid Internet and triple play (voice, data, and television) packages. This has led to a 40 percent year-over-year decline in average 3G subscription cost, from $50 (adjusted for purchasing power parity) in 2010 to $30 PPP in 2011 per user per month.[298]

Despite the fast growth in Internet adoption, a digital divide separates urban and rural, rich and poor. Household penetration in densely populated areas is roughly twice that of medium dense areas. Penetration is 80 percent in households in the highest income bracket versus 35 percent in households in the next lower income bracket.[299]

Exhibit 83

Morocco's ecosystem compares favorably to regional peers but lags behind more developed nations

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Urban populations, which comprise 58 percent of total population, drive the majority of Internet usage since access in cities is widely available via fixed or mobile broadband connection, as well as through public access points such as Internet cafes.[300] In contrast, demand for usage in rural sections of the country is less ubiquitous, constrained by access to computers. Additional constraints to adoption among rural populations include lower income and literacy levels. These differences in Internet usage between various tranches of the population must be kept in mind while looking at overall Internet penetration statistics.

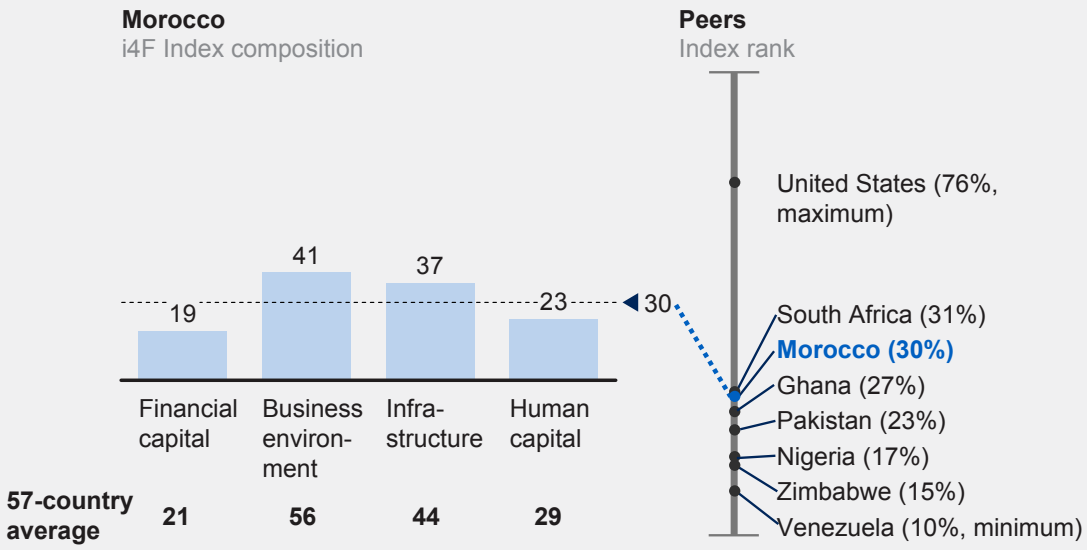
297 Agence Nationale de Réglementation des Télécommunications (du Maroc), Tableau de bord du marché Internet au Maroc, June 2011.
298 Ibid. PPP adjustment based on IMF estimate.
299 Maroc Numeric 2013 Web site; high-income households are defined as those with income greater than 18,000 Moroccan dirham per month. The next lower income bracket is defined as households with income between 8,000 and 18,000 Moroccan dirham per month.
300 *CIA World Factbook*, 2010.

Morocco's score on McKinsey's Internet ecosystem foundations index is near the top in Africa but low compared with developed countries (Exhibit 84). Areas of potential improvement include creating a business environment less limited by insufficient intellectual property protection; improving the amount of few venture capital and private equity investments; increasing the stock of secure Internet servers; and raising the level of gross enrollment in tertiary education.

Exhibit 84

Morocco's Internet ecosystem ranks near the top in Africa but still has potential to improve

Score relative to maximum of 57-country set in each index variable



SOURCE: McKinsey analysis

In building its Internet ecosystem, Morocco has significant assets to leverage, such as math and science education along with reasonably good availability of scientists and engineers.[301] For example, in the World Economic Forum's Executive Opinion Survey, Morocco scores 4.45 (out of 7) on the "availability of scientists and engineers" metric. This places Morocco on a par with countries such as Algeria at 4.49, Turkey at 4.48, and Hungary at 4.43. There is potential for improvement, however, as demonstrated by the very strong 5.5 score obtained by Tunisia, ranking the neighboring country seventh among almost 140 countries.

User groups

Individuals. Moroccan consumers obtain many benefits from the Internet. Consumer surplus of $11 per user per month translates to $2 billion per year for Morocco's total Internet population. As Internet penetration increases, and online content and services mature, we expect Moroccan consumers will capture much additional surplus in the coming years.

Internet penetration is rapidly growing among the Moroccan population, along with the fast growth of various online user activities. The most prevalent online activities for Moroccan Internet users in 2010 were consumption of digital media, communicating via e-mail or instant messaging, and social networking. Those three activities grew more than 40 percent between 2009 and 2010.

301 World Economic Forum Executive Opinion Survey 2011.

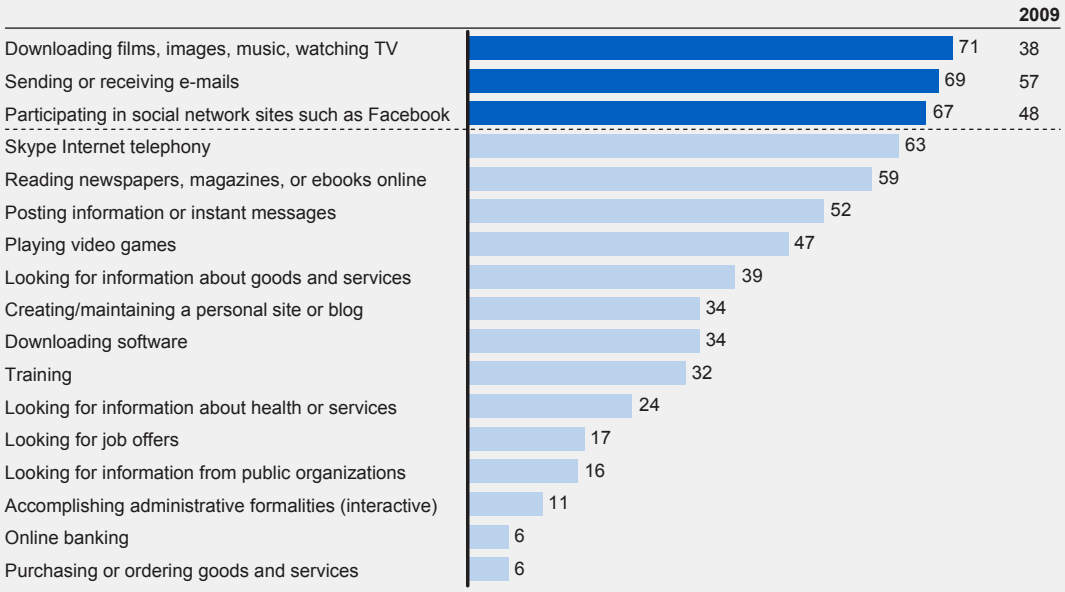
Digital media has the highest user penetration with 71 percent of Internet users going online to download movies, pictures, music, and watch TV (Exhibit 85). This stands in contrast to developed countries. In the United States, for example, activities such as streaming video and downloading music are less popular, at 40 to 50 percent user penetration, while e-mail and search dominate with about 95 percent user penetration.[302] This difference could be driven in part by illegal platforms for downloading music and movies, as intellectual property regulations on the Internet is not always stringently enforced in aspiring countries.

Exhibit 85

The most prevalent activities among Moroccan consumers are digital media, e-mail, and social networking

Online activity penetration

% of individuals connecting to the Internet in past 12 months



SOURCE: ANRT; Information Technology Observatory, 2010; McKinsey analysis

After digital media and e-mail, social networks and social media are the most popular online activities among Moroccans, with Facebook and YouTube representing the two most visited Web sites.[303] We estimate that Facebook alone has over 3.5 million users in Morocco—almost one-quarter of total Internet users.[304] In addition to international social media sites such as Facebook, Twitter, and YouTube, Morocco has local social networking platforms, such as Alam Jadid. Social media has enabled Moroccans, especially youngsters, to increasingly participate in social and civic activities.

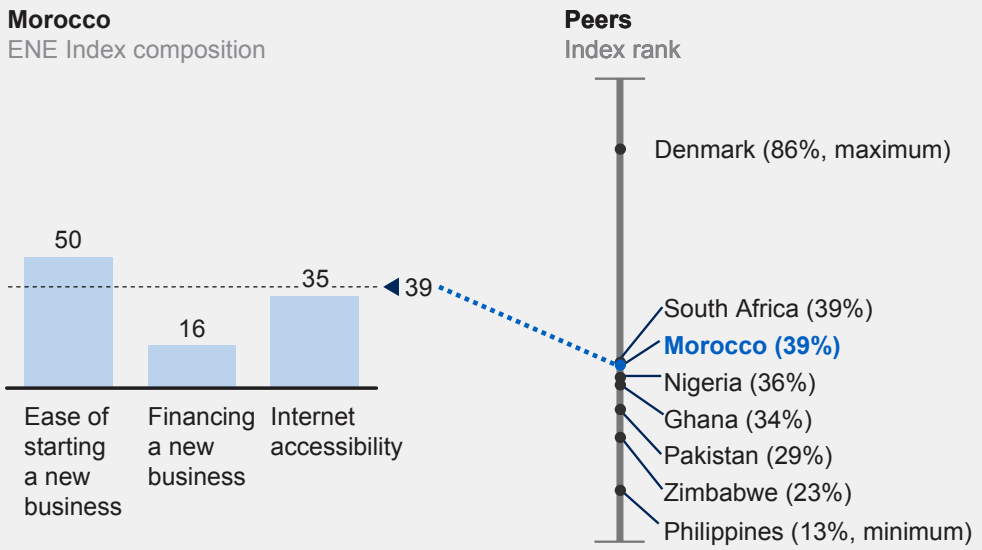
Entrepreneurs. Morocco's high Internet user growth is creating a nascent domestic market for Internet entrepreneurs, who have begun to emerge in the past two to three years. Many of them are Moroccans educated abroad or Europeans attracted to the growing opportunities of Morocco's burgeoning Internet consumer market. To nurture a new Internet start-up sector, three categories of entrepreneurship constraints should be addressed: financing, talent, and infrastructure.

302 IDC, 2011.
303 Alexa, "Top sites in Morocco," 2011.
304 Internet World Stats, Facebook subscribers.

Exhibit 86

Morocco ranks higher on ease of entrepreneurship than most regional peers

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Box 36. Examples of innovative Moroccan start-ups (as of December 2011)

- **Mydeal.ma.** E-commerce Web site founded in 2010 as the first group buying Web site in Morocco and is one of the largest e-commerce merchants by revenue. US-based Living Social is a shareholder.
- **Soukaffaires.ma.** Online classified portal that allows users to search by geography and keywords. Launched in 2010, it generates 4.5 million page views per month.
- **Clicoo.ma.** Online auction Web site where the lowest unique bid is awarded as the winner. Contrary to traditional online auctions Clicoo awards the lowest bid, but the need for uniqueness of the winning bid incentivizes bidders to increase their bid amount. Like many other Moroccan e-commerce merchants, the Web site accepts multiple modes of payment including via SMS, credit cards, or cash on delivery.
- **Hmizate.ma.** A group buying Web site in Morocco that was established in January 2011 and has more than 100,000 subscribers. The site offers deals in Casablanca, Rabat, Fez, and Marrakesh, with planned expansions into other Moroccan cities.
- **Hia.ma.** A portal dedicated to women, offering news and advice on topics such as celebrities, home decoration, health, fashion, and cooking.
- **Marocannonces.com.** A platform for postings on job offers, real estate, travel packages, and news among other topics. It claims over 1.4 million visitors and 19 million page views per month.

McKinsey has built an ease of Internet entrepreneurship index based on three components: the ease of starting a new business; the ease of financing a new business; and Internet accessibility.[305] Morocco's score on McKinsey's ease of Internet entrepreneurship index is above most regional peers (Exhibit 86). It is helped by a relatively low number of procedures required to start a new business but is constrained by a still nascent venture capital industry along with Internet penetration that has not yet reached full potential.[306] Morocco has limited financial capital available for early-stage Internet start-ups and lacks an experienced venture capital community to support entrepreneurs. Obtaining commercial loans can be a challenge for a start-up. Moroccan banks have been focusing on large corporations and medium-sized businesses and do not have the right credit processes in place to assess risk for new ventures. Moreover, venture capital, while available, is limited. To try to address this issue, the Maroc Numeric Fund, started in September 2010, was created under the national strategic ICT plan to provide first-round capital to Internet start-ups. The fund has 100 million Moroccan dirham, or approximately $12 million, under management and is a public-private partnership. Portfolio companies include Soukaffaires, a free classified listings portal, and Greendizer, which provides billing solutions to companies (see Box 36, "Examples of innovative Moroccan start-ups (as of December 2011)").[307]

Enterprises. Moroccan enterprises are still in the process of adopting the Internet. Compared with other developing countries, Internet penetration and reported productivity gains from Internet are low. Internet-enabled SMEs report productivity gains due to Web technologies of just 5.3 percent, compared with 11.4 percent in other aspiring countries surveyed. This may be caused by less prevalent broadband access: the average Moroccan SME provides 30 percent of its employees with broadband access compared with 59 percent elsewhere.[308]

Enterprises in Morocco are currently under-leveraging information technologies. The Internet is fragmented between well-structured enterprises equipped with the Internet and SMEs that are comparatively under-investing in Web technologies. A 2010 survey conducted by ANRT of 500 enterprises with more than 10 employees revealed that most companies of this size were Internet-enabled, with 91 percent of companies being connected to the Internet .[309] However, Internet usage levels and availability of computers varied across industries, with financial services having the highest ratio of computers to employees.

Most SMEs, when equipped to access the Internet, use it for basic functions such as e-mail, search, and government-related queries (Exhibit 87). Some SMEs leverage the Internet for more complex activities such as banking, customer service, or recruitment. This stands in contrast with Internet usage by SMEs in developed countries. For example, a McKinsey study on SME Internet usage in France showed that companies derived a significant value from having intranet and extranet sites, conducting online transactions, and marketing.

In small enterprises, investments in IT are limited by lack of awareness of the potential benefits. Some managers do not see IT investments as profitable and believe they can operate without technology. In addition, going online requires businesses to be more transparent with tax filings and regulations. These constraints account for Moroccan businesses' reluctance to adopt Internet technologies, especially within the informal sector.

As a result of the current low impact Moroccan enterprises are deriving from the Internet, one priority of the Maroc Numeric plan is to increase enterprise productivity by encouraging investment in and usage of IT and Web technologies.

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305 Ease of Internet entrepreneurship index components: ease of starting a new business (industry-agnostic view of the overall business ecosystem in a country); ease of financing a new business (availability and attractiveness of financing for ICT start-ups, as well as the cost of financing a new business); Internet accessibility (extent and cost of Internet access for both enterprises and their target consumers).

306 The World Bank, in its "Doing Business" project, estimated that six procedures were necessary to start a business in Morocco.

307 Maroc Numeric Fund, 2011, www.mnf.ma (accessed December 1, 2011).

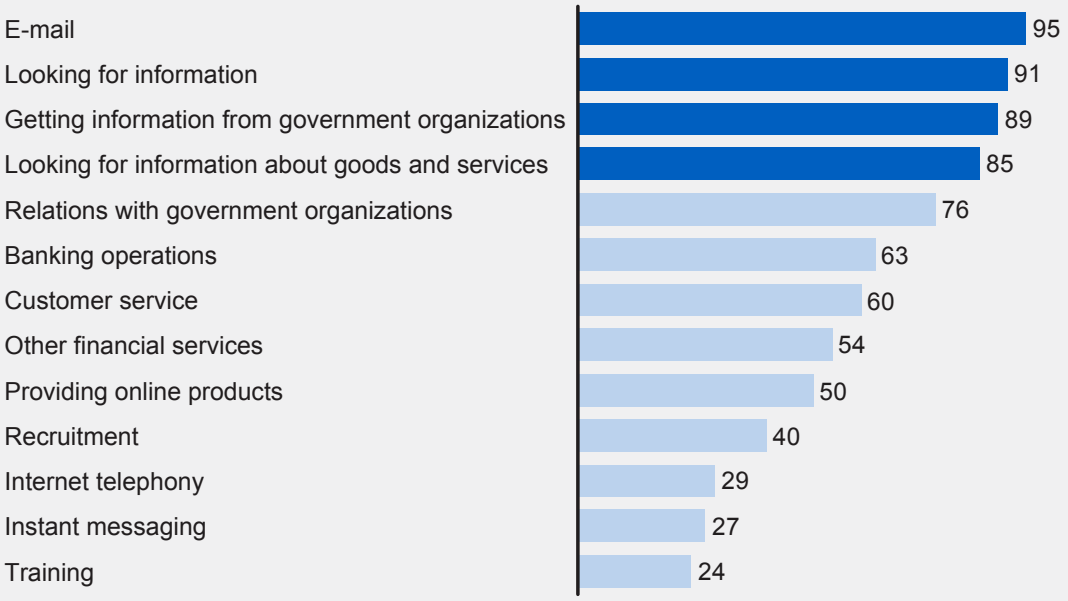
308 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.

309 Agence Nationale de Reglementation des Telecommunications.

Exhibit 87

Enterprises in Morocco use the Internet primarily for communication and search

% of companies that use the Internet



SOURCE: ANRT, Information Technology Observatory 2010; McKinsey analysis

Government. Morocco's government is trying to encourage investment in and usage of IT and Web technologies, with a goal of increasing private IT investment as a share of revenue from 0.5 percent to 1 percent by 2013.[310] Other priorities in the current strategic plan, Maroc Numeric 2013, include increasing Internet penetration, developing a domestic IT sector, and leveraging the Internet for e-government services.

Several other programs seek to increase public access to the Internet and drive social impact. For example, the GENIE (GÉNéralisation des Technologies d'Information et de Communication dans l'Enseignement au Maroc) program has three priorities: improving Internet infrastructure and access in education, training teachers and administrators to be digitally literate, and providing access to educational content through the Internet. The program aims to connect more than 9,000 schools, 200,000 teachers and administrators, and 6 million students by providing hardware, Internet connection, and multimedia resources.[311]

Another example is the establishment of Community Access Centers, which provide Internet access to populations in geographically isolated areas. The goal of the program is to equip 400 community centers with public Internet access by 2013. Because of Morocco's large population of young people, youth centers are the first to be equipped.

Morocco currently ranks in the bottom half of countries in the United Nations e-Government Development Database and could better leverage the Internet to improve efficiency in administrative processes and promote transparency.[312] In particular, while online information availability has improved, the availability of transactional services to users of e-government services is still limited. Despite these shortcomings, examples of e-government initiatives exist, as some processes that previously had to be completed through paper forms are now being carried out online. One existing initiative provides administrative processing services to enterprises, including registration of new businesses, filing employee social benefit claims, and filing enterprise corporate and income taxes. Another example of e-government services is the

310 Maroc Numeric 2013 Web site.
311 www.portailtice.ma (accessed December 1, 2011).
312 Maroc Numeric 2013 Web site.

online tax portal, where Moroccans are able to file and pay. The government also has an e-health portal, where citizens can directly make appointments with physicians.

Path forward

Morocco is a country with significant potential for capturing the economic and social impact of the Internet. Morocco was identified as an aspiring country because it displays a strong set of fundamentals while also exhibiting the potential for growth. Nominal 2010 GDP was $94 billion, having grown at close to 9 percent from 2005 to 2010.[313] In 2010, per capita GDP was $2,796.[314] Morocco's young population will also be a great asset in increasing the impact from Internet in the future.

Morocco's key macroeconomic strength that it can leverage to help propel the country's Internet growth is its strong local consumption. Indeed, final consumption expenditure accounts for 75 percent of GDP (see Box 37, "Aspiring countries can draw on their strengths to drive Internet ecosystem growth," for a summary of five macroeconomic strengths across aspiring countries).

Despite rapid growth in Internet penetration and the development of 3G over the past few years, Morocco's Internet ecosystem is still held back by three constraints: the cost of Internet access, especially broadband, is prohibitively expensive for low income populations; Internet infrastructure development has been stronger in denser, urban areas than in lesser populated rural areas; and low digital literacy, especially among senior populations. Low-income, elderly populations in rural areas are the least likely to be online today.

Box 37. Aspiring countries can draw on their strengths to drive Internet ecosystem growth

We have identified five macroeconomic strengths that aspiring countries can leverage to drive Internet ecosystem growth. These strengths are not mutually exclusive, but they apply in varying degrees to each aspiring country. For a broader discussion of these strengths and a comparison of our 57-country set along them, see chapter 3.

- **"Resource-rich"** countries' economies are disproportionately dependent on exploiting highly profitable natural resources (e.g., oil, natural gas), giving them large sums of money to invest.
- **"Hub-of-trade"** countries' economies are driven by exports of goods and services. Local enterprises, or multinationals with local branches, have developed expertise in supply chain and international trade.
- **"Innovation-potential"** countries have large investments in R&D. They benefit from large pools of highly educated and creative individuals developing new products.
- **"Strong-local-consumption"** countries' economies are heavily reliant on domestic consumption. Furthermore, imports are low, meaning that most goods and services consumed are provided by local businesses.
- **"Strong-SME-sector"** countries have an SME sector that is a dominant force in the economy, e.g., SMEs employ a majority of the workforce.

313 IMF World Economic Outlook National Accounts Table; nominal per capita GDP in 2010.
314 World Bank, national accounts data, 2010.

Several approaches could be used to reduce these divides. To lower cost of access, a low-cost laptop or computer program could be developed (e.g., One Laptop per Child type of program) and healthy competition could be promoted even more among Internet service providers to lower the cost of subscription. To address low penetration in rural areas, where one cellular tower can cover a large radius, investment could be made in mobile broadband infrastructure. Also, public Internet access points such as rural Internet centers could help. To improve digital literacy, the government could promote, as it states in its strategic plan, ICT training for teachers and students, and also get schools and academic institutions online.

Beyond Internet access, the next step is to encourage users to create content and conduct more activities online. That includes promoting online services such as secure online payments to facilitate e-commerce and e-banking, and developing more e-government services. In addition to productivity gains for the administration and increased transparency, e-government services will act as a catalyst for business use of Internet, by showcasing the benefits of the Internet (e.g., filing taxes online) to managers in SMEs.

As Morocco removes or reduces the key barriers, it has tremendous potential to increase the economic and social benefits it derives from the Internet.

Country profiles

Nigeria

Nigeria is one of the most populous countries in the world and a major player in Africa in both the size and growth of its economy. To date, the economy has mostly been driven by the export of natural resources. With 0.5 percent of its current GDP accounted for by the Internet, the impact of the Internet on Nigeria's economy lags behind that of other aspiring countries. However, opportunities for growth appear within reach—and they may be imminent. Rapid growth of the mobile market, coupled with Nigerians' use of these devices as a means to access the Internet, suggests that the Internet will rapidly penetrate the population.

Obstacles to the development of a strong Internet ecosystem remain despite growth. Linguistic diversity, coupled with relatively low education levels, continues to hinder Nigerians' use of the Internet. Additionally, Nigeria's Internet infrastructure, business engagement, and financial systems appear limited. Nigeria's power grid can be unreliable, especially in rural areas. Bandwidth speeds are slow, and secure data transfer can be difficult: per capita, Nigeria has 0.1 percent the amount of secure servers per capita as the United States.[315] In addition, 73 percent of Nigerians said that it was not easy to obtain a loan, and 59 percent said that the government did not make the filing process easy enough for those hoping to start a business.[316]

Yet, forecasts appear bright. By 2015, mobile penetration is expected to rise to 82 percent from 57 percent today.[317] Given that Nigerians often use mobile devices to access the Internet, growth in the mobile market suggests that Internet usage will grow—70 percent of Nigerian mobile phone users visit social network sites; 65 percent use their mobile phones for e-mail.[318]

Similarly, use of the Internet by entrepreneurs and enterprises appears to be growing. Nigeria has a relatively accommodating entrepreneurial environment. Nigeria's flexible hiring and firing practices rank in the top decile of countries.[319] Moreover, domestic Web-based start-ups are emerging to fulfill many of the solutions observed in other countries. These businesses include sites facilitating mobile banking, e-commerce, the proliferation of entertainment options, job matching, and more.

Country overview

Nigeria is one of the largest economies in Africa, and it is growing quickly. Nigeria has Africa's third-largest economy, the largest population, the largest online population, and the fourth-highest GDP growth rate.[320] The country's export of natural resources has driven the size of its economy and its economic growth. Yet Nigeria continues to face challenges related to poverty, disease, and diversity. The prospects for the Nigerian market for the Internet are hindered by these challenges, as well as by weak underlying infrastructure. However, favorable demographics, coupled with recent investment and growth, suggests that these challenges can be overcome.

Nigeria was second only to South Africa in total value of exports in 2010 among African countries.[321] Since 2006, the value of Nigeria's exports has grown at 10 percent per year.[322] While there is a heavy focus on the export of petroleum (87 percent of Nigeria's total exports), Nigeria's trade relationships are

315 World Economic Forum, "Global information technology report, 2010–2011."
316 Magali Rheault and Bob Tortora, "Nigeria—Drivers and challenges of entrepreneurship," Gallup, April 2008.
317 Pyramid Research and Nokia Siemens Network.
318 Analysys Mason, "Assessment of economic impact of wireless broadband in Nigeria," February 2011.
319 World Economic Forum "Global competitiveness report, 2010–2011."
320 *CIA World Factbook*, 2011; World Economic Forum, "Global information technology report, 2010–2011."
321 *CIA World Factbook*, 2011.
322 International Trade Centre: Trade Map—International Trade Statistics.

well diversified.[323] The largest importer of Nigerian goods, the United States, receives only 37 percent of Nigeria's total exports. Other large Nigerian importers appear across the globe; these include India (10 percent), Brazil (8 percent), and Spain (7 percent).[324]

Despite its economic growth, Nigeria faces many challenges in its continued development. Chief among those is reducing the prevalence of poverty and disease. Nigeria's large economy can be attributed in part to its large population. In 2010, per capita GDP in Nigeria ranked 183rd in the world.[325] In 2007, it was estimated that 70 percent of Nigeria's population lived below the poverty line.[326] Moreover, 4 percent of Nigerian adults are infected with HIV/AIDS, and Nigerian life expectancy rates rank 220th in the world—life expectancy in Nigeria is shorter than in most aspiring and developed countries.[327]

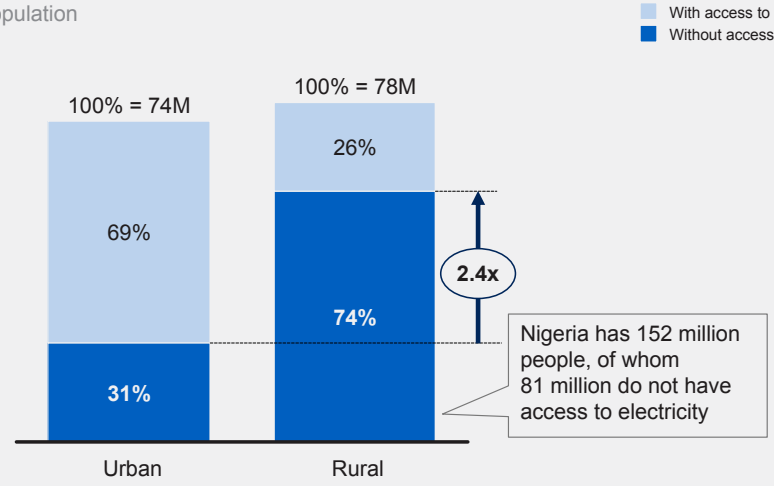
Nigeria's diversity and overall literacy can also act as a constraint. Within Nigeria, English is the official language, but Hausa, Yoruba, Igbo, Fulani, and more than 500 additional indigenous languages are also spoken.[328] Moreover, Nigeria ranks 142nd in the world with regard to literacy rate.[329] Together, these factors may make it difficult for Nigerians to interpret much of the Internet's content.

Low levels of electrification and fixed broadband lines also challenge Nigerian Internet adoption (Exhibit 88). Only one in four Nigerians in rural areas has access to the national electrical grid.[330] Even those with access do not receive reliable power; Nigeria experiences an average of 26 power outages per month. With each outage lasting approximately eight hours, those connected to the grid still experience nine full days each month without power.[331]

Exhibit 88

Nigeria's electrification rates are low, especially in rural areas

%; 100% = total population



SOURCE: International Energy Agency (IEA) Electrification Database, 2008

Another indicator of weak infrastructure is that fixed-line broadband subscriptions are scarce. Just 1 in 1,000 people have broadband subscriptions, and just 1 percent of Nigerians have access to fixed-line

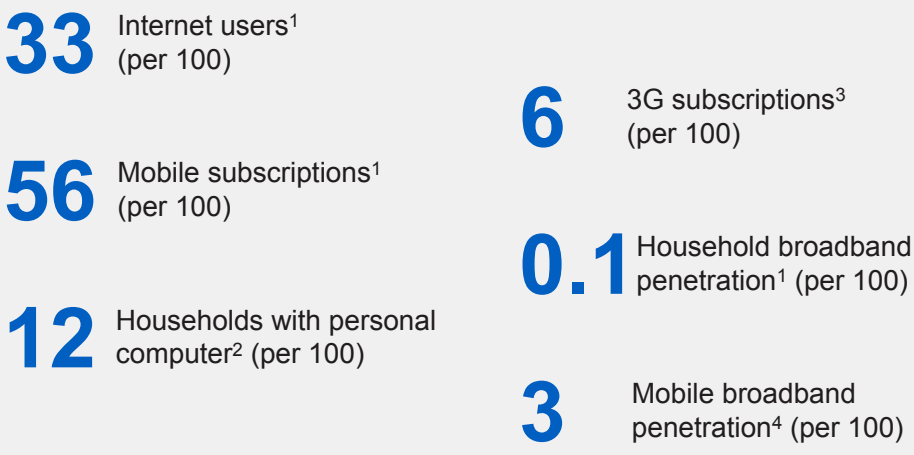
323 International Trade Centre: Trade Map—International Trade Statistics. The information is as of 2010 and includes crude petroleum oils; petroleum oils, not crude; and petroleum gases.
324 *CIA World Factbook*, 2011.
325 Ibid.
326 Ibid.
327 Ibid.
328 Ibid.
329 Ranking based on data from United Nations Development Programme (UNDP) Report 2011, UNESCO Institute for Statistics, and national self-reported data.
330 International Energy Agency electrification database.
331 Federal Ministry of Energy; World Bank, "Enterprise Survey"; Mikael Hook, "Energy Security—A brief introduction," November 19, 2011.

Internet, compared with the 56 percent who have mobile subscriptions.[332] Approximately 33 percent of Nigerians have Internet access, largely through mobile or public access points.[333] Infrastructure-related constraints are most prevalent in rural areas. The share of Nigerians without electricity in rural areas is 2.4 times that in urban areas.[334] Urban dwellers are also more than seven times as likely as rural dwellers to have access to Internet services.[335] Additionally, the literacy rate is approximately 20 percentage points higher in urban areas.[336]

With 44 million Internet users today, Nigeria already has Africa's largest online population.[337] Nigeria is also quite young, with more than 70 percent of the population under 30 years old and an average age of 19. These demographics suggest a population eager and able to adapt to new technologies (Exhibit 89).[338]

Exhibit 89

Nigeria's Internet landscape statistics



Note: Only available information depicted. Not all metrics available for Nigeria.
1 The EIU Telecoms and Technology Report data for 2010, published July 2011.
2 WEF, Global Information Technology Report 2010–2011. Data for 2008.
3 World Cellular Information Service, December 2011.
4 ITU World Telecommunication/ICT Indicators database as provided by Wireless Intelligence, 2010.

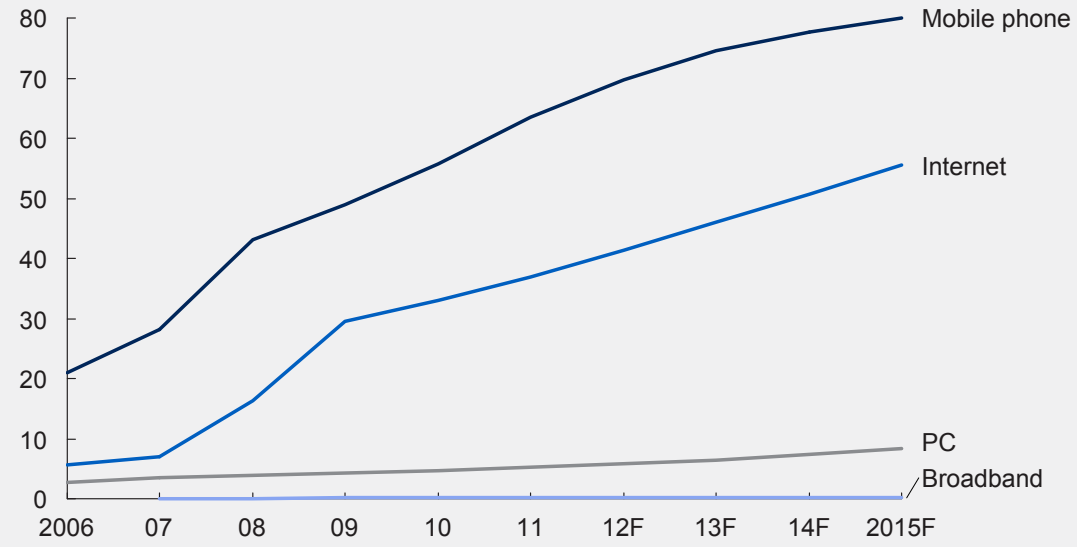
SOURCE: McKinsey analysis

In recent years, significant investments have enabled deployment of new broadband technologies, including fiber-optic cable and broadband over power lines.[339] These investments are believed to have had cascading effects on the level of Internet usage in Nigeria. By the end of 2011, Nigeria's Internet user penetration rate will have risen to an estimated 37 percent from 6 percent in 2006, representing a 45 percent annual growth rate.[340] These increases in Internet access stem largely from the growth in mobile subscriptions. The Nigerian mobile sector has been one of the fastest-growing telecommunications markets in the world, going from 1 million subscriptions in 2001 to 85 million in 2010, a 64 percent annual growth rate (Exhibit 90).[341]

332 Fixed-line Internet, broadband subscriptions, and mobile subscriptions data from Economist Intelligence Unit, "Nigeria: Telecoms and technology report," July 2011.
333 The Economist Intelligence Unit, "Telecoms and technology report," July 2011; World Economic Forum, "Global information technology report, 2010–2011."
334 IEA electrification database
335 Gbenga Omokhunu, "Over 95 percent of Nigerians have no access to PCs, Internet," *The Nation*, December 20, 2011.
336 Nigeria National Bureau of Statistics, General Household Survey, 2007.
337 World Bank, World Development Indicators; Economist Intelligence Unit, "Nigeria: Telecoms and technology report," July 2011.
338 *CIA World Factbook, 2011.*
339 Economist Intelligence Unit, "Nigeria: Telecoms and technology report," July 2011.
340 Ibid.
341 Ibid.

Exhibit 90

Nigerian Internet penetration has been driven almost exclusively by increases in mobile penetration



SOURCE: Pyramid Research; ITU; McKinsey analysis

Impact of the Internet

To measure the economic impact of the Internet, we have constructed the iGDP Index, which measures the contribution of the Internet to a country's GDP. We have also separately measured a country's e-commerce platform, because it plays a seminal role for consumers and retailers alike in a country's Internet ecosystem. The eCP assesses the health of a country's e-commerce ecosystem.

- **iGDP.** Using the expenditure method, the contribution of the Internet is measured as the proportion of GDP that can be attributed to the Internet in private consumption, public expenditure, private expenditure, and trade.[342] This measure is ICT-related, as it aggregates the expenditure on all goods and services that are related to the Internet, including devices, access, the consumption of hardware, and online consumption.

- **eCP.** The e-commerce platform demonstrates e-commerce enablement by scoring a country's online payment enablement, parcel delivery systems, and Internet readiness.[343]

The economic impact of the Internet in Nigeria is lower than in the rest of the aspiring world; it has half the impact seen in Mexico and Vietnam, and only 13 percent of that in Malaysia (Exhibit 91). Private consumption drives nearly all of the Internet's economic impact on Nigeria. However, there appears to be room for consumption growth through the further enablement of e-commerce. To this end, a few e-commerce players have already emerged to try to capture the market.

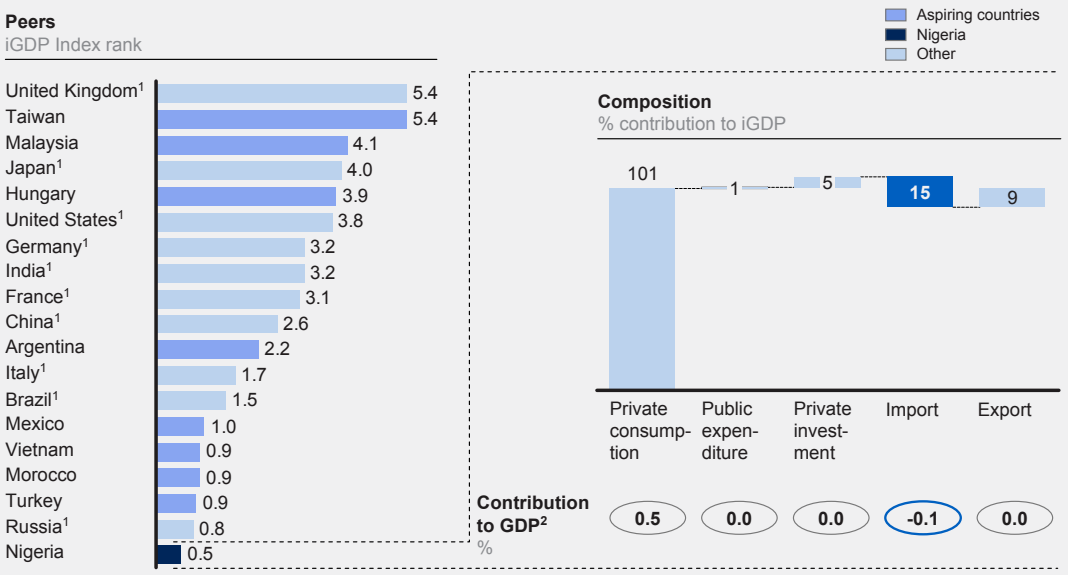
342 Internet contribution to GDP index components: private consumption (total consumption of goods and services by consumers via the Internet, or consumers' costs to obtain Internet access); private investment (private-sector investment in Internet-related technologies); public expenditure (public expenditure on Internet is estimated by adding government, public health care, and public education expenditures on the Internet); trade balance (exports of Internet-related goods and services, plus B2C and B2B e-commerce, net of all associated Internet-related imports).

343 E-commerce platform index components: online payment enablement (number of financial cards in circulation, volume of cashless payments, legal protection provided to the e-consumer); parcel delivery (reliability of postal system, cost of domestic shipping, percent of a population with delivery to their homes); Internet readiness (volume of secure servers, Internet penetration, domain registration cost).

Exhibit 91

Nigeria's Internet economic impact is the lowest in the aspiring world

% Internet contribution to GDP



1 2009.
2 Numbers may not sum due to rounding.

SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD, iConsumer US 2010; Euromonitor; H2 Gambling Capital; World Travel and Tourism Council; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

The Internet contributes only 0.5 percent to Nigeria's GDP. In the average aspiring country, private consumption accounts for about 70 percent of the Internet's contribution on the economy, but in Nigeria private consumption accounts for 100 percent. By contrast, Nigeria is underindexed on private investment: in the average aspiring country, investment accounts for 17 percent of impact, but in Nigeria it accounts for only 5 percent.

Although private consumption is Nigeria's strength, room for growth in the sector could be achieved by enabling the Nigerian e-consumer. E-commerce could be promoted in the country by increasing consumer online payment enablement and Internet readiness. Specifically, relatively low levels of cashless payments, coupled with below average infrastructure, make online transactions difficult for the Nigerian e-consumer.

In a sample of 57 countries across the developed and aspiring world, Nigeria has much room for growth in terms of the online payment enablement, parcel delivery systems, and Internet readiness (Exhibit 92). For each category, specific opportunities exist.

The volume of cashless payments made in Nigeria limits the country's online payment enablement. Nigeria has 0.2 annual cashless payments per year per capita. By comparison, Morocco, another aspiring country, has 1.6 cashless payments per year per capita; South Africa, one of Africa's more advanced economies, has 22.1.[344] Nigeria ranked in the bottom decile of all 57 countries studied for the share of the country's population with mail delivered at home. The percent of the population that has mail delivered to its final destination is about twice as large in Morocco (72 percent) and South Africa (64 percent) as it is in Nigeria (37 percent).[345]

The limited number of secure Internet servers in Nigeria constrains the volume of reliable transactions that can occur online. Nigeria has one secure Internet server per one million people. Morocco has double this rate, while South Africa has 40 times that amount.[346] Nigeria has an opportunity to overcome this constraint

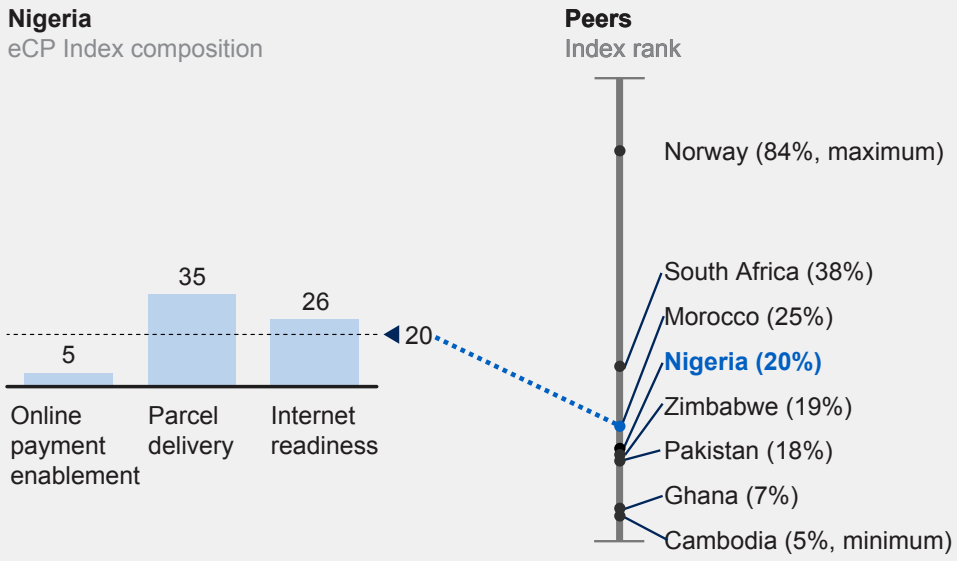
344 McKinsey Global Payments Database, 2011.
345 Universal postal union; expert interviews.
346 World Economic Forum, "Global information technology report 2010–2011."

by using cloud technologies (see Box 38, "E-commerce players are emerging in Nigeria, each employing unique features to overcome constraints (as of December 2011)").

Exhibit 92

Nigeria has room for growth in all three categories of e-commerce

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Box 38. E-commerce players are emerging in Nigeria, each employing unique features to overcome constraints (as of December 2011)

- **234world.com.** Cashless payments are relatively uncommon in Nigeria; this site allows consumers to pay online by depositing cash at any branch of Zenith Bank, GTBank, or UBA. The Web site also offers the option to "eHaggle," where "buyers will be able to negotiate prices of products with the seller/merchant and arrive at a price that is agreeable to both parties."[347]

- **Orderbay.com.** Many Nigerians find it difficult or expensive to purchase goods outside the country. Orderbay "provides online shopping services to people who want to shop abroad from Nigeria" and emphasizes low costs. Orderbay facilitates the purchase of standardized tests, Web site hosting, PayPal account funding, and much more.[348]

- **Booksng.com.** This site was one of Nigeria's first online bookstores. Purchases can be made with a Nigerian Interswitch ATM card. The Web site also effectively uses Nigerian postal systems, guaranteeing delivery within 48 hours.[349]

347 234world.com.
348 Orderbay.com.
349 Booksng.com; Nigerian e-commerce blogs.

Internet ecosystem

To assess the health of a country's Internet ecosystem, we constructed two indexes:

- **e3.** This index measures the current maturity of an Internet ecosystem according to three major drivers: environment, engagement, and expenditure.[350]
- **i4F.** This index measures the vibrancy of an Internet ecosystem—i.e., the preconditions for future growth—based on the four key foundations of financial capital, business environment, infrastructure, and human capital.[351]

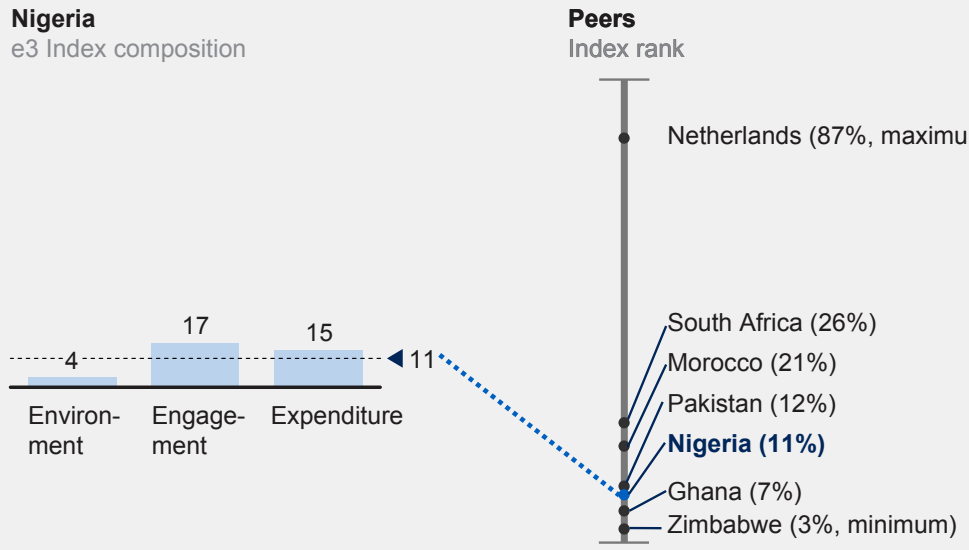
Nigeria's current Internet ecosystem is below average, and indicators of growth potential suggest the ecosystem has much distance to cover. Little broadband access and low business engagement diminish the country's current Internet ecosystem, and future prospects could be constrained by relatively low levels of human capital and difficulty accessing financial capital. Yet an opportunity for a turnaround remains.

Based on the maturity of its Internet ecosystem, Nigeria ranks below the global average with an e3 score of 11. Even compared with other African nations, Nigeria is below average: South Africa scores 26, Egypt 24, and Morocco 21. Nigeria is in the bottom quartile of countries with regard to the Internet environment it creates for its citizens, as well as the engagement and expenditure levels of businesses and individuals.

Exhibit 93

Low broadband access and business engagement diminish Nigeria's current Internet ecosystem

Percentile rank, 57-country set



SOURCE: McKinsey analysis

With regard to environment, Nigeria's Internet ecosystem is constrained by slow bandwidth speeds, lack of infrastructure, and low accessibility of digital content (Exhibit 93). As we have mentioned, the country has fewer secure Internet servers than regional and aspiring counterparts. Nigerians surveyed on the

350 Internet ecosystem maturity index components: environment (existing Internet speed and penetration), engagement (usage of Internet by individuals, enterprises, and governments), and expenditure (Internet spending such as e-commerce and online advertising).

351 Internet ecosystem foundations index components: financial capital (availability of financing for Internet and ICT companies);, business environment (the country's attractiveness to business due to regulatory and societal effects), infrastructure (penetration and quality of Internet-enabling infrastructure), and human capital (education and research).

accessibility of digital content (where 1 means digital content is not at all accessible and 7 is best in class) rated the country 4.0 on average, compared with 4.5 in Morocco and 4.6 in South Africa.[352] Internet engagement is limited by low broadband access, few businesses using Web sites, and the government offering few online services. Forty-nine percent of businesses in Nigeria have a Web site, the same level observed in Vietnam, 10 percentage points less than Morocco, and 20 percentage points less than Malaysia.[353] The World Economic Forum's government online service index (which rates services on a scale from 0 to 1, where 1 is best in class) scores the Nigerian government's online offering at 0.1, compared with its scores of 0.2 in Morocco and 0.3 in South Africa for online offerings in those countries.[354]

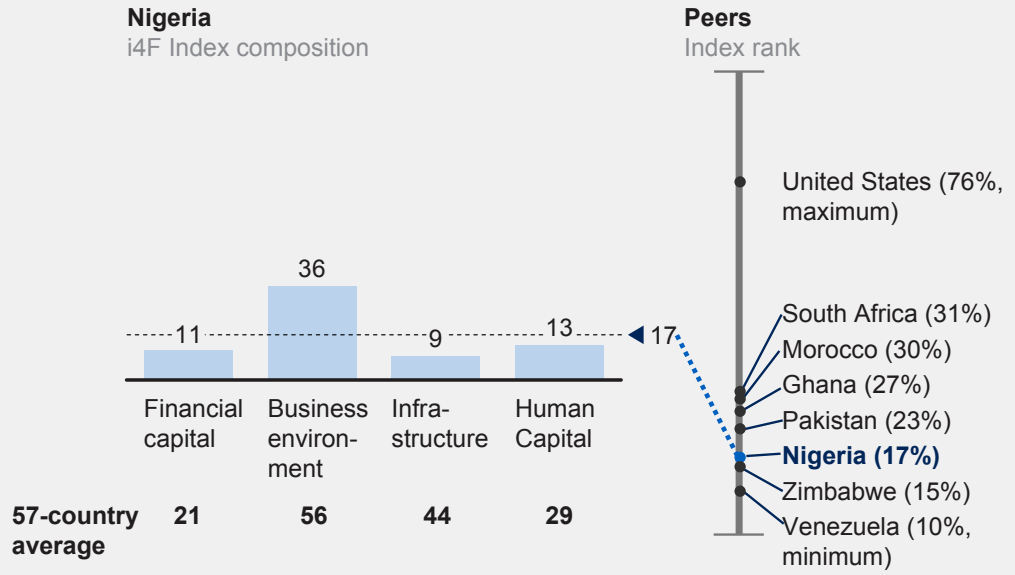
Expenditure on the Internet is also limited. Low levels of e-commerce enablement are one reason for low online retail expenditure as a percent of total expenditure. Only 0.1 percent of total retail spend in Nigeria occurs online, 5 times less than that observed in Morocco and 16 times less than in South Africa.[355]

There are opportunities to strengthen the foundations that will underpin the growth of Nigeria's Internet ecosystem. Nigeria's business environment may be the strength to leverage in the future (Exhibit 94). Potential improvements include increasing access to financial and human capital and improving infrastructure. Financial capital is constrained by the difficulty of getting bank loans. Businesses in Nigeria find that obtaining a bank loan is not easy—and other sources of funding are relatively nonexistent. When asked "How easy is it to obtain a bank loan in your country with only a good business plan and no collateral? [1 = very difficult; 7 = very easy]," Nigerians scored their country a 2; Moroccans scored their country 50 percent higher, while South Africans scored theirs 60 percent higher.[356] And to make matters potentially more difficult, Nigeria has few venture capital deals.[357] However, the country ranks favorably when considering the amount of time required to start a business (that is, relatively little time is required), and it is average with regard to having effective antitrust policy.

Exhibit 94

Business environment may be key lever for growth of Nigeria's ecosystem

Score relative to maximum of 57-country set in each index variable



SOURCE: McKinsey analysis

352 World Economic Forum, "Global information technology report, 2010–2011."
353 United Nations Council on Trade and Development, Information Economy Report 2010.
354 World Economic Forum, "Global information technology report, 2010–2011."
355 Euromonitor.
356 World Economic Forum, "Global competitiveness report, 2010–2011."
357 Capital IQ, "Transaction Screening Report," 2000–2011.

Infrastructure remains a critical barrier to growth. As we have noted, electricity supply in Nigeria is mixed and often unreliable. Asked "How would you assess the quality of the electricity supply in your country (lack of interruptions and lack of voltage fluctuations)? [1 = insufficient and suffers frequent interruptions; 7 = sufficient and reliable]," Nigeria scored in the bottom decile of all countries at 1.3.[358] This, in addition to a relative lack of government procurement of advanced tech products and the aforementioned scarcity of secure Internet servers, creates multiple opportunities for improvement.

Surveys suggest that collaboration between industry and research in Nigeria is low. And given that talent often flows out of the country and that tertiary education enrollment is low, the country also lags behind others in human capital development and utilization.

User groups

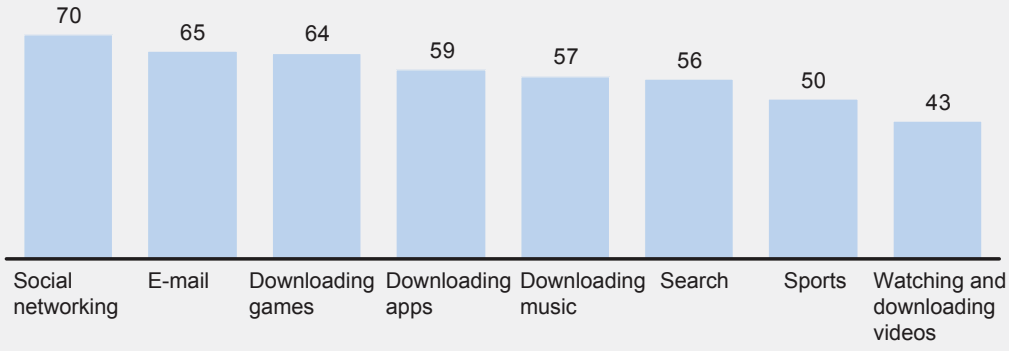
Individuals. Nigeria's consumption of Web technology is growing rapidly, due in part to the opening of the mobile telecommunications market. Nigerians with mobile devices are using those devices to access the Internet; specifically, they use mobile Internet to visit social networks, send e-mail, and visit entertainment sites. Job-matching sites also prove important when Internet usage is looked at more broadly. Given the recent developments in consumption adoption, the ways in which Nigerians are using the Internet is also changing.

After Nigeria's mobile market was liberalized and the influx of large GSM mobile operators began in 2001, the country's mobile population expanded significantly.[359] In 2007, mobile subscription penetration reached 27 percent.[360] By 2008, the mobile subscription base reached 63 million people, enabling Nigeria to become Africa's largest mobile market as measured by subscriptions.[361] By 2010, mobile subscription penetration had increased to 57 percent; by 2015, it is expected to reach 82 percent.[362]

Exhibit 95

Nigerian Internet users use mobile devices for social networking, e-mail, and visiting entertainment sites

Question: Which types of mobile Internet sites do you visit on your mobile phone? (% of answers)



SOURCE: Analysys Mason, *Assessment of economic impact of wireless broadband in Nigeria*, February 2011.

Many Nigerians are now using their mobile devices to access and use Web content (Exhibit 95). After conducting a survey of 1,500 Nigerian mobile phone users, Pyramid Research noted that the following: "When Nigerian end users were asked about the types of activities for which they use mobile communications, access to entertainment and information is the most frequent response, followed by work-related activities in the older age brackets. More than 40 percent of the respondents in the 16 to 25

358 World Economic Forum, "Global competitiveness report, 2010–2011."
359 Pyramid Research, "The impact of mobile services in Nigeria," March 2010.
360 Pyramid Research.
361 Pyramid Research, "The impact of mobile services in Nigeria," March 2010.
362 Pyramid Research and Nokia Siemens Network.

age bracket claimed use of mobile communications for education-related activities."[363] Another research firm, Analysys Mason, observed that 70 percent of Nigerian mobile phone users visit social networking sites and that 65 percent use their mobile phones for e-mail (for more information about how people in the country use mobile services, see Box 39, "Midway to e-commerce: Nigerians transact online, then purchase and pick up in store").[364]

In addition to these functions, the use of the Internet as a job-matching tool is important in Nigeria. The top 20 Nigerian Web sites are worth an estimated $400 million,[365] and online job boards account for one-fifth of these sites.[366] For example, NaijaHotJobs.com sorts job opportunities by categories such as banking, engineering, and IT. Within each of these categories, educational downloads and tutorials are offered to help individuals develop skills relevant to their field. The site also includes a forum with job postings.[367]

Given the acceleration of mobile adoption and the widespread facilitation of new ways to access the Internet, Nigerians are also changing their preferences about where they access the Internet. In 2008, 82 percent of users said that they had accessed the Internet from a cybercafé; by 2009, that figure had dropped to 66 percent.[368] Furthermore, a 2010 study found that more than nine out of ten Nigerian Internet users between the ages of 18 and 27 use their mobile phones to access the Internet more often than they use desktop or laptop computers.[369]

Box 39. Midway to e-commerce: Nigerians transact online, then purchase and pick up in store

Only 30 percent of adult Nigerians have bank accounts,[370] but 56 percent have mobile subscriptions.[371] Some businesses are looking to leverage the ubiquity of mobile phones to correct for the scarcity of financial services.

Paga, a mobile payments provider, recognizes that Nigerians lack trust related to security and online payments. Paga believes that e-commerce in Nigeria is not about the "e," but instead about allowing Nigerians to purchase products through mobile applications. These products can then be paid for either electronically or, more likely, at Paga's nearest physical storefront. This allows online merchants to reach more customers and ensures that customers are comfortable with their transactions.[372] Since February 2011, Paga has facilitated 40,000 transactions that collectively were worth $1.6 million.[373]

370 EFInA, "Access to financial services in Nigeria 2010 survey," November 2010.
371 Economist Intelligence Unit, "Nigeria: Telecoms and technology report," July 2011.
372 www.mypaga.com.
373 Loy Okezie, "Paga now lets you fund your account with Mastercard and Verve card," Techloy.com, December 2011.

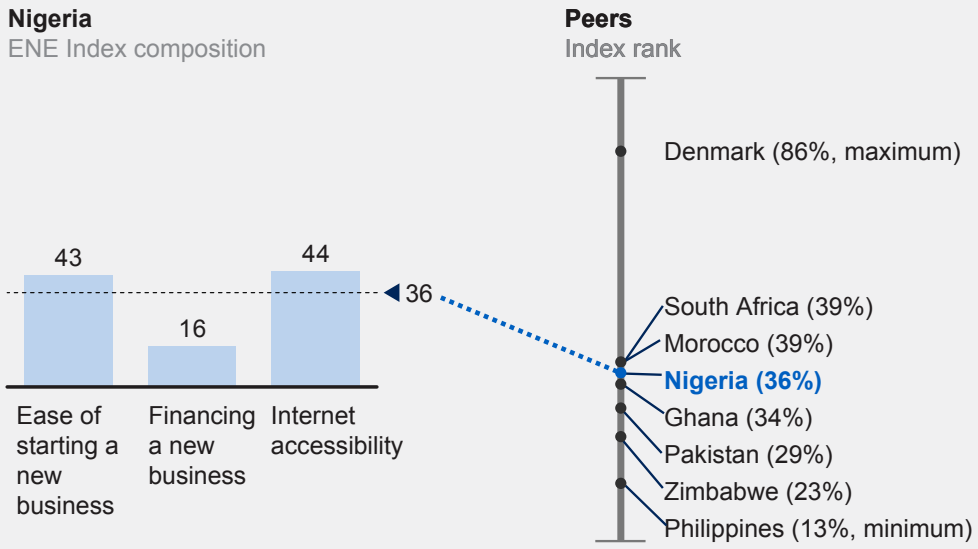
363 Pyramid Research, "The impact of mobile services in Nigeria," March 2010.
364 Analysys Mason, "Assessment of economic impact of wireless broadband in Nigeria," February 2011.
365 Web Trends Nigeria, "Top 20 Nigerian websites worth N.66 billion Naira," July 6, 2010.
366 Ibid.
367 Naija Hot Jobs website, http://www.naijahotjobs.com (accessed December 1, 2011).
368 Analysys Mason, "Assessment of economic impact of wireless broadband in Nigeria," February 2011.
369 Opera Software. "Generation Y chooses the mobile Web." November 24, 2010.

Entrepreneurs. McKinsey has built an ease of Internet entrepreneurship index based on three components: the ease of starting a new business, the ease of financing a new business, and Internet accessibility.[374] Nigeria lags behind more developed countries when it comes to ease of entrepreneurship, although it is above average when compared with the rest of Africa. The country scores only three index points behind South Africa on ease of entrepreneurship (Exhibit 96); other African nations, such as Ghana, Egypt, and Zimbabwe, trail Nigeria. Although the country's scores for the environment it creates to start a new business and for Internet accessibility are about average, Nigeria's ease of entrepreneurship is constrained by difficulties in starting and financing new businesses. For instance, in Nigeria it takes 31 days to start a new business—compared with 12 days in Morocco and Ghana, 7 days in Egypt, and 22 days in South Africa.[375]

Exhibit 96

Time and financing hinder Nigerian entrepreneurs trying to start a new business

Percentile rank, 57-country set



SOURCE: McKinsey analysis

The high cost of acquiring bank loans and the difficulty of securing them make financing a new business in Nigeria harder than average. In terms of annual income per capita, in 2010 it costs the average Nigerian entrepreneur 77 percent of his or her income to start a business. That is over 4.5 times as high as in Morocco and 13 times as high as in South Africa.[376] This high cost is driven in part by constraints related to electricity, as new Internet businesses may need to purchase costly generators to ensure that electricity supply is reliable. Apart from cost, there are other barriers: in a Gallup Poll, 73 percent of Nigerians said that it was not easy to obtain a loan, and 59 percent said that the government did not make the filing process easy enough for those hoping to start a business.[377]

Despite these weaknesses, Nigerian entrepreneurs can leverage investments from abroad. Nigeria attracts more inward FDI than other aspiring countries; inward FDI makes up 3.1 percent of Nigeria's GDP, though it accounts for just 2.5 percent of GDP on average for the aspiring countries we studied.[378]

374 Ease of Internet entrepreneurship index components: ease of starting a new business (industry-agnostic view of the overall business ecosystem in a country); ease of financing a new business (availability and attractiveness of financing for ICT start-ups, as well as the cost of financing a new business); Internet accessibility (extent and cost of Internet access for both enterprises and their target consumers).

375 World Bank, "Doing Business" project, 2011.

376 World Bank, "Doing Business" project, 2011.

377 Magali Rheault and Bob Tortora, "Nigeria—Drivers and challenges of entrepreneurship," Gallup, April 2008.

378 The Economist Intelligence Unit.

While the cost of domain registration is relatively low, Internet penetration in Nigeria is still low relative to that for our 57-country sample. Improvements in penetration can be expected if strides are made in areas such as infrastructure.

Although improvements must be made, some companies are already benefiting from Nigeria's entrepreneurial environment. One such company is NollywoodLove, an entertainment start-up that has obtained license rights to major Nigerian movies. By partnering with YouTube, NollywoodLove has begun to broadcast movies in a dedicated section of the video site.[379]

Enterprises. Enterprise use of Internet technologies in Nigeria is still nascent. Unreliable electricity is one of the primary reasons Internet adoption remains low—but for enterprises that can overcome this and other constraints, the Internet provides a multitude of benefits. Enterprises that revolve around Web-based offerings have already begun to capture these benefits.

Nigeria's share of businesses with broadband connections is six times smaller than the aspiring country average and just half of the African average, largely due to difficulties incorporating ICT solutions into a business model where reliable power supplies are expensive.[380]

Low broadband adoption partially explains why other metrics gauging enterprise usage of the Internet lag behind those in other countries. As mentioned in our discussion of the e3 Index, Nigeria's share of e-tail as a percent of total retail is below African and global levels. When surveyed regarding the extent of business Internet use (where a score of 1 = not at all and 7 = best in class), Nigerians scored their country a 4.5. By comparison, Moroccans scored their country 4.6, and South Africans scored their country 5.1.[381]

Some enterprises do, however, use the Internet, and they do so effectively. Based on an 11-month study of SMEs in Nigeria in 2008, researchers found the following: "On the impact of information technology resources on business growth, general income flow, and job creation, results of the study show that a majority of small-scale enterprises have immensely benefited in these areas" (see Box 40, "Examples of innovative Nigerian start-ups (as of December 2011)").[382]

Moreover, in a proposal to the Nigerian government on SMEs, Fairford Resources noted the following: "For both service-based and product-oriented SME companies … in Nigeria, the Internet:

- Reduces operational costs by bridging the information gap created through geographical dispersion, administration costs, and transportation costs;
- Increases efficiency due to increased precision and speed;
- Offers increased access to local, national, or international markets;
- Allows personalization of products and services;
- Encourages direct and specialised marketing due to the many databases available, which capture consumer preferences; and
- Provides cost-effective advertisement assuring your business of a high return on its investment (ROI)."[383]

379 Web Trends Nigeria, "Nigerian start-up got N450 million ($3 million) funding to redefine entertainment," September 29, 2011.; Web Trends Nigeria, "YouTube partners Nigerian start-up to bring Nigerian movies online (legally)," March 21, 2011.

380 Expert interviews; Pyramid Research.

381 World Economic Forum, "Global information technology report, 2010–2011."

382 I. F. Anyasi and A. L. Imoize, "Information technology and the business communities: A case study of small-scale business enterprises in Nigeria," articlesbase.com, December 24, 2009.

383 FarifordFairford Resources (UK) Ltd., "The implementation of Internet presence for Nigerian small and medium businesses," May 2005.

Box 40. Examples of innovative Nigerian start-ups (as of December 2011)[384]

- **Nairaland.com.** This site serves as an aggregator for various news outlets. As of November 11, 2011, the ticker on the Web page boasted 800,000 members discussing 736,000 forum topics.
- **DealDey.** DealDey is a Nigerian Groupon-like start-up. Consumers can purchase products from their mobile phones and pay either with credit card or through payment applications such as Paga.
- **Paga.** This mobile payments solution provider seeks to circumvent the low percentage of Nigerians who are "banked." It partners with merchants to allow consumers to pay for products purchased online through Paga storefronts, and it offers services such as sending money via SMS to another mobile phone.
- **NollywoodLove.** This successful Nigerian entertainment start-up has license rights to major Nigerian movies. YouTube partnered with NollywoodLove to create a Nollywood-specific section in the YouTube movie section. It is estimated that NollywoodLove generated $1 million from Adsense in under a year.
- **Jobberman.** This site allows users to browse many job postings by industry and specialization.

384 Company Web sites.

Government. E-government services in Nigeria are also nascent. Nigeria, along with most of Africa, falls in the bottom 20 percent of the United Nations' e-Government Development Index.[385] Nigeria performs poorly on the index because of limited online services, limited telecommunications infrastructure, and poor human capital.

The Nigerian government's national e-governance strategy, "e-Nigeria," has been slow to progress, since few user groups have access to computers from which government services can be leveraged. The structure of e-Nigeria is to serve as an integration platform for other e-services, including eProcurement, ePayment, eNaira, eMilitary, eState, eLegislature, and eJudiciary. But underdeveloped internal infrastructure and planning undermine the delivery of e-government services to Nigerians. Additionally, lack of digital literacy in the existing government workforce hinders usage. Working to move past these problems will be a challenge for the Nigerian government as it proceeds.[386]

Path forward

Nigeria is a country with great potential. It was identified as an aspiring country because it displays a strong set of fundamentals and appears to be poised for growth: nominal 2010 GDP was greater than $200 billion, GDP growth from 2005 to 2010 exceeded 13 percent, and 2010 per capita GDP was more than $1,300.[387] Additionally, the country has favorable characteristics for continued growth, including a young consumer base eager to use more Web technologies.

Different sources of macroeconomic strength can be leveraged to help propel growth of the Internet in Nigeria (see Box 41, "Aspiring countries can draw on their strengths to drive Internet ecosystem growth" for a summary of five macroeconomic strengths across aspiring countries). First and foremost, Nigeria is a resource-rich country with high levels of exports. Exports, primarily in natural resources such as petroleum, account for nearly 20 percent of Nigeria's GDP.[388]

385 United Nations, "e-Government survey 2010."
386 Obi Thompson, "Challenges to e-governance development in Nigeria," presented at a UNeGOV.net workshop in Abuja, Nigeria, July 24–27, 2006.
387 IMF World Economic Outlook National Accounts Table; nominal per capita GDP in 2010.
388 *CIA World Factbook.*

Box 41. Aspiring countries can draw on their strengths to drive Internet ecosystem growth

We have identified five macroeconomic strengths that aspiring countries can leverage to drive Internet ecosystem growth. These strengths are not mutually exclusive, but they apply in varying degrees to each aspiring country. For a broader discussion of these strengths and a comparison of our 57-country set along them, see chapter 3.

- **"Resource-rich"** countries' economies are disproportionately dependent on exploiting highly profitable natural resources (e.g., oil, natural gas), giving them large sums of money to invest.
- **"Hub-of-trade"** countries' economies are driven by exports of goods and services. Local enterprises, or multinationals with local branches, have developed expertise in supply chain and international trade.
- **"Innovation-potential"** countries have large investments in R&D. They benefit from large pools of highly educated and creative individuals developing new products.
- **"Strong-local-consumption"** countries' economies are heavily reliant on domestic consumption. Furthermore, imports are low, meaning that most goods and services consumed are provided by local businesses.
- **"Strong-SME-sector"** countries have an SME sector that is a dominant force in the economy, e.g., SMEs employ a majority of the workforce.

Nonetheless, the country's Internet ecosystem is constrained by macroeconomic and Internet-specific challenges. About 70 percent of Nigerians live below the poverty line.[389] In attempting to engage online, consumers in Nigeria must overcome weak infrastructure, such as unreliable electricity and low bandwidth speeds, as well as a lack of financial cards in the country. Additionally, businesses have a relatively small online presence.

Beyond these constraints, Nigeria faces other challenges that could hinder use of the Internet ecosystem by user groups such as entrepreneurs and businesses. Most notably, financial capital in Nigeria appears hard to acquire. Nigerians report difficulty in acquiring bank loans, and venture capital activity is relatively low compared with other aspiring countries.

Nigeria has taken the initial steps to build a robust Internet ecosystem. But for the Internet's growth in the country to continue on its current trajectory, a number of trends must be sustained—growth in consumer demand, advances in ease of entrepreneurship, and growth in Nigerian-based online businesses. When constraints to a robust Internet ecosystem are resolved, Nigeria should be well on its way to taking greater advantage of the economic impact of the Internet.

389 *CIA World Factbook.*

Country profiles

Taiwan

Taiwan's advanced Internet ecosystem is on par with those of developed countries. Initially, Taiwan's Internet infrastructure was supported by a series of government initiatives, which allowed its telecom sector to evolve into a more competitive industry and also drove broad Internet penetration. The Internet penetration rate, now 72 percent, has empowered individuals, entrepreneurs, and enterprises.[390] Widespread penetration of PCs and smartphones also enables Internet usage. As a result, economic indicators of the Internet's impact, including the Internet's contribution to GDP and consumer surplus created, are in line with levels seen in developed countries. In addition, Taiwan is an integral part of the global ICT supply chain given its high level of technology exports.

Opportunities exist to further leverage Taiwan's mature Internet ecosystem. Although Internet penetration is high in Taiwan, e-commerce levels are lower than those in highly developed markets. Thus Taiwanese entrepreneurs and businesses, as well as multinational players, can leverage the local market by increasing the availability of products and services. In addition, human capital in Taiwan lags behind the levels seen in more developed countries, as measured by such indicators as doctorate degrees in science and engineering and number of R&D personnel. An increased focus on further developing local human capital and fostering innovation can aid Taiwan in expanding its role in the global ICT market.

Taiwan's online population is active and sophisticated, accessing the Web to search, play games, socialize, and catch up on fashion trends. Strong Internet entrepreneurship has been driven by successful domestic online players. In addition, enterprises derive growth and productivity from the Internet, using Web tools to communicate with suppliers and customers and making use of the Internet as a platform for conducting transactions. And from an early stage, the government has provided support and investments to expand Internet infrastructure and access, and it has improved its services through Internet options.

Public- and private-sector efforts will continue to improve the quality and speed of Internet access, using the fast growth in South Korea and Japan as benchmarks in Asia. Beyond advances in infrastructure, the path forward in Taiwan's Internet development will be to leverage the vibrant and innovative Internet ecosystem and to make use of Taiwan's status as a hub of trade. Developing online content and services, as well as moving its ICT manufacturing sector from hardware components to other parts of the value chain, will be key. Adapting cloud technologies is another area of opportunity.

Country overview

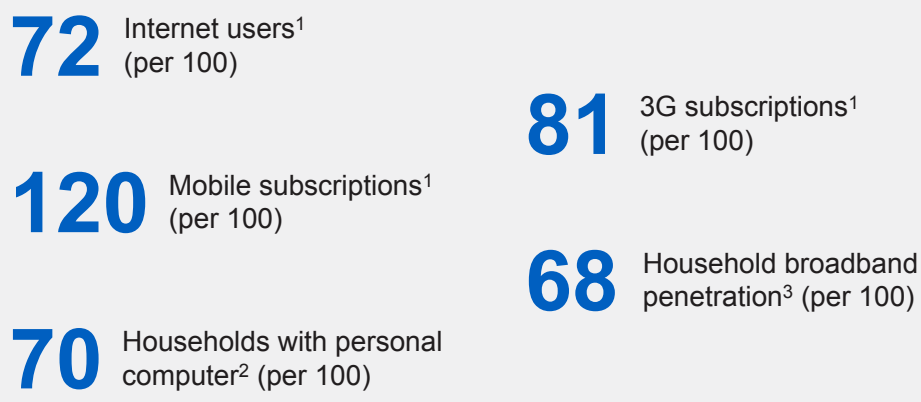
Taiwan is a robust economy, with the 19th-highest purchasing power parity per capita GDP in the world.[391] In 2010, Taiwan's real GDP growth rate of 10.8 percent was the fourth highest in the world.[392] It is a major manufacturer of electronic goods and a flourishing trading hub in Asia. Exports, particularly electronics and machinery, generate about 70 percent of Taiwan's GDP growth.[393] Taiwan is the world's number-one provider of LCD monitors, notebook PCs, PDAs, and chip foundry services, with 70 percent or more share of the global market for each technology.[394] In addition, the economy is increasingly driving value from the services sector.

390 Taiwan National Communications Commission, 2010.
391 IMF, 2010.
392 *CIA World Factbook*, 2010.
393 Ibid.
394 Market Intelligence Center, Industrial Technology Research Institute, 2010. As reported by; *Bloomberg Businessweek*, "Why Taiwan matters," May 16, 2005.

Taiwan has a strong Internet infrastructure. The majority of Taiwan's population is online. Taiwan has a high household PC penetration rate of 70 percent and high smartphone penetration rates. Smartphones made up 30 percent of all mobile shipments in 2011, and penetration has been bolstered by low-cost device options.[395] The combination of mobile and fixed-line broadband covers 95 percent of the country, and the availability of multiple access points has made Internet penetration ubiquitous in urban areas (Exhibit 97).[396]

Exhibit 97

Taiwan's Internet landscape statistics



Note: Only available information depicted. Not all metrics available for Taiwan.
1 Taiwan National Communications Commission 2010.
2 WEF, Global Information Technology Report 2010–2011. Data for 2009.
3 Fixed broadband subscription from National Communications Commission 2010 divided by households from Pyramid Research.

SOURCE: McKinsey analysis

Impact of the Internet

To measure the economic impact of the Internet, we have constructed the iGDP Index, which measures the contribution of the Internet to a country's GDP. We have also separately measured a country's e-commerce platform, because it plays a seminal role for consumers and retailers alike in a country's Internet ecosystem. The eCP assesses the health of a country's e-commerce ecosystem.

- **iGDP.** Using the expenditure method, the contribution of the Internet is measured as the proportion of GDP that can be attributed to the Internet in private consumption, public expenditure, private expenditure, and trade.[397] This measure is ICT-related, as it aggregates the expenditure on all goods and services that are related to the Internet, including devices, access, the consumption of hardware, and online consumption.

395 Taiwan National Communications Commission, 2010, "Taiwan smartphone penetration set to hit record high: IDC," *Taipei Times*, January 17, 2011.

396 Budde.com, "Taiwan—Broadband Market—Overview, Statistics and Forecasts" www.budde.com.au/Research/Taiwan-Broadband-Market-Overview-Statistics-and-Forecasts.html (accessed December 1, 2011).

397 Internet contribution to GDP index components: private consumption (total consumption of goods and services by consumers via the Internet, or consumers' costs to obtain Internet access); private investment (private-sector investment in Internet-related technologies); public expenditure (public expenditure on Internet is estimated by adding government, public health care, and public education expenditures on the Internet); trade balance (exports of Internet-related goods and services, plus B2C and B2B e-commerce, net of all associated Internet-related imports).

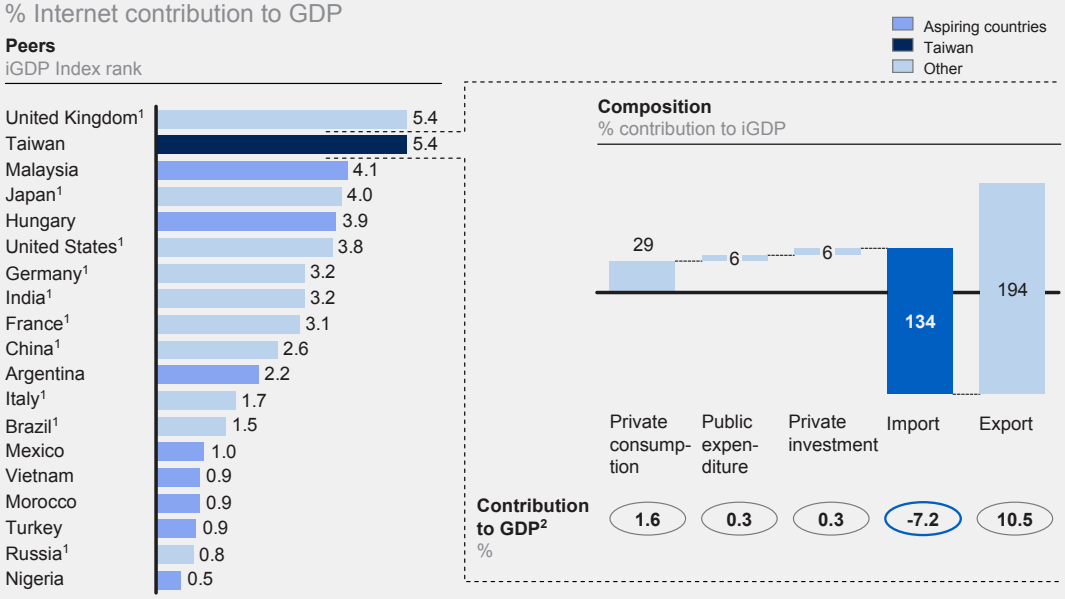
- **eCP.** The e-commerce platform demonstrates e-commerce enablement by scoring a country's online payment enablement, parcel delivery systems, and Internet readiness.[398]

The Internet's contribution to Taiwan's GDP, 5.4 percent, is the highest of the aspiring countries on which we have focused and on par with iGDP in developed countries (Exhibit 98). The maturity of Taiwan's Internet ecosystem is reflected in the high contribution the Internet makes to the economy, and there is potential for Taiwan to derive more value during the next wave of Internet development in the country.

Exhibit 98

The Internet's contribution to Taiwan's GDP is on par with that of developed countries

% Internet contribution to GDP



1 2009.
2 Numbers may not sum due to rounding.

SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; World Travel and Tourism Council; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

Trade in Internet-related goods is the major driver of Taiwan's high iGDP. As we have stated, Taiwan is integral to the international supply chain of ICT goods, with strengths in both original design manufacturing (ODM) and original equipment manufacturing (OEM). Furthermore, some players, such as HTC, have scaled the value chain to create brand-name products. Private consumption, including B2B and B2C e-commerce, also contributes to Taiwan's iGDP. B2B e-commerce has increased due to raised levels of online transactions between businesses. As a result, B2B e-commerce sales in 2010 had grown to $237 billion from $152 billion in 2005;[399] the compound annual growth rate for these sales was 9 percent. Online retail sales have grown at a compound annual growth rate of 17 percent, reaching $2.4 billion in 2010 from $1.1 billion in 2005, largely supported by Taiwan's strong Internet infrastructure and favorable Internet retail environment.[400]

The strength of Taiwan's foundations for thriving e-commerce, as measured by the eCP Index, is in the upper range of all countries studied (Exhibit 99). A strong e-commerce platform is supported by a reliable postal service and a high level of online payment enablement, driven by the high number of cards in circulation and legal protection of e-consumers. Taiwan is also highly Internet-ready, due in part to broad Internet penetration and a high e-business readiness rating according to the Economist Intelligence Unit.

398 E-commerce platform index components: online payment enablement (number of financial cards in circulation, volume of cashless payments, legal protection provided to the e-consumer); parcel delivery (reliability of postal system, cost of domestic shipping, percent of a population with delivery to their homes); Internet readiness (volume of secure servers, Internet penetration, domain registration cost).

399 IDC, 2010.

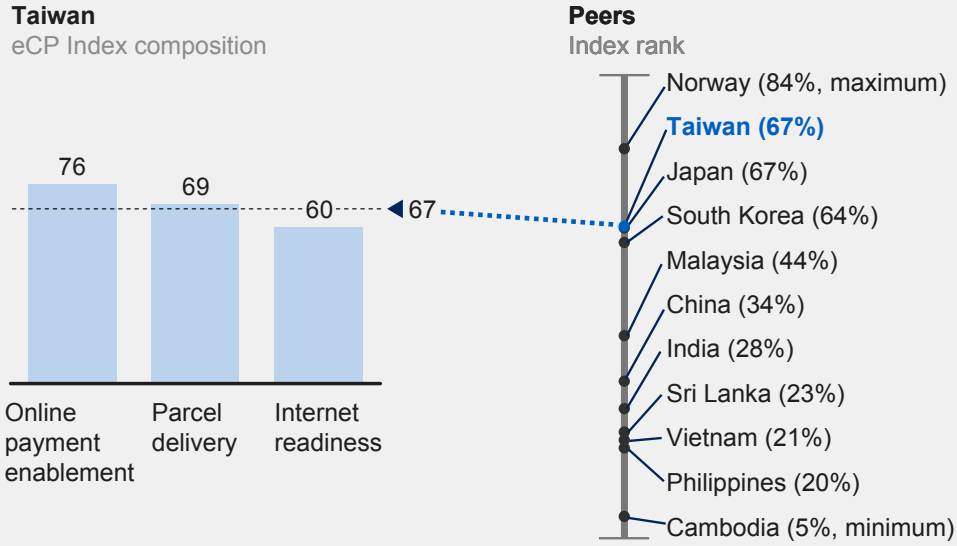
400 Euromonitor Retailing 2011.

With its strong foundations for e-commerce, Taiwan has the potential to gain additional value from a lively e-commerce ecosystem. Internet retail as a share of total retail is estimated at 3 percent, which lags behind countries with more robust e-commerce ecosystems such as the United Kingdom (about 8 percent) and the United States (about 4 percent).[401] Thus there is an opportunity for Taiwan's Internet companies to expand their sales by pushing new products and services into the online market, as well as for global online retail companies to increase their presence in Taiwan's Internet market.

Exhibit 99

Taiwan's e-commerce environment is in the upper range of all countries

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Internet ecosystem

To assess the health of a country's Internet ecosystem, we constructed two indexes:

- **e3.** This index measures the current maturity of an Internet ecosystem according to three major drivers: environment, engagement, and expenditure.[402]
- **i4F.** This index measures the vibrancy of an Internet ecosystem—i.e., the preconditions for future growth—based on the four key foundations of financial capital, business environment, infrastructure, and human capital.[403]

401 Online retail and total retail sales from Euromonitor, 2010.

402 Internet ecosystem maturity index components: environment (existing Internet speed and penetration); engagement (usage of Internet by individuals, enterprises, and governments); expenditure (Internet spending such as e-commerce and online advertising).

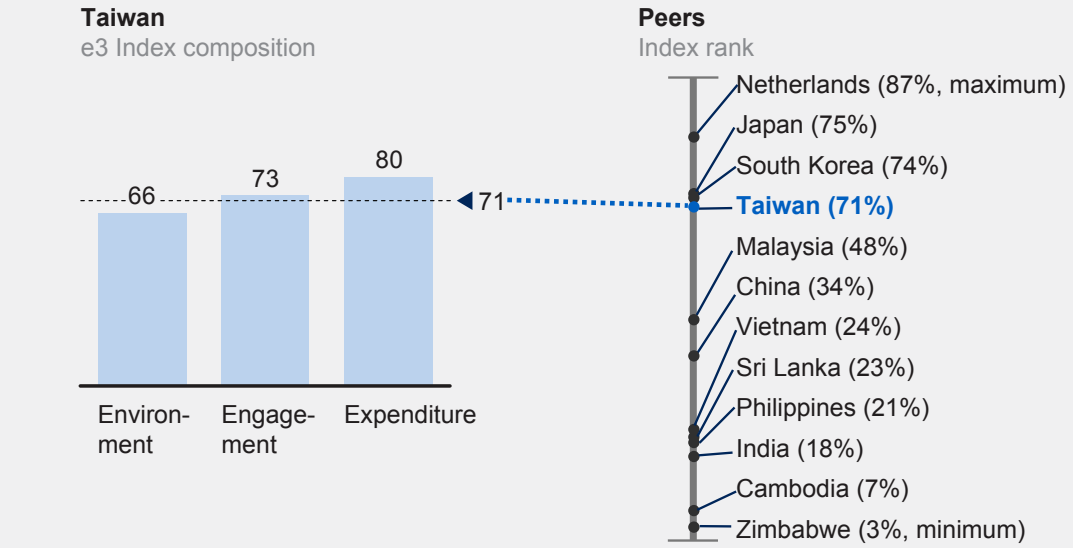
403 Internet ecosystem foundations index components: financial capital (availability of financing for Internet and ICT companies); business environment (country's attractiveness to business due to regulatory and societal effects); infrastructure (penetration and quality of Internet-enabling infrastructure); human capital (education and research).

The maturity of Taiwan's Internet ecosystem, as measured by the e3 Index, is in the upper-middle range of all countries and is higher than most other countries in the region (Exhibit 100). Among the drivers of Internet maturity, Taiwan is highest in its level of Internet expenditure. This is due to the high share e-commerce plays as a percentage of GDP and total retail, as well as a strong amount of online advertising. In addition, high Internet engagement is due to government successes in ICT promotion, high business broadband penetration and Internet usage, and high levels of Internet access for individuals. Finally, Taiwan has a strong Internet environment with a high level of Internet quality and content.

Exhibit 100

Taiwan's Internet ecosystem maturity is close to that of leading countries in the region such as Japan and South Korea

Percentile rank, 57-country set



SOURCE: McKinsey analysis

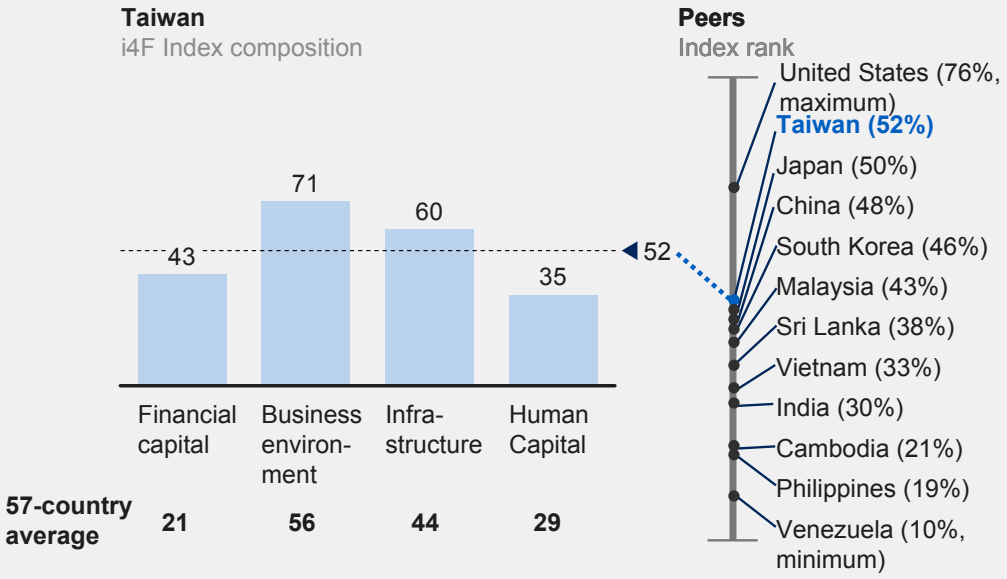
Major strides in Internet infrastructure have positioned Taiwan to advance rapidly in Internet penetration. Since state-owned Chunghwa helped facilitate this position by developing the country's fixed-line network, Taiwan's infrastructure growth has moved in sync with that of developed countries and, in some cases, Taiwan has been a pioneer. For example, Taiwan made investments in fiber optic three years before the United States. Now Internet access is available via cable, fiber optic, and mobile broadband. Competition among operators, combined with high GDP and income equity, has contributed to affordable Internet access for Taiwanese consumers.

Taiwan's Internet ecosystem foundations, as measured by McKinsey's i4F Index, are moderately high in comparison with all countries studied, and they are stronger than those for all the other countries in the region (Exhibit 101). Taiwan's strength in financial capital is supported by the availability of financing through local equity markets, loans, and venture capital. A business environment that supports ICT growth is assisted by the existence of ICT clusters, as well as relatively easy business processes, including short times required to start a new business and effective antitrust policies. Infrastructure is well established, and human capital is high given existing educational systems. However, human capital has potential to grow through higher-level education and corporate investments; the number of advanced degrees in science and engineering could be increased, and more personnel could be dedicated to research and development.

Exhibit 101

Taiwan ranks high on its Internet ecosystem foundations while human capital scores show room for growth

Score relative to maximum of 57-country set in each index variable



SOURCE: McKinsey analysis

User groups

Individuals. Taiwanese people, among the best equipped in Asia to use the Internet, have integrated technology into their daily lives. Taiwan's digital consumers are not only online, but they are active and sophisticated users. They access the Web to search, obtain word-of-mouth recommendations, consume digital media such as music and video, and catch up on fashion trends from Japan, South Korea, and the United States. Taiwanese consumers' familiarity with the Web also facilitates e-commerce activity. The Internet retailing market was an estimated $2.4 billion in 2010 and has been growing at 16 percent annually over the last five years.[404] Clothing and accessories are the most popular online retail categories for Taiwanese consumers, who like to shop for global trends on Web sites such as Rakuten and Taobao.

The most prevalent Internet use in Taiwan is searching for information and communicating through e-mail and instant messaging—88 percent of Internet users go online to search, 75 percent use e-mail, and 68 percent read the news online.[405] Consumers benefit from searching the Internet in a variety of ways; for example, prices are transparent when shopping online, and consumers can access a wider variety of information sources. Taiwanese users also leverage the Internet to gather word-of-mouth recommendations and online reviews for everything from restaurant recommendations to movie choices. Online reviews and recommendations have an impact on consumption choices for Taiwanese Internet users—41 percent of Taiwanese Internet users state that they trust recommendations from online product reviews when making a purchase decision. The only sources more trusted for recommendations are friends (62 percent) and family (56 percent). Online reviews are especially important for purchases of electronics: 40 percent of respondents state they would not buy electronics at all without consulting online reviews.[406]

The maturity of the Internet ecosystem in Taiwan has resulted in a consumer surplus of $4 billion, or $26 per user per month. This surplus is higher than for the rest of our focus aspiring countries—1.6 times higher than the per user consumer surplus in Malaysia, for instance. Although Taiwan's per user consumer surplus is

404 Euromonitor 2011.
405 Asia Digital Marketing Association, 2010.
406 Nielsen, "Nielsen: Word of mouth is the key to consumers' shopping decision," June 2010.

on par with some developed countries, it has yet to reach the high levels seen in the United Kingdom and United States. Thus, an opportunity exists to further expand the prevalence of online services and retail among Taiwanese consumers.

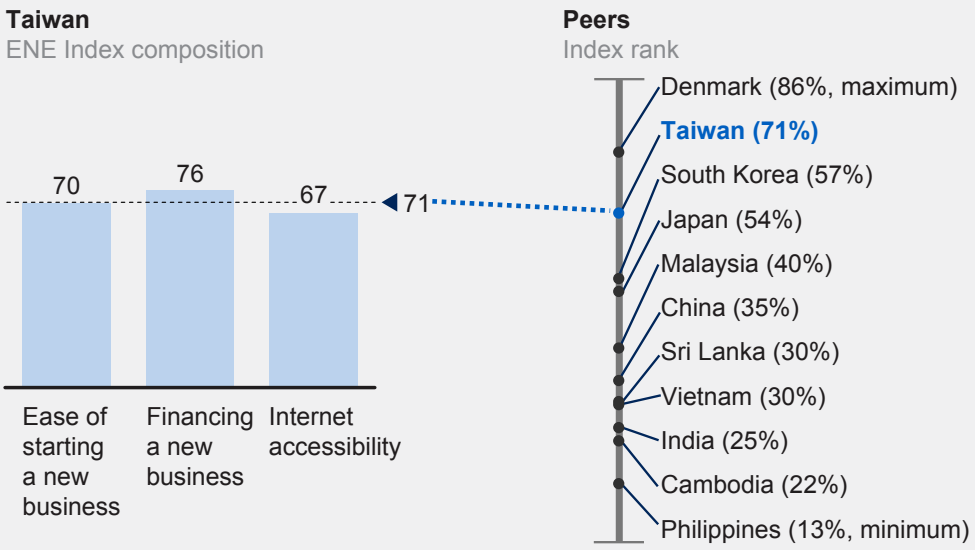
Entrepreneurs. McKinsey built an ease of Internet entrepreneurship index, which is based on three components: the ease of starting a new business, the ease of financing a new business, and Internet accessibility.[407] A favorable Internet ecosystem, reinforced by the growing online consumer market, has encouraged Internet entrepreneurship in Taiwan. The country offers a competitive business environment, with limited constraints related to issues such as capital requirements and legal procedures. Development of Internet entrepreneurship is further facilitated by the presence of an investor community that includes venture capital firms as well as domestic and foreign investors.

The ease of Internet entrepreneurship in Taiwan, as measured by the McKinsey ease of Internet entrepreneurship index, is not only higher than for other countries in the region, but it is also high compared with the average of all countries (Exhibit 102). A few elements helped Taiwan score highly: it is relatively easy to start a business because time and procedure requirements are low. The financing required to start a new business is available through private equity and venture capital investments, and investors are encouraged by a track record of successful start-ups and investments in the market. In addition, ubiquitous Internet accessibility and the low cost of domain registration provide an ideal platform for Internet entrepreneurship.

Exhibit 102

Ease of Internet entrepreneurship in Taiwan is among the highest of all countries

Percentile rank, 57-country set



SOURCE: McKinsey analysis

The existence of preconditions for entrepreneurship has sparked Taiwanese Internet success stories. Examples include Internet retailer PCHome and social networking site Wretch.cc, which was established before Facebook entered the market (see Box 42, "Examples of innovative Taiwanese start-ups (as of December 2011)"). However, Taiwanese companies face competition from global players entering the market—indeed, the top three sites in Taiwan are international players Yahoo, Facebook, and YouTube.[408]

407 Ease of Internet entrepreneurship index components: ease of starting a new business (industry-agnostic view of the overall business ecosystem in a country); ease of financing a new business (availability and attractiveness of financing for ICT start-ups, as well as the cost of financing a new business); Internet accessibility (extent and cost of Internet access for both enterprises and their target consumers).

408 Alexa, alexa.com (accessed December 1, 2011).

Box 42. Examples of innovative Taiwanese start-ups (as of December 2011)

- **Wretch.cc** is Taiwan's most popular social networking site; it was acquired by Yahoo in 2007.
- **EZTableOnline** is a restaurant reservation Web site founded in 2008. The site allows its more than 100,000 users to make reservations at over 350 restaurants.
- **Gomaji** is the second most popular group buying Web site in Taiwan (it trails only Groupon). Gomaji offers daily deals in all of Taiwan's major cities on products and services ranging from movie tickets to massages.
- **iPartment** is a social networking site where users are residents of virtual apartments. Users can decorate apartments, visit neighbors and friends, write journals, and leave messages on others' journals. The service is free, but users can also purchase virtual currency for value-added services such as interactive games.
- **FashionGuide** is a Web site with forum discussions on beauty, fashion, celebrity trends, and other topics. The site's FG team selects members to try new products and brands; these members then post reviews. Products with high ratings in reviews receive a certificate and a sticker label. The reviews are influential, as recognition by the FG team has a positive impact on product sales.
- **appWorks Ventures** is an angel fund that runs an incubator similar to Silicon Valley's Y Combinator. Entrepreneurs receive mentorship and financial resources to get their early-stage start-ups off the ground.

Enterprises. Broadband use is prevalent among enterprises in Taiwan, which leverage the Internet in ways similar to American and European enterprises. The Internet enables improved communication with suppliers and customers and offers a platform for conducting transactions. As a result, B2B e-commerce sales in Taiwan have grown at a compound annual growth rate of 9 percent from 2005 to 2010.[409]

Our SME survey illustrated the relative importance of the Internet to Taiwan's economy compared with other aspiring countries. The average SME in Taiwan stated that 20 percent of total revenue came from online advertisements, compared with 16 percent in the other aspiring countries. Taiwanese employees are also better equipped to use the Internet than are their counterparts in other aspiring countries in our study. SMEs in other aspiring countries were nearly four times as likely as SMEs in Taiwan to cite "lack of education on using the Internet in public schools and/or among the general public" as a constraint to Internet usage.[410] In addition, Taiwanese SMEs that use the Internet demonstrate a strong correlation between their rate of growth and their Web activity, including Web expenditure, online advertisement, employees with broadband access, and employees with smartphone access (Exhibit 103).

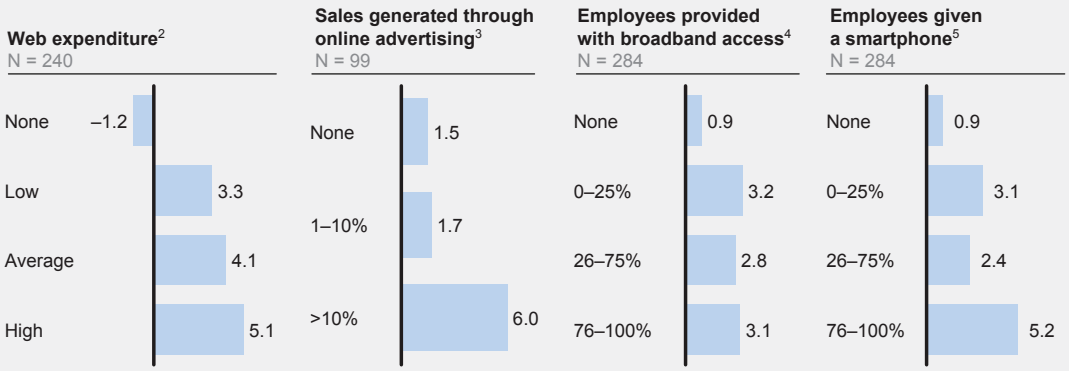
409 IDC.

410 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.

Exhibit 103

High growth in Taiwan correlates positively with Web spending, online sales generation, and access to broadband and smartphones

Stated growth[1] percentage (%)



1 Excludes all respondents who did not know the growth rate of their company.
2 Low Web expenditure is less than 10 percent of total expenses. Average is 11–30 percent of total expenses. High is greater than 30 percent of total expenses. "What percentage of your expenses are digital, i.e., linked to Web technologies (electronic messaging, intranet, extranet, WiFi, Web sites, Web 2.0 tools, servers/routers, Web connection for employees, Enterprise Resources Planning (ERP), e-commerce, e-marketing, e-supply chain)?" Excludes "I don't know" responses.
3 "What percent of your revenues are driven by ONLINE advertising? 2010 (projected)." Excludes "I don't know" responses.
4 "Do you have a broadband Internet connection available to your employees?" If so, "What percentage of your employees have access to it?"
5 "Do you have access to wireless Internet through a mobile broadband connection?" If so, "What percent of your employees have you given smartphones?"

SOURCE: 2011 McKinsey survey of 348 SMEs in Taiwan; McKinsey analysis

Government. Taiwan's government played an early role in encouraging the development of the Internet ecosystem through investments in infrastructure and policies to foster a competitive environment. In addition, Taiwan's government was an early adopter of e-government. As early as 2003, 85 percent of Taiwanese agencies had Web sites, 89 percent of government employees used e-mail, and 90 percent of employees used Web browsers.[411] The government has also leveraged the Internet to make administrative processes more efficient, increase transparency by providing information on Web sites, and provide government services through the online platform. For example, the Government Service Network (GSN) platform enables government administrations and civil servants to exchange documents, conduct e-meetings, and respond to e-mails from citizens.[412] GSN also offers various online services to citizens, including vehicle registration, tax filing, and electronic health records (see Box 43, "Electronic health records reduce waste, fraud, and outpatient visits").[413] Our SME survey shows that filing taxes is the most popular e-government application in Taiwan; other popular activities include accessing information about government ministries and services and researching official reports (Exhibit 104).

Box 43. Electronic health records reduce waste, fraud, and outpatient visits

Taiwan's 23 million citizens carry an electronic card that contains an individual's medical record, including information about the last six visits to a care provider, prescriptions, allergies, and organ donation willingness. Health providers upload information to the card within 24 hours of treatment through an interface device provided by Taiwan's National Health Insurance.

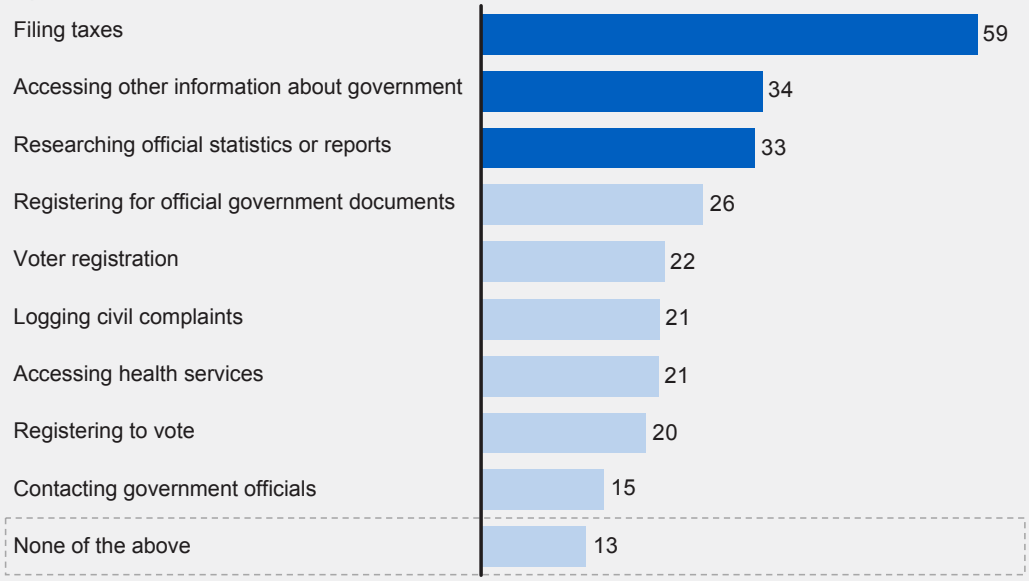
After Taiwan's initial $126 million investment, the annual IT costs associated with maintaining the program are approximately $12.3 million. In turn, the program has helped to reduce waste and fraud. For example, providers can avoid duplicating prescriptions. Since the implementation of the program, outpatient visits have dropped by 10 percent.

411 Research, Development, and Evaluation Commission, "E-government development in Taiwan," The Executive Yuan, November 2003.
412 Government Service Network, 2011.
413 PricewaterhouseCoopers, "How Taiwan connected its health system to give every patient a 'pocket' medical record (the IC card)," 2010.

Exhibit 104

In Taiwan the most popular e-government service is filing taxes

% of respondents using each e-government online service in the last year.
Sample size for Taiwan = 348



SOURCE: 2011 McKinsey survey of 348 SMEs in Taiwan; McKinsey analysis

Path forward

Taiwan has great potential to leverage the economic and social impact of the Internet. It was identified as an aspiring country because it displays a strong set of fundamentals while also exhibiting the potential for growth. In 2010, nominal GDP was $423 billion, GDP growth exceeded 10 percent; and per capita GDP was an estimated $18,300.[414]

Taiwan has successfully developed a healthy Internet ecosystem through early investments in Internet infrastructure and an Internet-savvy population. Given Taiwan's current strengths, during its next wave of growth, Taiwan may be able to achieve levels of Internet impact similar to those in developed countries. To do this, Taiwan can rely on its existing strengths as a hub of trade and as a country with strong innovation potential (see Box 44, "Aspiring countries can draw on their strengths to drive Internet ecosystem growth" for a summary of five macroeconomic strengths across aspiring countries).

Taiwan has a strong base for innovation given high rates of literacy and tertiary school enrollment, as well as high-quality math and science education. Some 80,500 patents were filed in Taiwan in 2010, which is among the highest in the world and is higher than in most developed countries.[415] However, innovation in Taiwan has been constrained to limited segments of the ICT manufacturing value chain. The majority of Taiwan's ICT sector consists of SMEs that produce intermediary components for brand marketers rather than brand-name, higher-margin finished goods. Transformations in R&D efforts can support manufacturers' expansion into different parts of the value chain, rather than narrowly focusing on OEM and ODM specifications.[416]

414 IMF, 2010.
415 Intellectual property office in Taiwan, 2010. Includes invention, design, and utility model patents filled by both residents and nonresidents.
416 Chung Hua Institute for Economic Research, "Trends in the ICT industry and ICT R&D in Taiwan," February 2011.

Box 44. Aspiring countries can draw on their strengths to drive Internet ecosystem growth

We have identified five macroeconomic strengths that aspiring countries can leverage to drive Internet ecosystem growth. These strengths are not mutually exclusive, but they apply in varying degrees to each aspiring country. For a broader discussion of these strengths and a comparison of our 57-country set along them, see chapter 3.

- **"Resource-rich"** countries' economies are disproportionately dependent on exploiting highly profitable natural resources (e.g., oil, natural gas), giving them large sums of money to invest.
- **"Hub-of-trade"** countries' economies are driven by exports of goods and services. Local enterprises, or multinationals with local branches, have developed expertise in supply chain and international trade.
- **"Innovation-potential"** countries have large investments in R&D. They benefit from large pools of highly educated and creative individuals developing new products.
- **"Strong-local-consumption"** countries' economies are heavily reliant on domestic consumption. Furthermore, imports are low, meaning that most goods and services consumed are provided by local businesses.
- **"Strong-SME-sector"** countries have an SME sector that is a dominant force in the economy, e.g., SMEs employ a majority of the workforce.

Another strength is Taiwan's lucrative position as a hub of trade. Given the relatively small size of the local market, domestic Internet players can seek growth opportunities outside of Taiwan. Enterprises can leverage existing relationships with foreign players to further develop emerging technologies. For instance, cloud computing trends have allowed Taiwanese firms the ability to leverage long-standing relationships with multinational companies to build data centers and computing infrastructure. To this end, Taiwanese firms Quanta and Compal Electronics recently announced partnerships with major multinational technology firms to develop servers designed for cloud computing. This is an area of significant investment. For example, Chunghwa has announced it will invest 20 billion new Taiwan dollars ($690 million) in cloud computing, and it has partnered with China Telecom to enter China's cloud computing market.[417]

Further opportunities to leverage Taiwan's role as a hub of trade exist in the potential to tap into the mainland China market given the two countries' similar cultures, common language, and close economic ties. For example, application developers can create games or content in Chinese and market it to both the Taiwanese and mainland China markets. In this regard, it is important to note that while the Chinese market is attractive, challenges and barriers to entry exist, including regulation and competition from local Chinese firms.

In addition to Taiwanese players expanding into China, Chinese players can leverage Taiwan to expand internationally. Specifically, partnerships between Taiwanese hardware manufacturers and Chinese content and service providers can expand into international markets such as Southeast Asia, offering smartphones with embedded online applications that can compete against the products of global players. Here, the challenge will be to secure partnerships that can produce products with differentiated offerings in order to spur international demand.

At the more developed end of our set of studied countries, Taiwan provides a success story for leveraging the Internet for economic and social impact. It has successfully built a robust infrastructure, climbed the value chain from ICT manufacturing to design, and developed a thriving entrepreneurship ecosystem. Looking ahead, Taiwan is likely to further increase its Internet impact, for individuals and enterprises alike, as the foundations of its Internet ecosystem are strong and continue to improve.

417 "Taiwan's top telecom carriers plan huge cloud investments," *Taiwan Economic News,* September 5, 2011.

Country profiles

Turkey

Turkey is a large and fast-growing economy with significant potential to build a robust Internet ecosystem. Given its emerging position in the global economy, growing middle class, and youthful demographic profile, Turkey has the opportunity to drive significantly more impact from the Internet. Although Turkey has a sizable Internet population (about 35 million users), overall Internet penetration lags behind European countries because of a few key issues such as the cost of access, device penetration, the limited number of e-commerce sites with strong value propositions, and a lack of widespread enablement of online payment systems.

Turkish consumers are young and highly engaged, obtaining utility from their high use of social networking and news consumption, among other activities. There is, however, significant room for improvement. E-commerce, for example, is nascent. Turkey's online proportion of retail is less than 1 percent, lagging well behind developed Western European nations such as France and Germany, which are near 4 percent.[418]

SMEs also underuse the Internet. While larger enterprises use the Internet to drive efficiencies and revenue opportunities in a fashion similar to their counterparts in developed countries, opportunity exists for SMEs to further leverage Web technologies. Those that have embraced the Internet have also found revenue benefits and lower costs.

While there have been a few highly successful Internet start-ups in Turkey, low access to capital has limited the country's entrepreneurial environment. Turkey's large middle class, literate population, fast-growing economy, and stable business environment have enticed international investors and attracted FDI. Venture capitalists and enterprises have swiftly entered the Turkish market, but investments are currently focused on large-scale ICT projects and mature Internet businesses. Venture funding focused on early start-ups could help drive the entrepreneurship necessary to create compelling online businesses that will, in turn, drive wider Internet ecosystem benefits by bringing more of the population online.

The government has made strides in providing online services for its citizens, especially in e-health. There remains room for improvement for the government in ICT promotion, where policy makers have an opportunity to help solve the key constraints for the Turkish Internet ecosystem: Internet access and cost, as well as device penetration.

Country overview

Turkey's economy is large and growing quickly. Turkey's GDP was $735 billion in 2010; it is the world's 17th-largest economy. The country grew at a 4.6 percent per year from 2002 to 2010, more than four times that of the United States and the European Union. Turkey also has a young population, with a median age of 28; a vibrant, growing middle class; and a high rate of urbanization, with more than 70 percent of the population living in urban areas.[419]

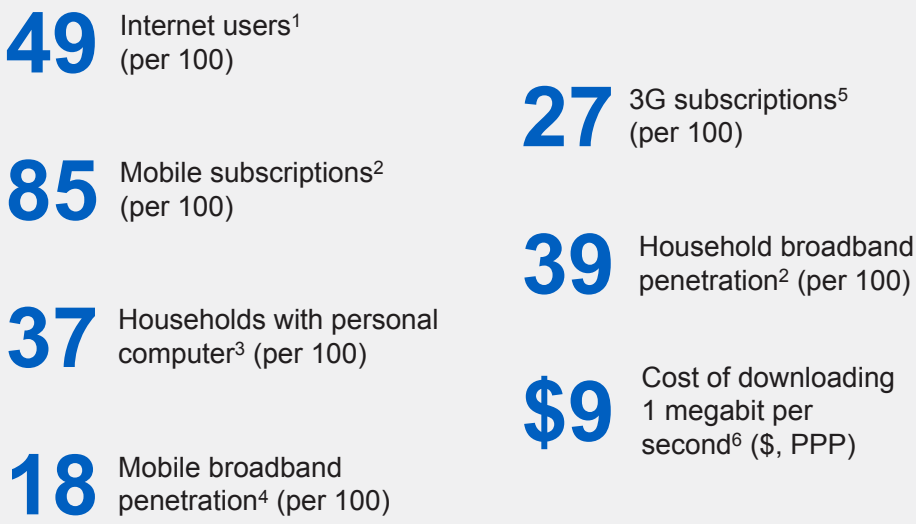
Currently, Turkey lags behind its Central and Eastern European neighbors with regard to personal computer penetration; 37 percent of households in Turkey have a personal computer, in comparison with an average of 57 percent in the region, and mobile phone subscriptions are also lower than average (85 subscriptions per 100 people versus the average of 124 subscriptions).[420] Turkey's smartphone penetration is 9 percent,

418 Euromonitor, 2010.
419 World Bank; *CIA World Factbook*, 2010.
420 World Economic Forum, "Global information technology report, 2010–2011."

which is on a par with Central and Eastern Europe; however, it lags behind penetration in Western Europe, which is 28 percent.[421] Turkey also trails in other metrics that measure the maturity of a country's Internet ecosystem, including Internet penetration, number of secure servers, and Internet bandwidth (Exhibit 105).

Exhibit 105

Turkey's Internet landscape statistics



1 The EIU Telecoms and Technology Report data, 2010.
2 Turkey Telecommunication Authority (Bilgi İletişim ve Teknolojileri Kurumu or BTK) 2010 report.
3 WEF, Global Information Technology Report 2010–2011. Data for 2009.
4 ITU World Telecommunication/ICT Indicators database as provided by Wireless Intelligence, 2010.
5 Turkey Telecommunication Authority (Bilgi İletişim ve Teknolojileri Kurumu or BTK) 2010 report, absolute value is 19.4 million subscribers.
6 Cost of 1 megabit per second Speed test.net pulled in November 2011; PPP adjustment to $ using World Bank 2010 conversion rate.

SOURCE: McKinsey analysis

Impact of the Internet

To measure the economic impact of the Internet, we have constructed the iGDP Index, which measures the contribution of the Internet to a country's GDP. We have also separately measured a country's e-commerce platform, because it plays a seminal role for consumers and retailers alike in a country's Internet ecosystem. The eCP assesses the health of a country's e-commerce ecosystem.

- **iGDP.** Using the expenditure method, the contribution of the Internet is measured as the proportion of GDP that can be attributed to the Internet in private consumption, public expenditure, private expenditure, and trade.[422] This measure is ICT-related, as it aggregates the expenditure on all goods and services that are related to the Internet, from devices to access, the consumption of hardware and online consumption.

421 GfK Group, "One in three online shoppers in the CEE region owns a smartphone," October 27, 2011; eMarketer, June 2010.

422 Internet contribution to GDP index components: private consumption (total consumption of goods and services by consumers via the Internet, or consumers' costs to obtain Internet access); private investment (private-sector investment in Internet-related technologies); public expenditure (public expenditure on Internet is estimated by adding government, public health care, and public education expenditures on the Internet); trade balance (exports of Internet-related goods and services, plus B2C and B2B e-commerce, net of all associated Internet-related imports).

- **eCP.** The e-commerce platform demonstrates e-commerce enablement by scoring a country's online payment enablement, parcel delivery systems, and Internet readiness.[423]

The Internet's contribution to Turkish GDP is low in comparison with Eastern European countries such as Hungary, as well as in comparison with more developed countries in Western Europe such as France and Germany. Turkey's e-commerce environment, too, is nascent.

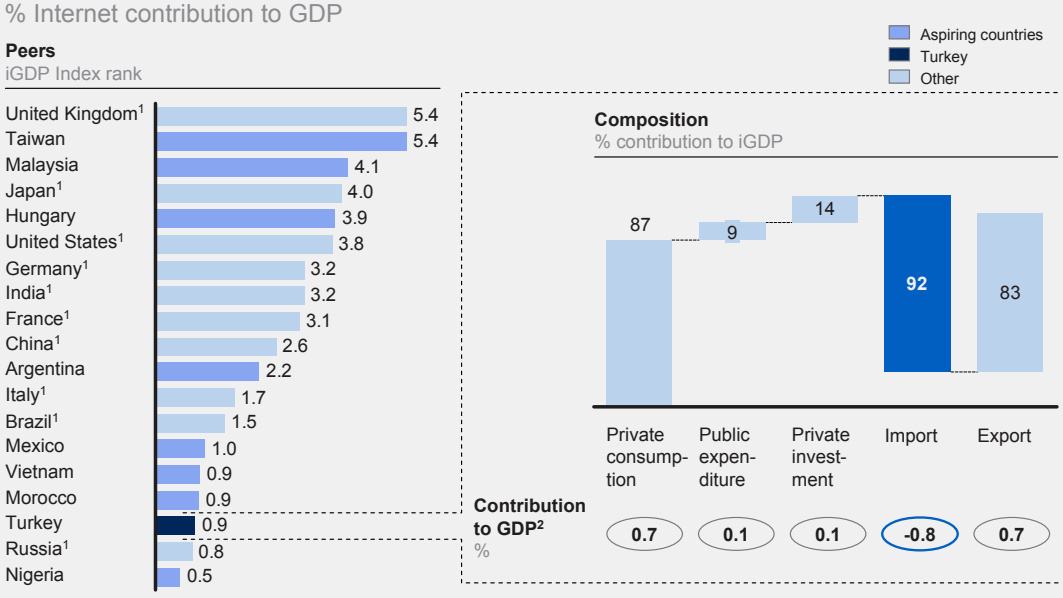
Turkey's Internet contribution to GDP is at 0.9 percent, which is lower than many of its Central and Eastern European peers (Exhibit 106). Private consumption of Internet-related goods, at 0.7 percent of GDP, represents the Internet's main contribution to Turkey's economy. To compare, private consumption of Internet-related goods represents 0.6 percent of GDP in Morocco and 1.0 percent of GDP in Italy. Turkey's three major drivers are revenue from household fixed broadband, online retail, and sales of home portable PCs, which combined represented close to $4 billion in 2010.

Public expenditure in Internet-related goods, at 0.1 percent of GDP, is relatively low in Turkey; in developed countries, we estimate it at 0.5 percent on average.[424] Indeed, Turkey has the lowest ICT spend as a percent of the government's budget in Central and Eastern Europe.[425] While Turkey's overall private investment was worth $106 billion in 2010, we estimate that only $5 billion of it was Internet-related ICT goods and services, half of which was in communications equipment.[426]

Exhibit 106

Private consumption drives Turkey's Internet contribution to the economy

% Internet contribution to GDP



1 2009.
2 Numbers may not sum due to rounding.

SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; World Travel and Tourism Council; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

Turkey has a trade deficit when it comes to Internet-related goods and services: while imports are not that high, a lack of ICT exports creates the deficit. Exports of ICT goods represent only 2.3 percent of goods

423 E-commerce platform index components: online payment enablement (number of financial cards in circulation, volume of cashless payments, legal protection provided to the e-consumer); parcel delivery (reliability of postal system, cost of domestic shipping, percent of a population with delivery to their homes); Internet readiness (volume of secure servers, Internet penetration, domain registration cost).

424 McKinsey Global Institute, *Internet matters: The Net's sweeping impact on growth, jobs, and prosperity*, May 2011.

425 McKinsey TMT database, TMT value migration tool; World Economic Forum, "Global information technology report, 2010–2011."

426 Global Insight World Market Monitor, 2010.

exported in Turkey; for its neighbor Hungary, this measure is as high as 19 percent.[427] Hungary's focus on ICT, combined with exports that represent more than 80 percent of GDP, means that Internet-related exports represent 6.8 percent of GDP.

Turkey's e-commerce is still in the early stages of development. Total e-commerce volume, both B2B and B2C, reached $8.7 billion in 2010.[428] Growth, however, is robust. Total e-commerce in Turkey has been growing rapidly, up 55 percent in 2010 compared with 2009. The number of Internet transactions has also increased—by 52 percent in the first three quarters of 2011 compared with the first three quarters of 2010—and it has reached 91.4 million transactions.[429]

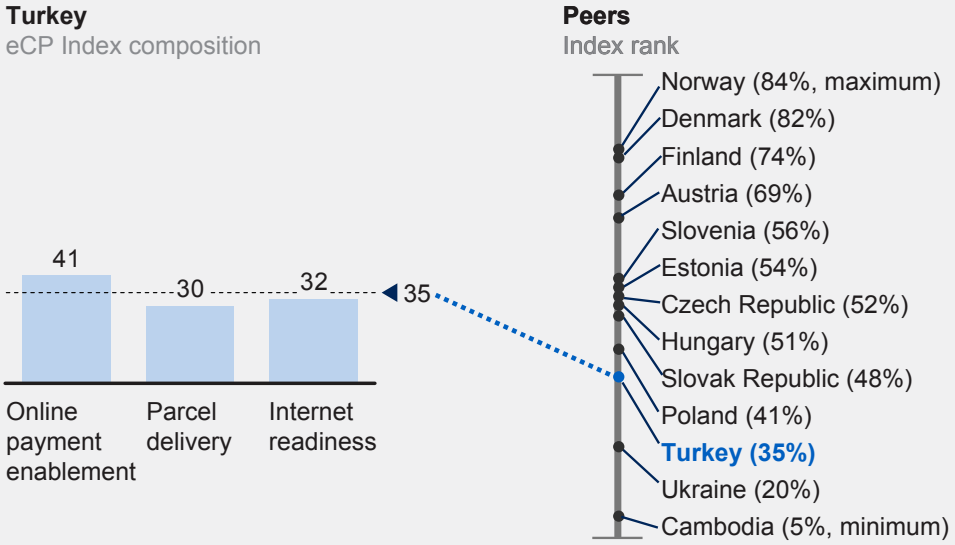
Sites with strong value propositions, such as the leading horizontal player HepsiBurada, Yemek Sepeti, and Trendyol, have been able to generate consumer interest and e-commerce volume. In Turkey, due to high offline retail and shopping mall expansion and young online demographics (Exhibit 7) with limited purchasing power, offline retail players have been slow to develop online solutions.

Turkey's foundations for a thriving e-commerce environment are constrained by online payment enablement, parcel delivery, and Internet readiness (Exhibit 107).

Exhibit 107

Turkey's e-commerce environment lags behind that of regional peers

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Parcel delivery, while generally reliable for private parcel delivery companies, suffers in comparison with the quality of the parcel systems of regional peers. Internet readiness is limited by domain registration costs, which are higher in Turkey than in Eastern European countries such as Hungary, as well as in developed countries such as France and Germany when adjusted for purchasing power parity.[430]

Online payment enablement is a key hurdle to e-commerce. While banks do offer POS systems for Internet companies, virtual POS has not been adapted for the virtual context, which has slowed adoption. Adoption of online payment solutions that offer security and one-click convenience may help sidestep online payment constraints.

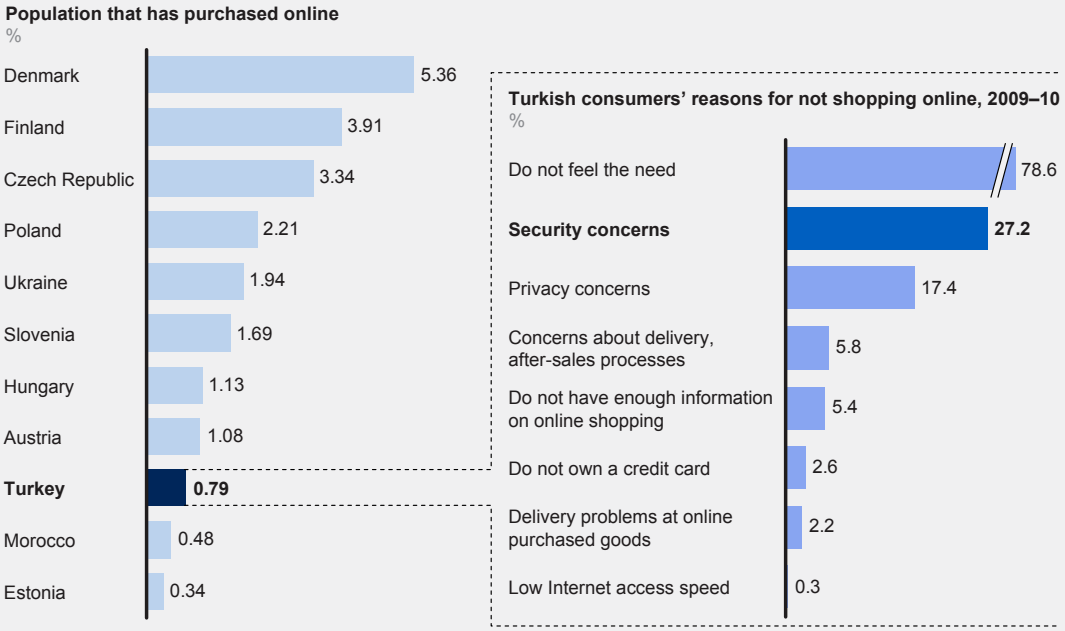
427 United Nations Statistics Division's Commodity Trade database, 2010–2011.
428 Interbank Card Center, "Total value of e-commerce transactions," 2010.
429 Euromonitor; Today's Zaman, "E-commerce purchases hit record high with 52 percent growth," November 1, 2011.
430 Domain registration Web sites; PPP adjustment from World Bank.

When asked about reasons for not buying online, Turkish consumers often cite security concerns (Exhibit 108). Overcoming limitations with safe and secure mechanisms for online payments will likely drive significant growth in e-commerce. For now, some e-commerce sites in Turkey offer pay-at-delivery service. For example, food delivery services often equip their carriers with mobile POS terminals.

The key reason for Turkish consumers not shopping online is that they do not feel the need. This points to the relative weakness of the supply side of the e-commerce environment—there are not enough strong online businesses that are drawing consumers to buy online instead of offline. More compelling online value propositions could help turn the tide.

Exhibit 108

Few consumers in Turkey have made online purchases, in part due to security concerns



SOURCE: SIS, 2009–2010; Euromonitor 2011 Internet retailing reports; McKinsey analysis

Internet ecosystem

To assess the health of a country's Internet ecosystem, we constructed two indexes:

- **e3.** This index measures the current maturity of an Internet ecosystem according to three major drivers: environment, engagement, and expenditure.[431]

- **i4F.** This index measures the vibrancy of the Internet ecosystem—i.e., the preconditions for future growth—based on the four key foundations of financial capital, business environment, infrastructure, and human capital.[432]

Turkey's Internet ecosystem is not very mature in comparison with the ecosystems of European countries (Exhibit 109). The Internet environment is constrained by limited household broadband penetration and

431 Internet ecosystem maturity index components: environment (existing Internet speed and penetration); engagement (usage of Internet by individuals, enterprises, and governments); expenditure (Internet spending such as e-commerce and online advertising).

432 Internet ecosystem foundations index components: financial capital (availability of financing for Internet and ICT companies); business environment (country's attractiveness to business due to regulatory and societal effects); infrastructure (penetration and quality of Internet-enabling infrastructure); human capital (education and research).

the quality of Internet access. Turkey's household broadband penetration of 39 percent exceeds some Eastern European countries, such as Russia (27 percent) and the Slovak Republic (25 percent), but it lags behind Western Europe. France, Germany, and Spain have household broadband penetration well above 50 percent.[433] Internet engagement is limited by low device penetration among both individuals and SMEs. Expenditure on the Internet is consequently low as well. Less than 1 percent of all Turkish retail takes place online. In the United States, by comparison, about 4 percent of retail takes place online.[434]

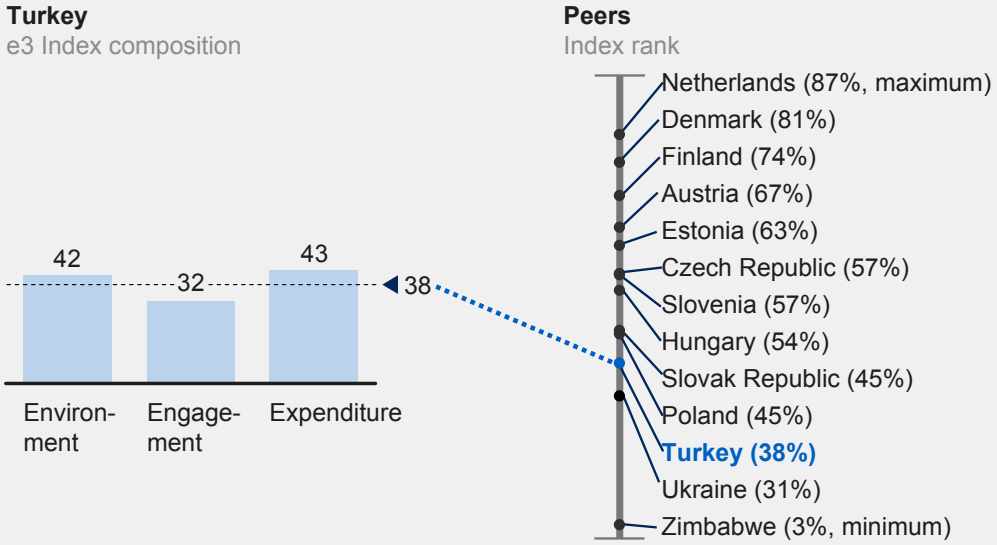
Turkey's Internet ecosystem is constrained by systemic concerns related to Internet penetration, cost of access, and device penetration. The foundations for future growth could also improve, particularly with regard to access to capital for entrepreneurs.

High access and device costs are major reasons for low Internet penetration and uptake. Currently, 68 percent of female adults and 48 percent of male adults say they do not use the Internet.[435] The cost of Internet access in Turkey is almost double the Central and Eastern European average, and twice as many SMEs in Turkey identify cost of access as the top constraint to increased Internet access as do SMEs in the other aspiring countries we surveyed.[436]

Exhibit 109

Household broadband penetration and quality of access hamper Turkey's Internet ecosystem

Percentile rank, 57-country set



SOURCE: McKinsey analysis

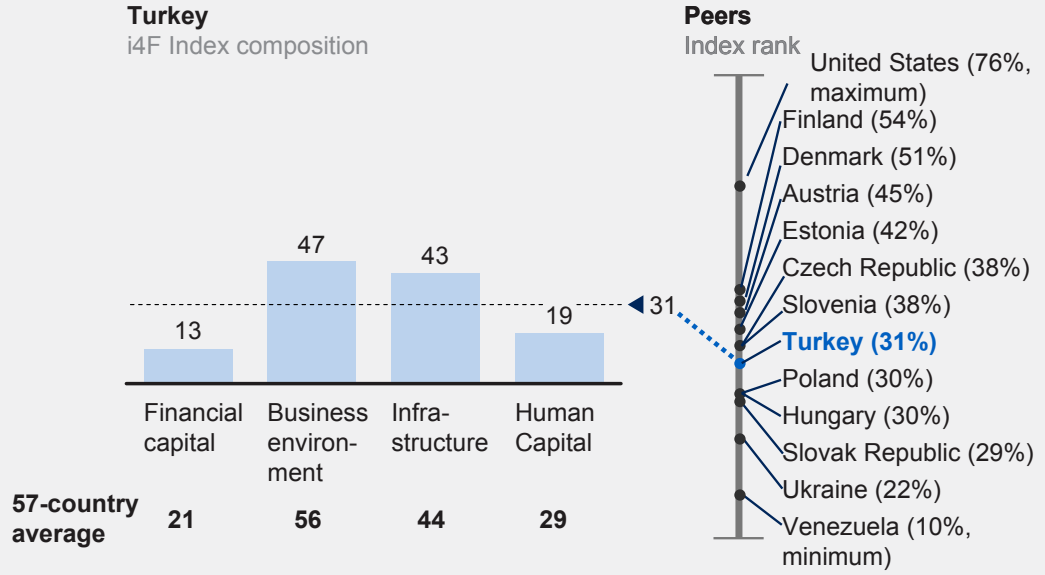
When looking at the foundations for Turkey's Internet ecosystem, two additional challenges related to future Internet development are revealed: low access to financial capital and lack of Internet-focused human capital (Exhibit 110). Limited venture capital constrains the number of start-ups that can be launched and lowers the chances of survival for those that enter the market. There have been recent highly visible investments in successful Turkish e-commerce plays, but such investments have focused on companies using proven business models or on large-scale ICT projects. Angel investments for new start-ups are scarce. Similarly, human capital in R&D and ICT must be improved. For example, Turkey has 0.7 R&D researchers per capita, which is less than half that of Eastern European countries such as Ukraine and Poland, and less than one-quarter that of major Western European nations.[437]

433 Turkish Telecommunication Authority; Pyramid Research.
434 Euromonitor, 2010.
435 TNS Piar Turkey Profile Report, 2011. Adults defined as 15+.
436 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan,Turkey, and Vietnam, 2011; Internet costs from SpeedTest.net; PPP adjustment from World Bank.
437 World Bank, World Development Indicators, "Researchers in R&D (per million people)," data.worldbank.org/data-catalog/world-development-indicators (accessed December 1, 2011).

Exhibit 110

Financial and human capital pose challenges to the foundations of Turkey's Internet ecosystem

Score relative to maximum of 57-country set in each index variable



SOURCE: McKinsey analysis

User groups

Individuals. Turkish Internet users engage in high levels of news consumption and social networking in comparison with users in developed and aspiring countries.[438] Turkey ranks third among European countries for time individuals spend online, and the country has the fifth-highest number of Facebook users among all countries in absolute terms.[439] Of the total Turkish online population, 76 percent read the news online.[440] This is a highly engaged audience that could be channeled to help fuel economic growth (see Box 45, "E-banking is popular among young Turkish consumers").

Turkish consumers therefore extract significant consumer surplus from the Internet. Measured as the utility to consumers from free activities ranging from e-mail to social networking, net of annoyances such as spam, we have estimated consumer surplus for Turkey at $14 per user per month, yielding an annual $2.7 billion surplus for Turkey.[441]

Box 45. E-banking is popular among young Turkish consumers

Turkey's demographics drive high usage of e-banking among Turkish Internet users, where young and engaged users are open to e-banking and similar services.

Garanti Bank, for example, has capitalized well on this trend. As the leading European bank for e-banking and a winner of Euromoney's "Best Bank in Turkey" award for 11 straight years, it offers many online and mobile banking services for its customers. More than two million online banking customers complete 15 million transactions per day and purchase 1.8 million products annually. Mobile services (browser based and native application solutions) include Cep Bank, with the ability to transfer money via SMS, even to non-Garanti customers.

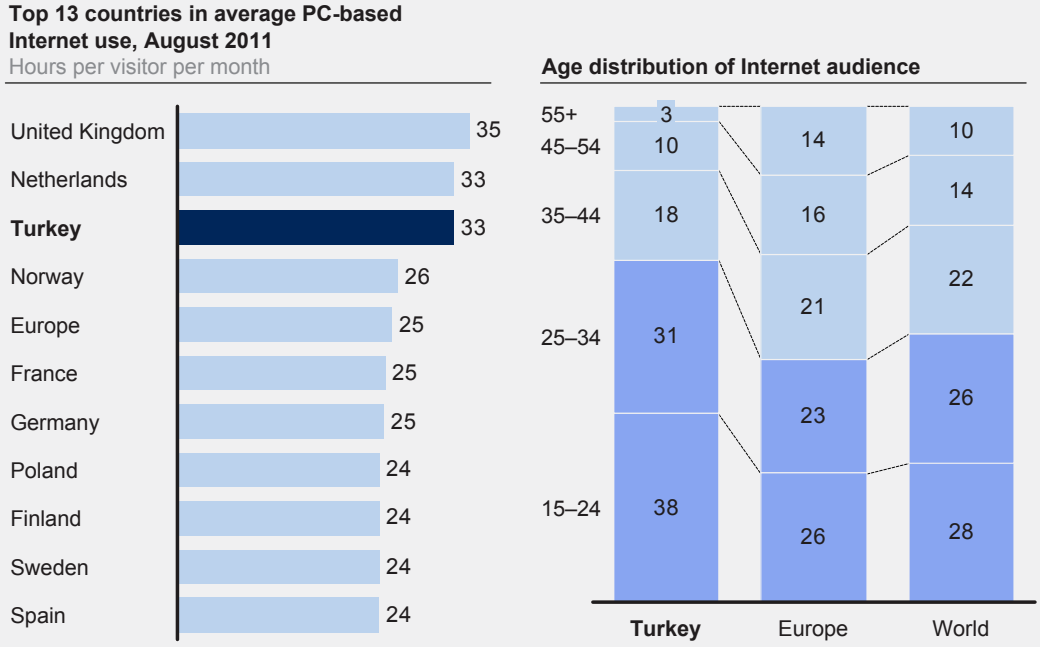
438 IDC, Internet User Online Activities, 2010.
439 Socialbakers, "Facebook statistics, November 2011," socialbakers.com (accessed December 1, 2011).
440 ComScore, "State of the Turkish Internet," November 2009.
441 See the appendix for details on consumer surplus estimation.

As Turkish Internet users consume a high level of news and media, traditional newspapers have had to adopt online strategies. Hurriyet, for example, has expanded online and provides relevant content to consumers. In addition to traditional online news offerings, Hurriyet fields a strong blogging and commenting community that has attracted loyal and engaged users.[442]

Besides being highly engaged, Turkey's Internet user base is very young. More than 76 percent of Turkish consumers visit news Web sites, compared with a global average of 50 percent (Exhibit 111).[443] Younger Internet users help to drive demand for digital content, including entertainment and social networking functions. For example, seven Turkish social games are in the top 500 Facebook games globally, including Okey, an online board game that has 4.3 million monthly active users.[444]

Exhibit 111

Turkish Internet consumers are very active and young compared with their European neighbors



SOURCE: comScore, 2009; McKinsey analysis

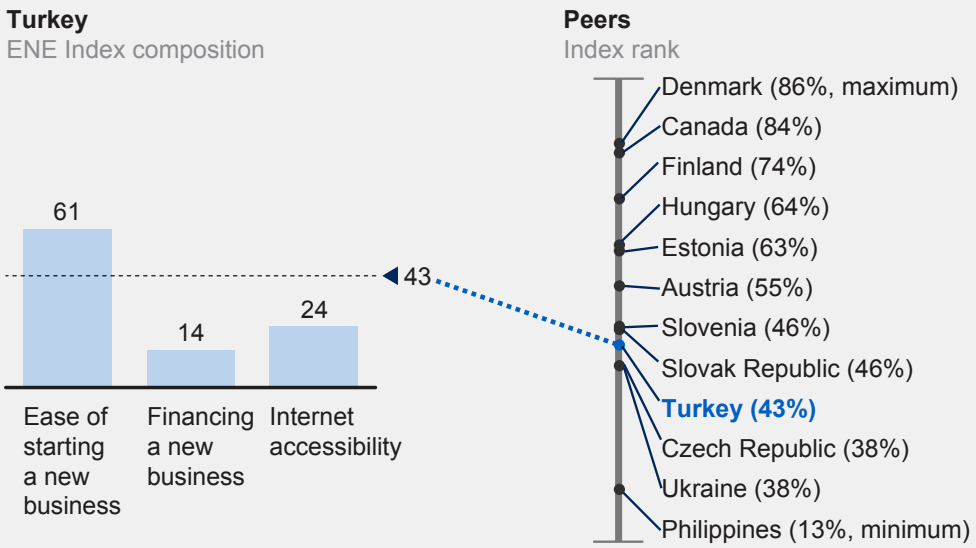
Entrepreneurs. McKinsey built the ease of Internet entrepreneurship index, which is based on three components: the ease of starting a new business, the ease of financing a new business, and Internet accessibility.[445] It is not difficult to start a business in Turkey. It takes on average only six days to register a business in Turkey, and the number of procedures is on a par with the more developed nations of Western Europe.[446] Lack of Internet accessibility, meanwhile, is a constraint: cost-efficient and reliable broadband access is a prerequisite for executing a successful e-commerce play and is not widely available in Turkey (Exhibit 112).

442 Hurriyet, hurriyet.com.tr (accessed December 1, 2011); McKinsey interviews.
443 ComScore, 2009.
444 Sebastian Sujka, "Turkey—Shining diamond of Eastern Europe," Social Games Observer, March 23, 2011.
445 Ease of Internet entrepreneurship index components: ease of starting a new business (industry-agnostic view of the overall business ecosystem in a country), ease of financing a new business (availability and attractiveness of financing for ICT start-ups, as well as the cost of financing a new business), Internet accessibility (extent and cost of Internet access for both enterprises and their target consumers).
446 World Bank, "Doing Business," 2011.

Exhibit 112

Lack of Internet accessibility and financing difficulties constrain Turkish entrepreneurs

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Growth in ICT-focused FDI for Turkey has been among the highest in the world over the last ten years, but the total amount invested, as a percentage of GDP, falls behind Turkey's Central and Eastern European neighbors.[447] Much of the funding is focused on large-scale ICT projects, and even the news-garnering investments by developed country private equity firms, such as Kleiner Perkins' $26 million investment in Trendyol, have been in established Internet plays with scale.[448] Lack of seed funding is a critical bottleneck for emerging start-ups, with the domestic venture capital space nascent and foreign investors wary of investing in unproven business models.

Financing is similarly difficult, with interest rates higher than many of Turkey's European peers.[449] In our survey, we found that Turkish SMEs were 1.5 times as likely as SMEs in the other aspiring countries we surveyed to say that increased access to loans would drive entrepreneurship.[450] As well as making other forms of lending more prominent, availability of funding for early-stage start-ups will help Turkish entrepreneurs create compelling online businesses (see Box 46, "Daily deals and group buying have become a dynamic force in Turkey"). This, in turn, may drive the innovation necessary to overcome the constraints limiting the potential of Turkey's Internet ecosystem.

Box 46. Daily deals and group buying have become a dynamic force in Turkey

The daily deals market in Turkey is new, but fast-growing. Grupanya, a pioneer and rare recipient of seed investment, received significant funding from a consortium of Turkish investors in April 2010, helping start a flurry of start-up activity in the daily deals space. Although increasingly only a few players dominate this activity—in addition to Grupanya, there are Grupfoni, SehirFirsati, and Markapon—competition is robust, and there are new entrants each month. There are now approximately 80 daily deal sites and 15 daily deal aggregators, making this one of the most dynamic spaces in the Turkish start-up environment.[451]

451 DailyDealMedia, "The fast growth of group buying in Turkey," March 10, 2011.

447 Economist Intelligence Unit, "Turkey," 2011; Global Insight World Market Monitor, 2010.
448 Bobbie Johnson, "Trendyol takes Turkey with $26m from Kleiner Perkins," GigaOm, August 10, 2011.
449 FXstreet, world interest rates as of December 11, 2011.
450 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.

Enterprises. Internet adoption by enterprises is high, with the majority of enterprises having broadband access.[452] Large enterprises have adopted the use of Web technologies in similar ways as their counterparts in developed countries. Many of these large enterprises are the local operations of multinational companies, and Web technology aligns with corporate policies. Local peers follow suit to stay competitive with those leveraging Web technologies for productivity, cost, and revenue gains. Local color emerges in specific areas where Turkey is different than other countries, in terms of its consumer usage profile. For example, enterprises sometimes have built strategies around Turkey's highly engaged and online audience. Akbank, one of the largest banks in Turkey, launched a Facebook game for SMEs called "Build & Manage." The game places SME workers in charge of a virtual company with production lines and departments such as marketing, accounting, human resources, and an R&D lab. The game had an Akbank branch built that promoted the Akbank brand.

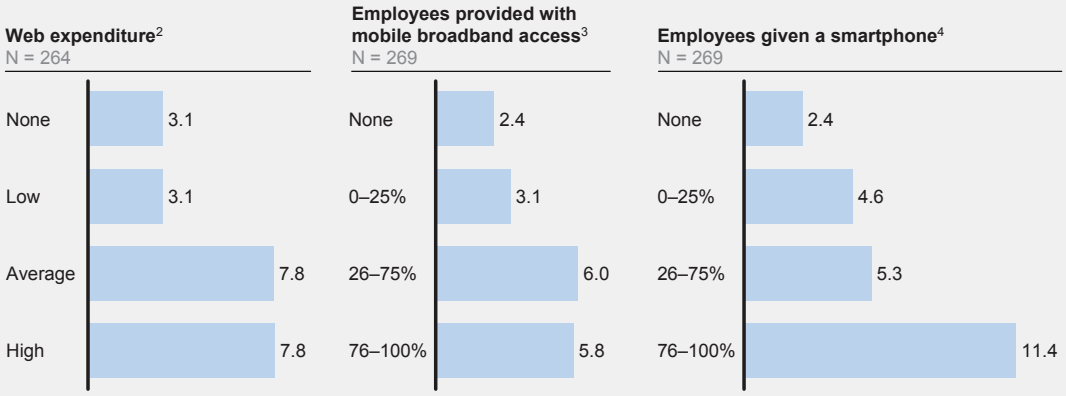
Turkish SMEs have found much benefit in embracing Web technologies. In our survey we found that Turkish SMEs that invested more in Internet access and devices, and in Web expenditure, also grew faster than those that invested less or not at all (Exhibit 113). The benefits have affected the bottom line as well as the top line. Revenue gains from the Internet are greater for those SMEs investing more in Web technologies. Additionally, savings on cost of goods sold and on general and administrative expenses derived from the Internet are greater for those SMEs investing more in Web technologies. Productivity has similarly increased: Turkish SMEs that have embraced the Internet have reported a 6.9 percent rise in productivity due to their use of Web technologies (see Box 47, "Examples of innovative Turkish start-ups (as of December 2011)").[453]

Exhibit 113

High growth in Turkey has a positive correlation with Web spending, and access to mobile broadband and smartphones

Stated growth[1] percentage

%



1 Excludes all respondents who did not know the growth rate of their company.
2 Low Web expenditure is less than 10 percent of total expenses. Average is 11–30 percent of total expenses. High is greater than 30 percent of total expenses. "What percentage of your expenses are digital, i.e., linked to Web technologies (electronic messaging, intranet, extranet, WiFi, Web sites, Web 2.0 tools, servers/routers, Web connection for employees, Enterprise Resources Planning (ERP), e-commerce, e-marketing, e-supply chain)?" Excludes "I don't know" responses.
3 "Do you have access to wireless Internet through a mobile broadband connection?" If so, "What percentage of your employees have access to it?"
4 "Do you have access to wireless Internet through a mobile broadband connection?" If so, "What percent of your employees have you given smartphones?"

SOURCE: 2011 McKinsey survey of 285 SMEs in Turkey; McKinsey analysis

452 Turkish Statistical Institute.
453 McKinsey SME survey of 2,484 SMEs across Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam, 2011.

Box 3. Examples of innovative Turkish web companies (as of December 2011)

- **Hepsiburada** is one of the first e-commerce sites in Turkey, and the leading player across a number of categories, including electronics, books, sports goods, home textile and baby care with 7.5 million unique users.
- **Trendyol** is a private shopping club that offers high-end fashion and beauty items online. Leveraging social networks, it has more than two million users.
- **Milliyet.com.tr** is the most popular news site in Turkey. In addition to traditional news offerings, its strong blogging and commenting community attracts a loyal and time-intense user.
- **Yemek Sepeti** is a food delivery service with about 6,000 registered restaurants and up to 30,000 orders placed per day. Yemek Sepeti has also launched in Russia and the United Arab Emirates.
- **Doğan Online** is the largest internet player in Turkey with portal, betting, travel, advertising and commerce businesses, attracting 10 million unique users.
- **Pozitron** is a service that seeks to help larger enterprises transition to mobile platforms.
- **Markafoni** is a private shopping club that has expanded to Australia, Ukraine, and Greece. It has more than two million users and completes a sale every two seconds.

Government. The Turkish government has worked to promote the use of the Internet in two ways: through ICT investment and through e-government services.

There is significant room for improvement in ICT investment. According to the World Economic Forum's Government Success in ICT Promotion index, Turkey is on a par with, or ahead of, Eastern European countries in the government's promotion of ICT, but it lags significantly behind the developed countries of Western Europe and aspiring countries that have done well in this regard, such as Malaysia and Taiwan.[454] As a share of government expenditure, Turkey's government spends the least on ICT relative to the other aspiring countries we have studied.[455] This exacerbates the Internet infrastructure deficit Turkey faces. Improvement in the government's promotion of Internet infrastructure could make a significant difference in Turkey's ability to drive economic impact from the Internet.

The government has also worked on ameliorating device access. It inaugurated the Fatih Project in August 2011, which aims to bring 15 million tablet computers to Turkish students over the next four years. The tablet computers will be manufactured in Turkey, and the program also seeks to install digital interactive boards in 500,000 classrooms.

The Turkish government has invested in providing e-government services, although they are not all widely used. Unlike individuals in most aspiring countries we surveyed, most Turkish consumers of e-government services did not focus just on filing taxes but leveraged the government's online services for health services and educational information (Exhibit 114).

The Turkish government created the National Health Information System, an online database of electronic health records, in June 2009. Within one year of implementation, 99 percent of public hospitals and 71 percent of private and university hospitals were online, submitting daily feeds of electronic health records. More than 43 million Turkish citizens now have their health records online in a single, coordinated system.[456]

Acknowledging the large proportion of mobile Web users in Turkey, the government has been investing in developing m-government services. One of them, mDevlet, a mobile application launched by the

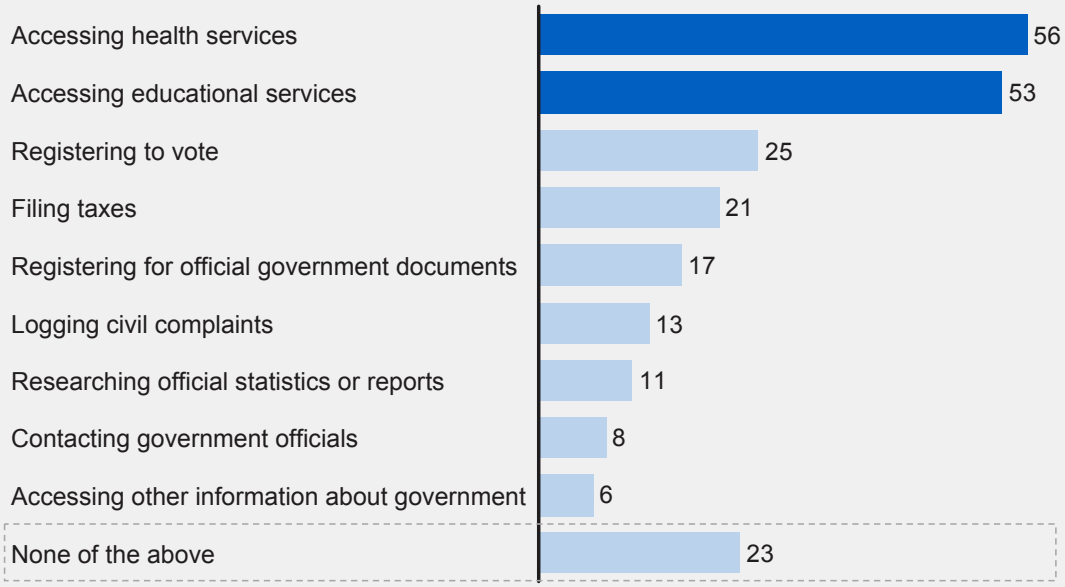
454 World Economic Forum, "Global information technology report 2010–2011."
455 International Monetary Fund, World Economic Outlook Database, 2011.
456 A. Dogac et al., "Electronic health record interoperability as realized in Turkey's National Health Information System," *Methods of Information in Medicine,* Volume 50, Number 2, 2011.

e-government gateway operator Turksat, allows users to access government services, such as traffic flow with live camera support, public transportation schedules, city maps with zoom, and more from their phones (see Box 48, "Real-time data sharing could save lives in an earthquake").[457]

Exhibit 114

Access to health and educational services are the most popular e-government services in Turkey

% of respondents using each e-government online service in the last year.
Sample size for Turkey = 250



SOURCE: 2011 McKinsey survey of 250 SMEs in Turkey; McKinsey analysis

Box 48. Real-time data sharing could save lives in an earthquake

The municipal government of Istanbul is promoting an Internet- and mobile-based system of emergency response in case of an earthquake. About a hundred seismographs are linked via GSM and communicate in real time with the observatory, which analyzes the signals and, as needed, alerts government agencies, civil defense, and emergency units. Real-time data sharing will likely allow for swifter and more accurate disaster management.[1]

1 OECD and ITU, "M-government: mobile technologies for responsive governments and connected societies," September 2011.

Path forward

Turkey is a country with great potential to leverage the Internet for economic and social impact. Turkey was identified as an aspiring country because it displays a strong set of fundamentals while also exhibiting the potential for growth: in 2010, nominal GDP was $735 billion, GDP growth was 9 percent, and per capita GDP was over $10,000.[458]

457 OECD and ITU, "M-Government: mobile technologies for responsive governments and connected societies," September 2011.
458 International Monetary Fund, 2010.

Turkey has a major strength in strong local consumption. With a large and growing economy and a youthful and burgeoning middle class, Turkish consumers can power the further development of the Turkish Internet ecosystem (see Box 49, "Aspiring countries can draw on their strengths to drive Internet ecosystem growth" for a summary of five macroeconomic strengths across aspiring countries).

Despite recent strong growth in consumers' use of e-commerce, further adoption is constrained by a young internet population with limited purchasing power, the attractiveness of recently growing traditional retail environments, de-prioritized online investments by offline retailers, the difficulty of online payments and consumers' reticence to share financial information online. More trenchant concerns on the e-commerce front pertain to the difficulty entrepreneurs have in getting seed funding for start-ups, with little alternatives in financing, given relatively high interest rates.

Box 49. Aspiring countries can draw on their strengths to drive Internet ecosystem growth

We have identified five macroeconomic strengths that aspiring countries can leverage to drive Internet ecosystem growth. These strengths are not mutually exclusive, but they apply in varying degrees to each aspiring country. For a broader discussion of these strengths and a comparison of our 57-country set along them, see chapter 3.

- **"Resource-rich"** countries' economies are disproportionately dependent on exploiting highly profitable natural resources (e.g., oil, natural gas), giving them large sums of money to invest.
- **"Hub-of-trade"** countries' economies are driven by exports of goods and services. Local enterprises, or multinationals with local branches, have developed expertise in supply chain and international trade.
- **"Innovation-potential"** countries have large investments in R&D. They benefit from large pools of highly educated and creative individuals developing new products.
- **"Strong-local-consumption"** countries' economies are heavily reliant on domestic consumption. Furthermore, imports are low, meaning that most goods and services consumed are provided by local businesses.
- **"Strong-SME-sector"** countries have an SME sector that is a dominant force in the economy, e.g., SMEs employ a majority of the workforce.

There are a few broader limitations to Turkey's ability to develop its Internet ecosystem into a robust one, holding it back from delivering significant economic impact. Cost and quality of access, coupled with low device penetration, are systemic barriers to growth, in urban areas and especially in rural ones. However, the constraints that Turkey faces are largely removable, and once solved, Turkey will likely leapfrog up the Internet development curve.

The government has stated its goal of being a top 10 economy by 2023. With its macroeconomic fundamentals and a highly engaged online audience driven by a median age 16 years younger than that of Europe, Turkey has the opportunity to be a major player in the Internet space well before then.

Country profiles

Vietnam

Vietnam is an emerging Internet market. Its population of 87 million is the 13th largest in the world and is young and educated.[459] The country is in the process of building the infrastructure necessary to bring its population online. Although current levels of Internet access are low, penetration is growing and individuals who are on the Internet prove to be active.

At the same time, Vietnam has the opportunity to improve the basics necessary to support a budding Internet ecosystem. Telecom players are still making major investments into developing infrastructure. Vietnam's economy is largely composed of traditional, nontechnology sectors, and the country remains reliant on imports of Internet-related goods such as hardware. Furthermore, high levels of inflation are stalling growth prospects for both the overall economy and the Internet market. Total Internet penetration, though growing, is still only 31 percent, due in part to a digital divide between urban and rural users.[460]

Among Vietnam's Internet user groups, consumers see the most value from the Internet. The majority of the Internet's contributions to Vietnam's GDP is driven by private consumption, and early adopters of the Internet actively engage in online activities such as reading news, conducting searches, and playing games. E-commerce is still nascent and provides high growth potential if ecosystem constraints such as the need for cashless payment infrastructure are addressed. Low Internet penetration constrains Internet entrepreneurship, and yet local success stories have begun to emerge. Enterprises have begun to expand their online presence and Internet technologies, encouraged by the opportunity to increase productivity and growth. Vietnam's government has taken an active role in applying Internet technologies to improve citizen services and expand education, thus encouraging overall Internet adoption.

Looking forward, Vietnam can improve Internet access constraints by investing in Internet infrastructure, particularly by leveraging mobile technologies and public access points to address the rural and lower socioeconomic populations. In addition, given the existing trade deficit of Internet-related technologies and lack of ICT-focused FDI, Vietnam can use its strength as a hub of a trade to increase production and exports of ICT goods and to attract additional foreign investments.

Country overview

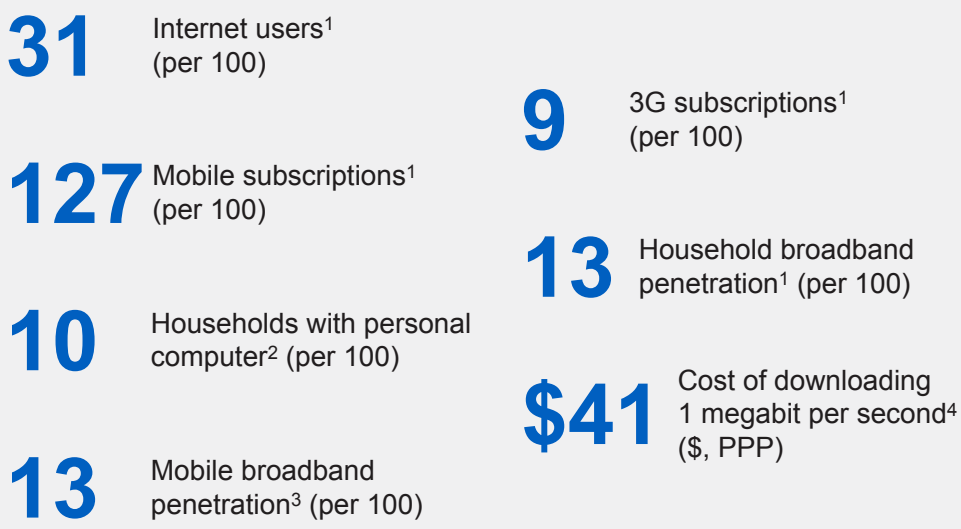
Vietnam is a fast-growing economy that has benefited from a shift away from a centrally planned economy to one that is more privatized and market-oriented. Joining the World Trade Organization (WTO) in 2007 attracted more foreign investment and opened Vietnam to international markets.[461] However, this economic growth has been curbed by recent inflation rates of around 20 percent.[462] Inflation has reduced disposable income, which consequently tightens Internet-related private consumption. Furthermore, government directives to increase capital and limit lending after the financial crisis have stymied consumer credit and adoption of credit cards, dampening e-commerce potential.

Vietnam's Internet penetration is just 31 percent, low compared with rates in nearby aspiring countries such as Malaysia, where the penetration rate is 55 percent, and Taiwan, where it is 72 percent (Exhibit 115). Low penetration in Vietnam is due partly to the low penetration of personal computers, broadband, and 3G—all of which are more than three times as prevalent in Taiwan and Malaysia.

459 World Bank, 2010.
460 "ICT white book," Vietnam National Steering Board on Information Technology and Ministry of Information and Communications, 2011.
461 World Bank, 2010.
462 "Vietnam's inflation accelerates to 22 percent, highest among economies in Asia," Bloomberg, July 22, 2011.

Exhibit 115

Vietnam's Internet landscape statistics



1 ICT White Book, Vietnam data for 2010, published 2011. EIU World Data was used where cross countries comparisons are made.
2 WEF, Global Information Technology Report 2010–2011. Data for 2008.
3 ITU World Telecommunication/ICT Indicators database as provided by Wireless Intelligence, 2010.
4 Cost of 1 megabit per second Speedtest.net pulled in November 2011; PPP adjustment to $ using World Bank 2010 conversion rate.

SOURCE: McKinsey analysis

Impact of the Internet

To measure the economic impact of the Internet, we have constructed the iGDP Index, which measures the contribution of the Internet to a country's GDP. We have also separately measured a country's e-commerce platform, because it plays a seminal role for consumers and retailers alike in a country's Internet ecosystem. The eCP assesses the health of a country's e-commerce ecosystem.

- **iGDP.** Using the expenditure method, the contribution of the Internet is measured as the proportion of GDP that can be attributed to the Internet in private consumption, public expenditure, private expenditure, and trade.463 This measure is ICT-related, as it aggregates the expenditure on all goods and services that are related to the Internet, from devices to access, the consumption of hardware and online consumption.

- **eCP.** The e-commerce platform demonstrates e-commerce enablement by scoring a country's online payment enablement, parcel delivery systems, and Internet readiness.[464]

The Internet's contribution to Vietnam's GDP is 0.9 percent of total GDP, which is lower than the 2 percent average for nine aspiring countries on which our research focuses (Exhibit 116). Despite private consumption driving the majority of Vietnam's iGDP, e-commerce in Vietnam is still in nascent stages.

463 Internet contribution to GDP index components: private consumption (total consumption of goods and services by consumers via the Internet, or consumers' costs to obtain Internet access), private investment (private-sector investment in Internet-related technologies), public expenditure (public expenditure on Internet is estimated by adding government, public health care, and public education expenditures on the Internet), trade balance (exports of Internet-related goods and services, plus B2C and B2B e-commerce, net of all associated Internet-related imports).

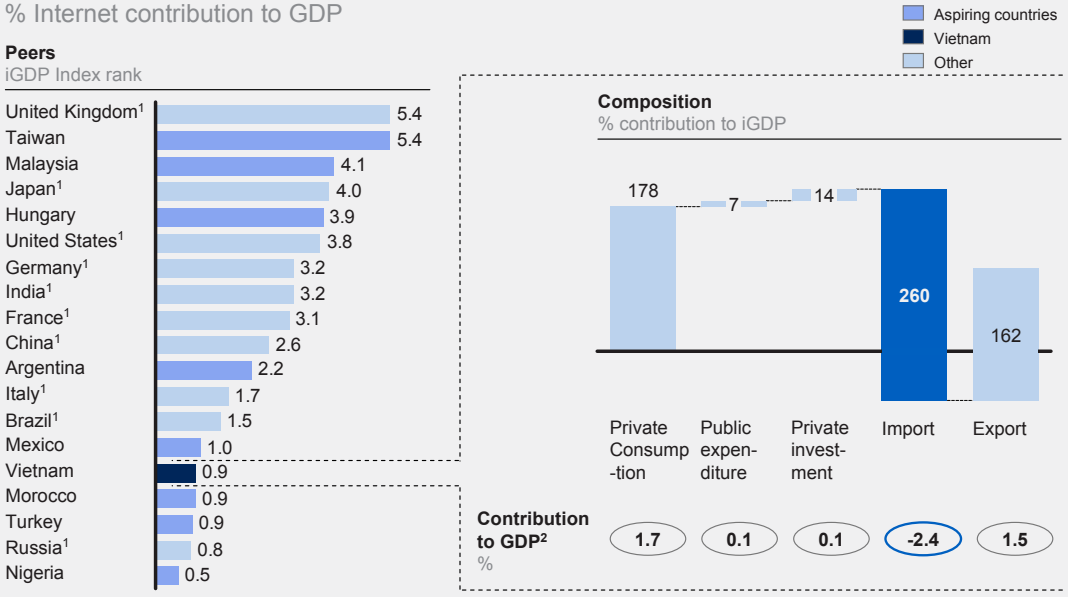
464 E-commerce platform index components: online payment enablement (number of financial cards in circulation, volume of cashless payments, legal protection provided to the e-consumer), parcel delivery (reliability of postal system, cost of domestic shipping, percent of a population with delivery to their homes), Internet readiness (volume of secure servers, Internet penetration, domain registration cost).

Private consumption of Internet-related goods, including broadband and mobile Internet spending, is the key contributor to Vietnam's Internet-related GDP. Private consumption related to the Internet contributes approximately 2 percent of Vietnam's total GDP, but this is offset by Vietnam's large trade deficit in Internet-related goods and services. Compared with private consumption, Internet-related public and private expenditure are very small drivers of Vietnam's iGDP. Developed countries, by comparison, have higher proportions of public and private expenditure in their Internet contributions to GDP.

Exhibit 116

Private consumption in Vietnam is offset by imports of Internet-related goods and services

% Internet contribution to GDP



1 2009.
2 Numbers may not sum due to rounding.

SOURCE: Gartner; Global Insight; OECD; ITU; IDC; WHO; ICD; iConsumer US 2010; Euromonitor; H2 Gambling Capital; World Travel and Tourism Council; PhoCusWright; Pyramid Research; UNESCO; McKinsey analysis

Vietnam's foundations for thriving e-commerce activity, as measured by McKinsey's e-commerce platform index, are low in comparison with more developed countries as well as regional averages. This is due to low online payment enablement due to low levels of cashless payments, a lack of reliability in postal services, and low Internet readiness and Internet penetration (Exhibit 117).

With low Internet penetration, e-commerce in Vietnam is an untapped market with high potential for growth. More than one-third of Internet users have visited an online shopping or auction site.[465] In a survey of Vietnamese Internet users, 50 percent indicated their belief that shopping online provides access to a wide variety of products.[466] However, e-commerce growth potential is constrained by concerns about payment security, with only 13 percent of Vietnamese Internet users believing that buying products online is safe.

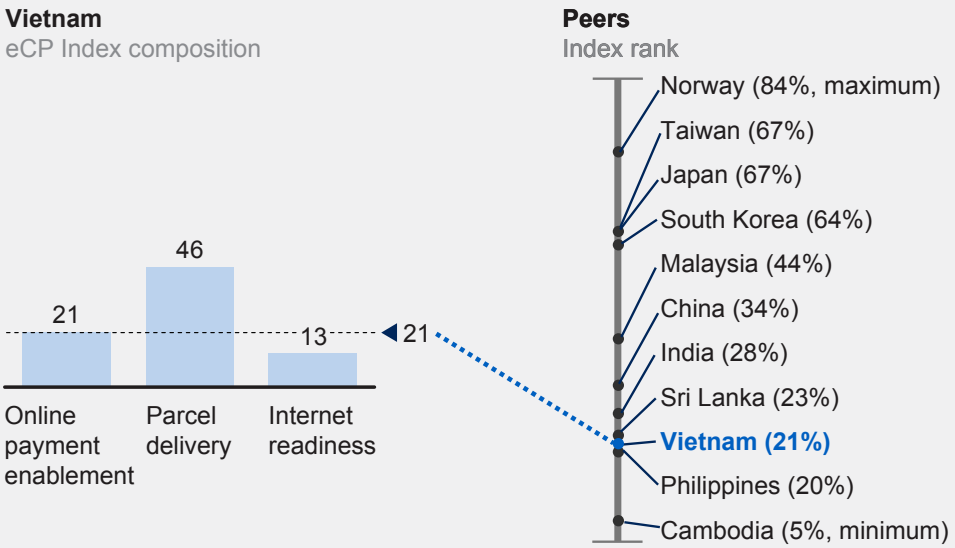
Entrepreneurs and small businesses in Vietnam have the opportunity to capture the nascent e-commerce opportunity by addressing local concerns through innovative models. Examples include offering alternate modes of payment and parcel delivery, such as cash on delivery, mobile transfers, and small-scale private parcel distribution in urban areas.

465 "Digital marketing yearbook 2011," Asia Pacific Digital Marketing Association, 2011.
466 Cimigo, "Vietnam netcitizens report," April 2011.

Exhibit 117

E-commerce in Vietnam can grow by further enabling online consumption and increasing the Internet readiness of consumers

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Internet ecosystem

To assess the health of a country's Internet ecosystem, we constructed two indexes:

- **e3** measures the current maturity of an Internet ecosystem according to three major drivers: environment, engagement, and expenditure.[467]
- **i4F** measures the strength of Internet foundations—i.e., the preconditions for future growth—using the four key foundations of financial capital, business environment, infrastructure, and human capital.[468]

Vietnam's maturity of Internet ecosystem, as measured by the McKinsey e3 Index, is in the lower-middle range among regional peers (Exhibit 118). Among the drivers of Internet maturity, Vietnam is lowest in its level of Internet expenditure. This is due to the relatively small share of online retail compared with total retail, as well as e-commerce's limited share of total GDP. Environment constraints are due to low household broadband penetration and Internet bandwidth, along with limited availability of secure servers. Although engagement is at moderately high levels and online activities such as gaming are popular among local users, it is constrained by low levels of Internet penetration. Use of e-government services is also limited.[469]

Overall Internet penetration in Vietnam is at 31 percent, although urban penetration, at 56 percent, is nearly twice as high as in rural areas.[470] However, Vietnam is comparatively less urbanized than peer aspiring countries, with 30 percent of its population living in urban areas.[471] Thus the Internet ecosystem can benefit from improved penetration and accessibility in rural areas.

467 Internet ecosystem maturity index components: environment (existing Internet speed and penetration), engagement (usage of Internet by individuals, enterprises, and governments), expenditure (Internet spending such as e-commerce and online advertising).

468 Internet ecosystem foundations index components: financial capital (availability of financing for Internet and ICT companies), business environment (country's attractiveness to business due to regulatory and societal effects), infrastructure (penetration and quality of Internet-enabling infrastructure), human capital (education and research).

469 World Economic Forum, "Global information technology report, 2010–2011."

470 Cimigo, "Vietnam netcitizens report," April 2011.

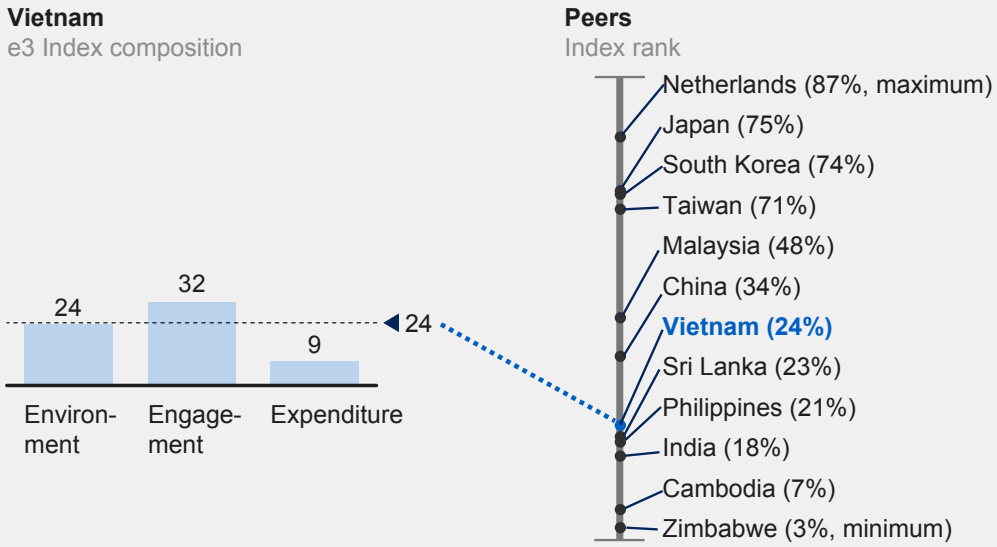
471 *CIA World Factbook*.

Although penetration is low on an absolute level, it has rapidly expanded because of the development and strong adoption of broadband services. Broadband subscribers increased from 0.5 million in 2006 to around 3.8 million in 2010.[472] Household broadband penetration reached 13 percent in 2010.[473] The broadband market is predominantly supported by DSL technology, but 3G penetration has grown since its introduction in 2009. By 2010, Vietnam had 7.7 million, or 9 percent, 3G subscribers.[474] Additionally, public access points such as Internet cafés play an important role in spreading Internet access, given the low levels of various Internet subscriptions.

Exhibit 118

Vietnam's Internet ecosystem is hampered by low spending

Percentile rank, 57-country set



SOURCE: McKinsey analysis

The government played an early role in developing of Vietnam's Internet infrastructure. Early challenges included attracting the foreign investment and capital necessary for building the network. Vietnam is still in the development phase of infrastructure building. Vietnam Posts and Telecommunications is the dominant player in both the fixed-line broadband and mobile markets. However, two other major telecom players and a number of Internet service providers are now in the market, and this competition is helping to drive down access costs.

The foundation for Vietnam's Internet ecosystem, as measured by McKinsey's i4F Index, is in the middle range in a regional context (Exhibit 119). Financial capital is constrained because of difficulty in accessing loans and venture capital. Shortcomings in intellectual property protection and the high number of days required to start a new business are constraints on the business environment, while infrastructure difficulties arise because of limited secure servers and the moderate quality of electricity. Despite these constraints, Vietnam's human capital is considerably higher than both regional and aspiring peers, due to the quality of math and science education, the availability of scientists and engineers, and technology transfer resulting from inward FDI.

472 Global Communications database, 2010.

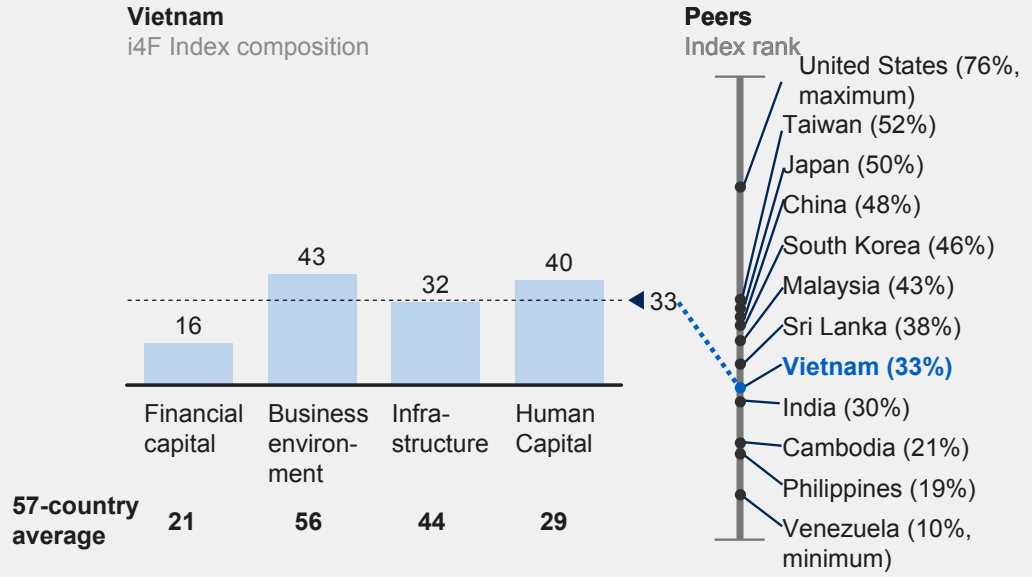
473 Vietnam National Steering Board on Information Technology and Ministry of Information and Communications, "ICT white book," 2011.

474 Ibid.

Exhibit 119

Financial capital constrains Vietnam's Internet ecosystem foundations

Score relative to maximum of 57-country set in each index variable



SOURCE: McKinsey analysis

User groups

Individuals. Online engagement by Vietnam's Internet users lags behind both regional peers and other aspiring countries. On average, Vietnamese Internet users spend 65 hours online per month, compared with an average of 96 hours per month for Internet users in Asia Pacific.[475] This online engagement is lower than in other Southeast Asian countries, including Indonesia (88 hours), Singapore (81 hours), and the Philippines (81 hours), suggesting large potential for growth.

Low levels of online activity, including e-commerce, relative to other aspiring countries correlates with the low consumer surplus we calculate for Vietnamese consumers. Each user derives $13 of surplus per month, for an aggregate of $3 billion per year, low compared with $16 in Malaysia and $26 in Taiwan. However, the ratio of the aggregate annual consumer surplus compared with the Internet's contribution to GDP is higher in Vietnam than in the other eight aspiring countries and developed countries. This is in line with the previously stated dependence of iGDP on private consumption.

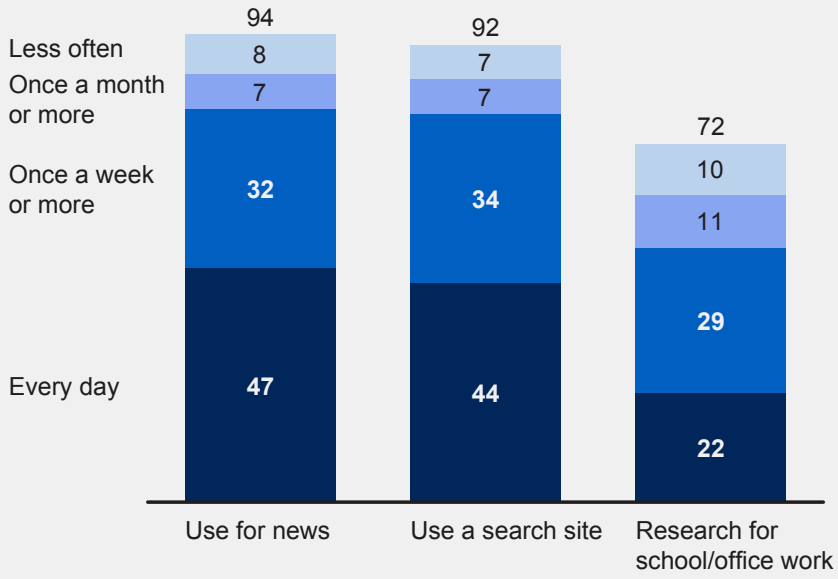
Despite low overall Internet penetration and engagement, early adopters of the Internet in Vietnam are active, relatively young, and urban. Vietnam's population is well educated. Compared with other countries at similar levels of economic development, Vietnam has very high literacy rates and a culture that values knowledge. Thus, Vietnamese use the Internet heavily for search and news, as well as conducting research (Exhibit 120). Ninety-four percent of Vietnam's Internet users access the news online. More than 40 percent of Vietnam's Internet users access the Web for news and search every day, and an additional 30 percent access those services once a week or more (see Box 50, "C2C e-commerce platforms put merchants and consumers directly in touch").[476]

475 IDC, 2010.
476 Cimigo, "Vietnam netcitizens report," April 2011.

Exhibit 120

Vietnamese consumers use the Internet heavily for news and search

% of Internet users



Box 50. C2C e-commerce platforms put merchants and consumers directly in touch

Vietnam has several C2C e-commerce platforms that allow e-commerce at a micro level. Web sites such as 5giay.vn, muare.vn, and rongbay.com allow merchants to post advertisements for rates cheaper than traditional media channels such as newspapers or television. Interested consumers contact the seller directly to make a transaction.

Online gaming is another area of high Internet activity: 38 percent of Vietnamese Internet users surveyed report that they play Web games, with 8 percent playing every day. Zing.com, an entertainment portal released by the popular gaming company VinaGame, is the second most popular Web site in Vietnam after Google and is the highest visited Web site among the 15- to 24-year-old age group.[477] Online gaming is especially popular in cybercafés and among young Internet users.

Entrepreneurs. McKinsey built the ease of Internet entrepreneurship index based on three components: the ease of starting a new business, the ease of financing a new business, and Internet accessibility.[478]

Young business leaders, entrepreneurs, and a first generation of venture capital firms and investors drive the emerging technology start-up scene in Vietnam. The growing and high potential consumer market has attracted Vietnamese living abroad, who return from overseas to start businesses or invest.

The ease of Internet entrepreneurship in Vietnam, as measured by the McKinsey ENE Index, lags behind other countries in Southeast Asia (Exhibit 121). Entrepreneurship is mostly inhibited by low accessibility of the Internet due to limited penetration and the high cost of bandwidth and domain registration. This lack

477 Cimigo, "Vietnam netcitizens report," April 2011.

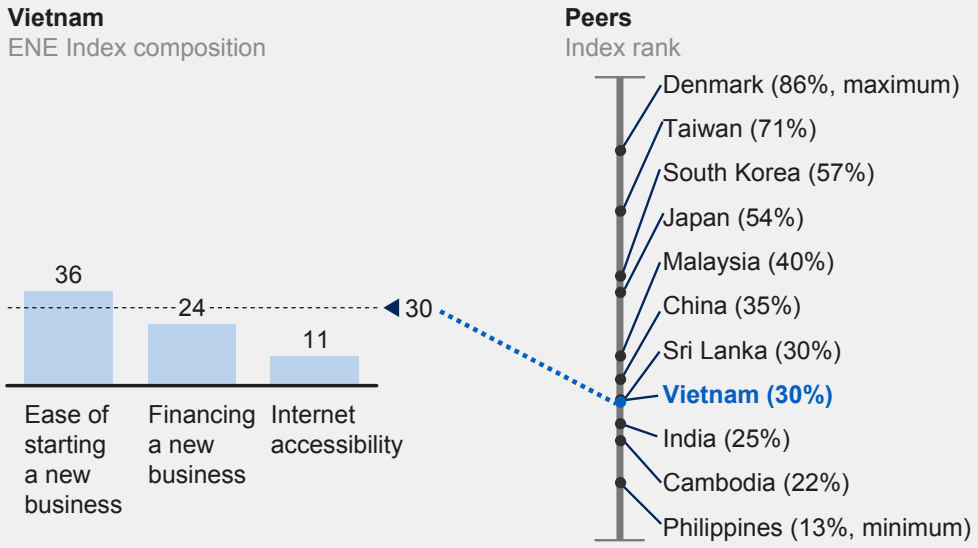
478 Ease of Internet entrepreneurship index components: ease of starting a new business (industry-agnostic view of the overall business ecosystem in a country); ease of financing a new business (availability and attractiveness of financing for ICT start-ups, as well as the cost of financing a new business); Internet accessibility (extent and cost of Internet access for both enterprises and their target consumers).

of infrastructure and critical mass of online consumers is difficult for potential entrepreneurs to overcome. Another entrepreneurship barrier is financing a new business, due to difficulties in accessing loans and financing. High time requirements also contribute to the difficulty of starting a new business in Vietnam.

Exhibit 121

Web accessibility, infrastructure, and financing hamper Vietnamese Web entrepreneurs

Percentile rank, 57-country set



SOURCE: McKinsey analysis

Despite these constraints, entrepreneurship in Vietnam is growing. Internet entrepreneurs are replicating existing online models, such as eBay or Groupon, as well as creating online content specific to fast-growing Vietnamese consumer trends such as online gaming. Multinational technology players, including those facing competition from similar local services, are also investing in homegrown Vietnamese start-ups. Reasons for investment include high growth and potential for returns, as well as positioning to enter the burgeoning Vietnamese market. For example, eBay has partnered with Vietnamese auction site Peacesoft. IDG Ventures, which is part of the International Data Group, has invested in multiple Vietnamese companies ranging from online payment developers to gaming companies such as VinaGame (see Box 51, "VinaGame dominates the Vietnamese gaming market," and Box 52, "Examples of innovative Vietnamese start-ups (as of December 2011)").[479]

Box 51. VinaGame dominates the Vietnamese gaming market

VinaGame started as an online gaming company in 2004 and has since developed into a platform for other Internet activities, including social networking and music. It was among the first companies in Vietnam to focus on multiplayer online games, which is especially popular among gamers who play in Internet cafés. Based on its own estimates, VinaGame is the dominant player in the Vietnamese gaming market, with a 60 percent market share. It has experienced fast growth, with the total number of accounts nearly doubling from 9.5 million in 2007 to 20 million by 2009.

VinaGame was among the first investments for IDG Ventures Vietnam when it opened its offices in Hanoi. The venture capital firm invested $500,000 in 2005 and sold a 10 percent stake in 2010 for a 7,500 percent return on the original investment.[480]

480 IDG Ventures Vietnam; Rebecca Fannin, "Here come the Viet gamers," *Forbes*, February 5, 2010.

479 IDG Ventures Vietnam.

Box 52. Examples of innovative Vietnamese start-ups (as of December 2011)

- **Vinapay** is a Vietnamese mobile payment platform that offers electronic transaction services and prepaid cards. Users leverage Vinapay to transfer money to other users and accounts.
- **Vietladders** is a social networking platform for senior and management-level professionals, with a model similar to Theladders.com. Companies search Vietladders for candidates and then pay the candidates to interview for open positions.
- **NhomMua** is a group buying Web site whose mobile application allows users to purchase daily deals in Ho Chi Minh City and Hanoi.
- **Nhaccuatui.com** is one of the top two music sites in Vietnam, and the eighth most popular Web site overall.[481]
- **Vietnamworks** is an online job site and the dominant market player. It is owned by Navigos Group, the largest provider of recruitment services in Vietnam.

481 Cimigo, "Vietnam netcitizens report," April 2011.

Enterprises. Enterprises in Vietnam are not yet using the Internet to the maximum capacity. Companies have not invested in expanding their online presences, despite the growth in the number of users coming online. In addition, companies are not yet leveraging the Internet to reach customers or conduct transactions. Although C2C e-commerce is present on a small scale, B2C e-commerce does not yet have the necessary supporting payments infrastructure. There is some development in this space, demonstrated by the movement of brick-and-mortar retailers (i.e., Fivimart supermarkets) into the online retailing space and improvements in offerings of online payment methods. Internet retailers also provide a range of payment options for online transactions, including cash on delivery, credit and debit cards, bank transfers, and transfers through third-party services such as PayPal or Payoo.[482]

Enterprises with Internet usage report large benefits in the form of productivity gains. Vietnamese enterprises in our SME survey that use the Internet report a 19 percent gain in productivity because of the Internet, the highest levels reported by enterprise users across all the countries in our study. In addition, there is a positive correlation between companies' rate of growth and their Web expense and smartphone access (Exhibit 122; also see Box 53, "Internet banking for trade shortens payment times").

Box 53. Internet banking for trade shortens payment times

In 2007, Incombank and Industrial and Commercial Bank of China (ICBC) launched a cross-border online banking service to facilitate trade. For the Food and Foodstuff Industries Joint Stock Company (Foodinco), the online banking innovation allowed it to shorten payment times from four hours to half an hour.

Previously, merchants used a paper-based system that required sending documents to banks in Vietnam or China. Not only was that system time-consuming, but it also had greater risks of late payments, fraud, and black-market currency exchanges.

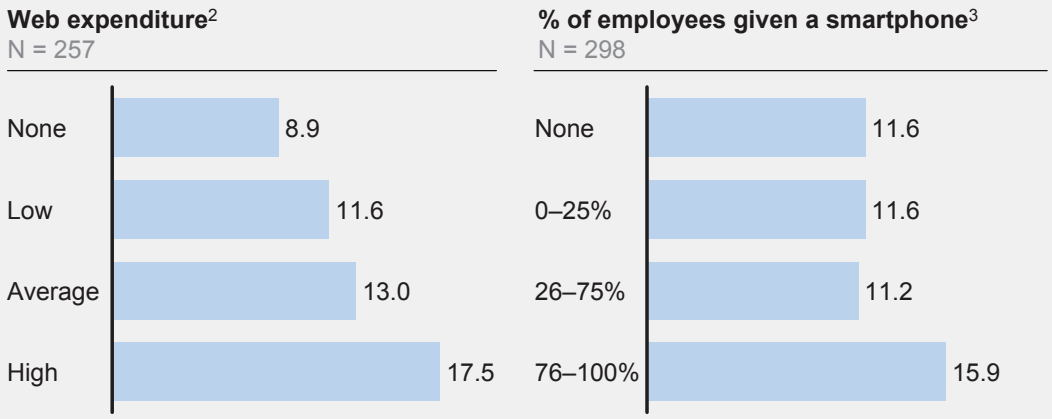
482 Euromonitor Internet Retailing.

Exhibit 122

High growth in Vietnam has a positive correlation with Web spending and access to smartphones

Stated growth percentage[1]

%



1 Excludes all respondents who did not know the growth rate of their company.
2 Low Web expenditure is less than 10 percent of total expenses. Average is 11–30 percent of total expenses. High is greater than 30 percent of total expenses. "What percentage of your expenses are digital, i.e., linked to Web technologies (electronic messaging, intranet, extranet, WiFi, Web sites, Web 2.0 tools, servers/routers, Web connection for employees, Enterprise Resources Planning (ERP), e-commerce, e-marketing, e-supply chain)?" Excludes "I don't know" responses.
3 "Do you have access to wireless Internet through a mobile broadband connection?" If so, "What percentage of your employees have access to it?"

SOURCE: 2011 McKinsey survey of 364 SMEs in Vietnam; McKinsey analysis

Government. The Vietnamese government views the Internet's role in developing key sectors such as education an important component of the country's strategy for competitiveness. For example, Vietnam's government partnered with Intel for the Computer to Schools project in an effort to modernize the country's education system and provide technology access that can advance the quality of education in Vietnam. It is reported that by 2015, Intel and local technology companies will provide one million low-cost PCs to teachers along with broadband Internet access.[483] Partly driven by these efforts, the 2010 United Nations e-Government Survey places Vietnam above the world and regional average for the development of e-government. However, Vietnam lags behind Southeast Asian countries such as Singapore and Malaysia that have well-developed e-government programs.[484]

The most popular e-government applications in Vietnam are accessing information about government services, accessing education services, filing taxes, and conducting research (Exhibit 123). The popularity of online tax filling reinforces government's goal to modernize tax collection (see Box 54, "Vietnam plans to ramp up Internet use to modernize its tax collection").

Box 54. Vietnam plans to ramp up Internet use to modernize its tax collection

Vietnam tax authority envisions leveraging the Internet to improve the effectiveness and efficiency of tax authorities. IT and the Internet will play a central role reforming Vietnam's tax administration.

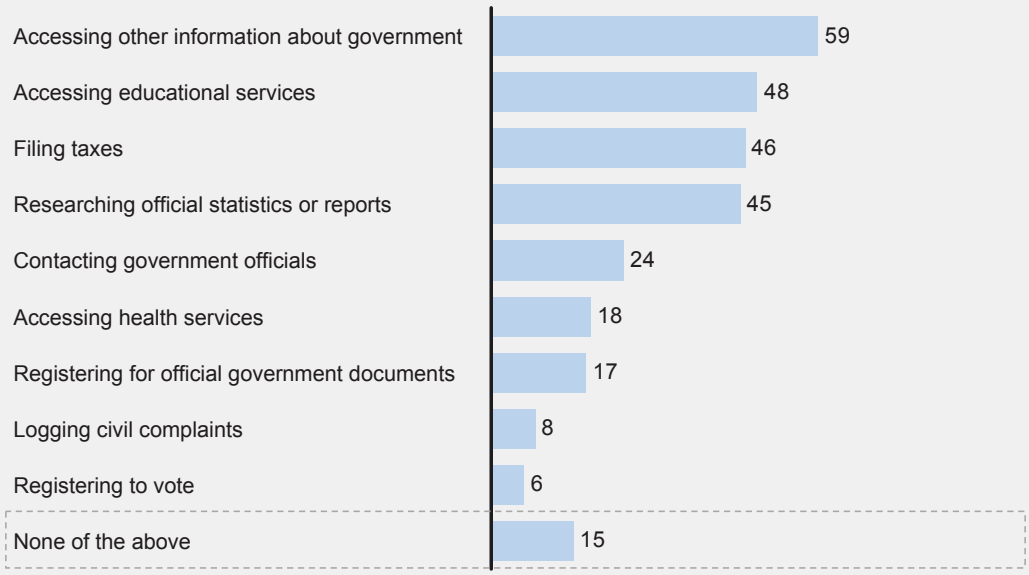
The goal is for at least 20 percent of tax registrations to be sent and processed through the Internet by 2012, 50 percent by 2015, and 65 percent by 2020.

483 Rick Hodgin, "Intel helps Vietnam bring education to the masses," TG Daily, April 9, 2009.
484 United Nations, "e-Government survey 2010."

Exhibit 123

Access to government information and educational services are the most popular e-government services in Vietnam

% of respondents using each e-government online service in the last year.
Sample size for Vietnam = 300



SOURCE: 2011 McKinsey survey of 300 SMEs in Vietnam; McKinsey analysis

Path forward

Vietnam has great potential for gaining impact from the Internet. Vietnam was identified as an aspiring country because it displays a strong set of fundamentals while also exhibiting the potential for growth: GDP in 2010 exceeded $276 billion, and per capita GDP was $1,174.[485] Vietnam's year-on-year GDP growth has consistently exceeded 5 percent. The country also has favorable characteristics for continued growth, including a young consumer base eager to consume more Web technologies (see Box 55, "Aspiring countries can draw on their strengths to drive Internet ecosystem growth," for a summary of five macroeconomic strengths across aspiring countries).

Two relative sources of macroeconomic strength, which Vietnam can use to develop its Internet ecosystem, are its natural resources and its position as a hub of trade. Vietnam's natural resources range from rice and coffee to rubber and crude oil. Rents from natural resources can be applied to augment Vietnam's Internet infrastructure and penetration, especially mobile, given its geography and large rural population. Firms growing or extracting these natural resources may form natural partners for public-private partnerships to address constraints in Internet ecosystem development, such as digital literacy and device access.

Vietnam can further increase Internet penetration by addressing infrastructure constraints through investments in mobile infrastructure and other wireless technologies. Vietnam has high mobile penetration with 127 mobile subscriptions per 100 users.[486] Additionally, 38 percent of Internet users have previously accessed the Internet on a mobile phone.[487] Mobile Internet is particularly popular among young users, with 47 percent of 15- to 27-year-olds accessing Internet through mobile devices, compared with 37 percent among ages 25 to 34 and 24 percent among ages 35 to 49.[488] Other wireless broadband technologies

485 IMF; World Bank.
486 Vietnam National Steering Board on Information Technology and Ministry of Information and Communications, "ICT white book," 2011. The most recent publicly available statistic is from the ITU for 2009, at 112 subscriptions per 100 users.
487 Cimigo, "Vietnam netcitizens report," April 2011.
488 Ibid.

Box 55. Aspiring countries can draw on their strengths to drive Internet ecosystem growth

We have identified five macroeconomic strengths that aspiring countries can leverage to drive Internet ecosystem growth. These strengths are not mutually exclusive, but they apply in varying degrees to each aspiring country. For a broader discussion of these strengths and a comparison of our 57-country set along them, see chapter 3.

- **"Resource-rich"** countries' economies are disproportionately dependent on exploiting highly profitable natural resources (e.g., oil, natural gas), giving them large sums of money to invest.
- **"Hub-of-trade"** countries' economies are driven by exports of goods and services. Local enterprises, or multinationals with local branches, have developed expertise in supply chain and international trade.
- **"Innovation-potential"** countries have large investments in R&D. They benefit from large pools of highly educated and creative individuals developing new products.
- **"Strong-local-consumption"** countries' economies are heavily reliant on domestic consumption. Furthermore, imports are low, meaning that most goods and services consumed are provided by local businesses.
- **"Strong-SME-sector"** countries have an SME sector that is a dominant force in the economy, e.g., SMEs employ a majority of the workforce.

include WiMAX, which is more suitable for Vietnam's less densely populated, rural environments than fixed-line broadband.

Public access points can also be a driver of increased Internet penetration, as they address hardware constraints and provide relatively affordable Internet access. Currently 23 to 26 percent of Vietnamese Internet users access the Internet via cybercafés.[489] This kind of access is more prevalent among lower socioeconomic classes.[490] Thus investments in public access points such as Internet cafés, postal offices, and libraries can be a way to bridge the access gap.

Vietnam's strength as a hub of trade provides it expertise in logistics and supply chain, as well as commercial partnerships. These can be leveraged to attract ICT manufacturers, especially if combined with other incentives, such as tax benefits. Southeast Asian nations have successfully entered the ICT hardware market. With its proven ability as a manufacturer of goods from clothing to electronics, Vietnam could expand into Internet-related hardware.

Although Vietnam has experienced increasing levels of international trade since its membership in the WTO, it is experiencing a trade deficit of Internet-related goods, as demonstrated by our iGDP index. In addition, FDI in ICT is currently low in comparison with investments flowing into other sectors. Thus, beyond its Internet infrastructure, Vietnam can explore the possibility of leveraging its strength as a hub of trade to increase the Internet contribution to GDP through related trade. Looking forward, Vietnam can develop a domestic base for the production and export of ICT goods, supported by increased ICT-related federal direct investment.

Vietnam has the potential to enjoy a robust Internet ecosystem. While systemic constraints need to be resolved, Vietnam has important strengths among individuals and enterprises alike. And while Internet penetration is currently low, those Vietnamese who are online are highly engaged. Similarly, Vietnam's position as a source of low-cost manufacturing provides key strengths necessary to develop into an ICT hardware manufacturer.

489 Usage in Internet cafés does not exclude usage in other places.
490 Cimigo, "Vietnam netcitizens report," April 2011.

3. Key strengths of aspiring countries that can be used for Internet development

Aspiring countries can leverage their macroeconomic strengths to increase the benefits they derive from the Internet. We have identified five key strengths to leverage; however, individual countries have different primary and secondary strengths, suggesting that each would do best to pursue its own distinct path toward enhancing the impact of the Internet. The five key strengths are:

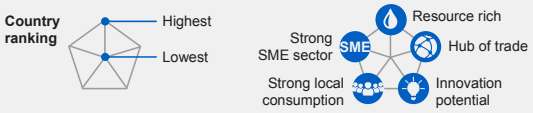
- **"Resource-rich"** countries whose economies are disproportionately dependent on exploiting highly profitable natural resources (e.g., oil, natural gas), giving them large sums of money to invest.
- **"Hub-of-trade"** countries whose economies are driven by exports of goods and services. Local enterprises, or multinationals with local branches, have developed expertise in supply chain and international trade.
- **"Innovation-potential"** countries have large investments in R&D. They benefit from large pools of highly educated and creative individuals developing new products.
- **"Strong-local-consumption"** countries' economies are heavily reliant on domestic consumption. Imports are low—most goods and services consumed are provided by local businesses.
- **"Strong-SME-sector"** countries have an SME sector that is a dominant force in the economy, employing a majority of the workforce.

We ranked 57 countries based on their performance along these five key strengths (Exhibits 124A and 124B).[491] For each country, a radar chart with five axes summarizes those five rankings. If a country ranks first, the line will pass through the edge of the corresponding axis. Inversely, if a country ranks last, the line will pass through the center. When data are not available for a particular dimension, the line is interrupted for that axis. The area of the radar chart is proportional to each country's per capita GDP so that the countries are comparable. For example, since we believe that gross domestic expenditure in R&D is indicative of the "innovation potential," we rank countries based on their R&D spending as a share of GDP. By looking at where the line crosses the "innovation potential" axis, we can get a sense of how focused a country is on innovation, and simultaneously of how large its absolute R&D spending is.

491 See the appendix for more detail on metrics and formulas used to rank countries along each of those dimensions.

Exhibit 124A

Five key strengths—country rankings



1. Resource rich

Argentina*	Bolivia	Colombia	Egypt	India	Mexico*
Morocco*	Nigeria*	Norway	Russia	Ukraine	Venezuela

2. Hub of trade

Cambodia	Chile	China	Malaysia*	New Zealand	Philippines
South Africa	Sri Lanka	Taiwan*	Vietnam*		

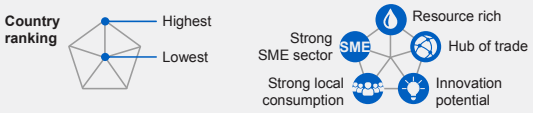
3. Innovation potential

Belgium	Canada	Denmark	Finland	Germany	Hungary*
Iceland	Israel	Japan	Slovenia	South Korea	Sweden

* Focus aspiring countries

Exhibit 124B

Five key strengths—country rankings
(CONTINUED)



4. Strong local consumption

Bangladesh	Brazil	France	Ghana	Greece	Pakistan
Turkey*	United Kingdom	United States	Zimbabwe		

5. Strong SME sector

Australia	Austria	Czech Republic	Estonia	Ireland	Italy
Luxembourg	Netherlands	Poland	Portugal	Slovak Republic	Spain
Switzerland					

* Focus aspiring countries

Countries can leverage their macroeconomic strengths to benefit from the Internet

Resource rich

Of the 57 countries we analyze, 12 countries stand out for enjoying rent from natural resources exceeding 10 percent of GDP:[492] Argentina, Bolivia, Colombia, Egypt, India, Mexico, Morocco, Nigeria, Norway, Russia, Ukraine, and Venezuela. Some resource-rich countries have had some success leveraging the Internet by:

- Investing in physical Internet infrastructure (e.g., mobile broadband, fixed cables).
- Investing in human capital (e.g., digital literacy).
- Developing ICT hubs to attract foreign multinational companies and enable knowledge transfer with the local workforce.
- Creating government-backed funds (e.g., sovereign wealth funds) to invest in SMEs or new businesses and jump-start the venture capital industry.

The value proposition from investing in the foundations of the Internet is strong for aspiring countries. In a set of 13 aspiring countries, we found a 66 percent correlation between the i4F Index, measuring the level of development of Internet foundations, and the Internet contribution to GDP. Gaps in a country's Internet foundation are therefore likely to result in a low Internet contribution to GDP.[493] Russia, for example, has only 20 secure Internet servers per million capita, compared with 1,446 in the United States.[494] MGI has calculated Russia's Internet contribution to GDP at 0.8 percent in 2009, well below the average (over 3 percent) of developed countries.[495] In this case, investing in secure Internet servers could accelerate growth of B2C e-commerce by facilitating online transactions so long as businesses use the extra supply of computing space created.

A possible way of accelerating the development of physical Internet infrastructure is to build public-private partnerships to reduce the risk and cost for companies investing in infrastructure, while still benefiting from their technical and project-management expertise. Iran did this in 2005 by creating MTN Irancell, a joint venture between the Iran Electronic Development Company and MTN International, a multinational mobile telecommunications company (also see chapter 5). MTN Irancell is now the second-largest mobile phone network operator in Iran and started providing WiMax services to major Iranian cities in 2010.

Turning to human capital, some resource-rich countries have decided to invest in digital literacy. Brunei's e-Hijrah program promotes the use of information and communication technology in education. This includes training teachers to use ICT effectively, developing infrastructure in schools, and teaching students how to use computers and the Internet. In parallel, Brunei's Authority for Info-communications Technology Industry (AITI) is offering to subsidize training in ICT-related skills for eligible jobs seekers by between 50 and 80 percent.[496]

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492 World Bank, World Development Indicators, "Total natural resources rents (percent of GDP)," latest available year (2009 for most countries).

493 Taiwan, Malaysia, Hungary, China, Argentina, India, Brazil, Morocco, Mexico, Russia, Vietnam, Turkey, and Nigeria.

494 World Bank, World Development Indicators, "Secure Internet servers (per million people)," based on data from Netcraft and World Bank population estimates.

495 Calculated in McKinsey Global Institute, *Internet matters: The Net's sweeping impact on growth, jobs, and prosperity,* May 2011, using the same methodology as in this report.

496 Web site of the Authority for Info-communications Technology Industry of Brunei Darussalam, ICT competency program.

Beyond digital literacy, resource-rich countries can incentivize foreign ICT companies to establish local branches, bringing the local market Internet know-how and the ability to train the workforce. For example, Malaysia, a country rich in oil and tin, created the Multimedia Super Corridor in 1996 to attract investors and promote development of ICT manufacturing companies. To do so, it allowed unrestricted employment of local and foreign knowledge workers, exempted companies from local ownership requirements, and provided financial incentives, including no income tax for up to 10 years, and no duties on import of multimedia equipment. Malaysia has experienced high levels of FDI in ICT, averaging $1.8 billion per year in the past five years.[497] In 2010, we estimated that the Internet contributed 4.1 percent of Malaysia's GDP, a remarkable share that was above that of many developed countries; 47 percent of that contribution came from a positive trade balance, driven by exports of ICT goods such as electronic equipment.

A resource-rich country can also enable its entrepreneurial sector. Here again, availability of capital will be critical to success. Governments can use their financial power to create government-backed funds (e.g., sovereign wealth funds) that will invest in ICT start-ups to jump-start domestic entrepreneurship. Partnering with private investors can also bring expertise, financial discipline, and exit options. In this regard, the Malaysian government has set up two funds. The first of these—the Technology Acquisition Fund—provides grants of up to $600,000 to Malaysian SMEs to facilitate the acquisition of foreign manufacturing technologies.[498] The second—the Commercialization of Research and Development Fund—focuses on the commercialization of products coming from local public and private R&D. In addition to these two funds, the Business Growth Fund, with an announced allocation of $50 million in 2010, aims to bridge the gap between seed funding and venture capital and is targeted specifically at high-tech companies.

Hub of trade

Large trade hubs include Cambodia, Chile, Malaysia, New Zealand, South Africa, Taiwan, and Vietnam. In these countries, good exports represent more than 25 percent of GDP.[499] These economies have also secured at least three large trading partners at an average distance of over 3,000 miles.[500] Countries that become major traders are typically large manufacturing centers (e.g., Malaysia), isolated and trading from great distances (e.g., Chile, South Africa), or regional relays for trade. Some hubs of trade have used their strength to enhance their Internet ecosystem by:

- Investing in broadband infrastructure to ICT-enable its trade centers.
- Attracting ICT manufacturers.
- Creating ICT parks with research institutes, investment firms, and private companies to move up the value chain.

Countries that are engaged in a great deal of International trade are well positioned to benefit from the Internet. Hubs of trade that are ICT-enabled will result in both internal productivity gains and easier collaboration with business partners throughout the world. Such hubs also considerably increase customer reach. The McKinsey SME survey shows that companies reporting high level of Web expenditure also report 17 percent of their revenue comes from exports, compared with 6.8 percent for companies reporting a low level of Web expenditure.[501]

497 *Financial Times*, FDI markets, 2006 to 2010.
498 Malaysian Technology Development Corporation Web site.
499 World Bank, World Development Indicators, "Goods exports (BoP, current US$)" and "GDP (current US$)," 2010.
500 IMF, Import/Export matrices, 2010; Centre d'Etudes Prospectives et d'Informations Internationales (CEPII). Geodesic distance calculated using the great circle formula.
501 2,071 SMEs surveyed in Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam. Low Web expenditure is less than 10 percent of total expenses; average is 11–30 percent of total expenses; high is greater than 30 percent of total expenses. "What percentage of your expenses are digital, i.e.,, linked to Web technologies (electronic messaging, intranet, extranet, WiFi, Web sites, Web 2.0 tools, servers/routers, Web connection for employees, ERP—Enterprise Resources Planning, e-commerce, e-marketing, e-supply chain)?" Excludes "I don't know" responses.

Over time, hubs of trade have developed expertise in logistics and supply chains, and in commercial partnerships. These strengths can be used as an asset to attract ICT manufacturers, especially when combined with other incentives, such as alleviating taxes and reducing restrictions imposed by legislation (e.g., on nationality of the business owner). For example, Dubai created a tax-free zone for ICT companies in 2000, called Dubai Internet City. This IT park allows for foreign ownership and provides reliable and powerful Internet connections, and this has attracted companies including foreign ICT giants.

Finally, for those countries manufacturing and exporting ICT goods, there is an opportunity to move up the value chain by creating ICT parks that mix public and private research facilities with companies. This is what Taiwan successfully set out to do in the 1980s, a time when a great deal of ICT manufacturing (semiconductors excluded) was moving into China for its cheaper labor. Taiwan started the Hsinchu Science and Industrial Park back in 1980. Today, the park's hundreds of technology companies account for roughly one-tenth of Taiwan's GDP.[502] To access the best of Taiwan's research in ICT, the park leverages government-funded applied research carried out at the nearby Industrial Technology Research Institute, which benefits from skilled researchers trained at the nearby National Chiao Tung University and National Tsing Hua University. In 2010, we estimated that the Internet contribution to GDP reached 5.4 percent in Taiwan (on a par with countries such as Japan, South Korea, and United Kingdom). This increased share was driven by exports of world leaders such as Quanta Computer (the world's largest notebook manufacturer, with $38 billion revenue in 2010), and Acer ($20 billion revenue in 2010). Importantly, this strategy also limits the brain drain by giving opportunities to local talent.

Innovation potential

Countries with a large ICT-educated and creative pool of individuals have the potential to develop high-added-value ICT businesses. We found that 12 of our 57 countries (including one aspiring country, Hungary) spend more than 2.8 percent of their GDP on R&D:[503] Belgium, Canada, Denmark, Finland, Germany, Hungary, Iceland, Israel, Japan, Slovenia, South Korea, and Sweden. To further enhance their Internet ecosystem, highly innovative countries should consider:

- Developing bridges between research facilities and companies.
- Providing access to financial capital to innovative products and ideas.
- Facilitating the process of starting a business.
- Specializing in specific sectors within ICT.

The main challenge for countries with strong research is the transfer of new technologies from the laboratory to the market. To this effect, university, industry, and public-private research partnerships can be encouraged to facilitate the transition of a product from prototype to commercialization phase, once the concept has been matured in the laboratory. There are many ways to promote such partnerships, including providing researchers with incentives to commercialize their inventions (e.g., a share of royalties) or developing technology parks mixing universities, laboratories, and companies.

Market mechanisms also need to be in place to provide access to financial capital. This can be achieved by developing capital markets as well private equity funds focused on new technologies. The availability of funds should address the need for the entire range of investments, from commercial loans, seed funding, and venture capital, through private equity and all the way to project finance. Israel started down such a path in 1992 when the government created the Yozma program to jump-start the Israeli venture capital industry. The government co-invested with international venture capital firms, offering them very favorable

502 According to Taiwan's National Science Council, revenue generated by the top three science parks in Taiwan—Hsinchu Science Park, Central Taiwan Science Park, and Southern Taiwan Science Park—totaled NT$2.16 trillion in 2010, with Hsinchu contributing NT$1.3 trillion.

503 UNESCO Institute for Statistics, "Gross domestic expenditure on research and development," latest available data (mostly 2009 and 2010).

terms. By 2000, 50 venture capital firms had raised close to $10 billion.[504] By 2005, Israel had the world's highest density of high-tech start-ups—nearly 2,500 in a country of only six million people.[505]

These countries can promote entrepreneurs so that companies are built that will sell the products developed in laboratories. Governments need to reduce any difficulties in starting a business (e.g., limit the number and duration of procedures to start a business). We have calculated a 68 percent correlation between enablers of Internet entrepreneurship and the number of ICT businesses registered per year and per capita.[506] It is evident that a favorable business environment will lead to more companies being set up. For instance, Japan has somewhat burdensome rules concerning the hiring and firing of employees. It also takes a long time to start a business in Japan, effectively reducing the overall number of companies created.[507] We estimate that 85 ICT companies begin life each year and per million capita in Japan compared with more than 400 in the United Kingdom, despite the fact that these countries have similar levels of Internet development.[508]

Lastly, these countries can maximize the value they create from R&D by specializing in a particular ICT field. Israel has the highest R&D spending as a share of GDP in the world—4.6 percent—and a high-quality education system, including universities such as Ben-Gurion University.[509] Israel has the highest number of engineers per capita in the world and has successfully bridged the gap between research and commercialization by providing its highly skilled labor force access to venture capital and a business-friendly environment, and also by specializing in software. As a result, Israel's software exports reached $6.2 billion in 2009.[510] We estimate that the Internet made a 6.4 percent contribution to GDP in that year, one of the highest contributions of any country in the world.[511]

Strong local consumption

We consider a country to belong to this category of macroeconomic strength if its economy is consumption-driven and has a low level of imports. Of the 57 countries we examined, 10 countries fit that definition: Bangladesh, Brazil, France, Ghana, Greece, Pakistan, Turkey, the United Kingdom, the United States, and Zimbabwe. In most, consumption accounts for more than 84 percent of GDP and imports represent less than 24 percent of GDP.[512] Some countries in this category have successfully leveraged the Internet by:

- Increasing consumer surplus by enabling consumers easier access to the Internet through the development of fixed or mobile Internet infrastructure, promoting competition among Internet service providers to lower cost of access, and developing secure online payments systems and labels.

- Helping businesses get online to address domestic consumer demand of Internet-related goods and services (e.g., coupons for local businesses).

504 Augusto López-Claros and Irene Mia, "Israel: Factors in the emergence of an ICT powerhouse," World Economic Forum, 2006.
505 A. Harrel, "The role of venture capital in the development of Israel's high-tech industry," Israel Venture Association, 2005.
506 As measured by the McKinsey Ease of Internet Entrepreneurship index, which takes into account ease of starting a new business, ease of financing a new business, and ease of Internet access. See the appendix for more detail.
507 World Economic Forum Executive Opinion Survey, 2010; World Bank "Doing Business" project, 2011.
508 Number of ICT businesses registered annually: Eurostat in European countries, McKinsey analysis based on World Bank data for other countries.
509 UNESCO Institute for Statistics, "Gross domestic expenditure on research and development," latest available data (mostly 2009 and 2010).
510 Israel Export and International Cooperation Institute.
511 McKinsey & Company, *The impact of the Internet on the Israeli economy,* 2009.
512 World Bank, World Development Indicators, "Final consumption expenditure (percent of GDP)," latest available data (mostly 2009 and 2010); World Bank, "Import of goods and services (percent of GDP)," latest available data (mostly 2009 and 2010).

The Internet has a significant impact on people's lives, providing access to a large set of free services, from e-mail and browsing to search and collaborative services such as wikis, blogs, and social networks. This access has given users substantial surplus value beyond the impact of the Internet on GDP. MGI research shows that this value ranges in a sample set of developed countries from $18 a month per user in Germany to $28 in the United Kingdom.[513]

There is an opportunity for aspiring countries in this category to increase the total user surplus derived from the Internet by using three main levers: promoting Internet use, lowering the cost of access, and enabling B2C e-commerce. First, total consumer surplus will increase (if not proportionately at least very substantially) with the number of Internet users. Use, in turn, can be facilitated by investing in Internet infrastructure and developing digital literacy. Second, reducing the cost of access will not only increase the number of users, but will also increase the surplus derived per user. Surplus is defined as the difference between an individual's willingness to pay and the price actually paid; in this case, the price paid is the Internet connection, as well as the cost of the device used to access the Internet. Therefore, promoting competition, to reduce the cost of access will have a positive effect on total consumer surplus. Third, surplus derived per consumer can be increased by facilitating online activities that generate user surplus such as B2C e-commerce. Consumers derive benefits from B2C e-commerce (e.g., online travel booking or online retail) through mechanisms such as price reduction and better information scanning. Developing B2C e-commerce requires facilitating online payments and increasing the quality of postal delivery systems as well as getting businesses online. In our set of 57 countries, we have found a 74 percent correlation between how countries rank on these enablers of e-commerce and the level of online retail per capita in the country.[514] For example, Brazil's online retail has reached 3.1 percent of total retail, enabled by a high level of payment sophistication (e.g., 3.4 financial cards per capita and 100 cashless payments per year per capita).[515]

Countries with strong local consumption can support the growth of local e-commerce. New services will range from coupons for local businesses and online auction sites to purchasing books and DVDs online. Beyond providing Internet access, helping local businesses get online and offer online payments options requires increasing digital literacy as well as liberalizing legislation on financial transactions and promoting businesses that offer such online payments platforms. For example, Morocco's Centre Monétique Interbancaire, started in 2001, now provides security standards for online transactions that comply with international regulations. In accelerating penetration of online payment, aspiring countries must think about how to overcome trust issues that are holding some consumers back from buying online. Our SME survey shows that a "lack of trust in society" is the fourth most cited issue by SMEs when asked about the main constraints holding consumers from using the Internet.[516] For this reason, the idea SMEs cite most often for developing the Internet in their country is to develop national "trust symbols" that consumers can easily recognize.[517] For example, US companies, providing that they meet the requirements, can purchase a Verisign or McAfee security badge to place on the online checkout process in order to give customers more confidence that their data are safe. The key here is that customers must be able to both recognize and trust that symbol.

513 McKinsey Global Institute, *Internet matters: The Net's sweeping impact on growth, jobs, and prosperity,* May 2011.

514 As captured by the McKinsey e-commerce platform index, looking at online payment enablement, quality and cost of parcel delivery, and level of Internet readiness combining factors such as number of secure servers and cost of Web domain registration.

515 Euromonitor, retail and online retail in Brazil, 2010; IMD, World Competitiveness Online, February 2011; McKinsey Global Payments database, 2010.

516 Aggregate of responses from 2,484 SMEs surveyed in Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam. Question asked was: "In your opinion, what are the general bottlenecks discouraging people in your country from using the Internet? (Rank top 3)"

517 Aggregate of responses from 2,484 SMEs surveyed in Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam. Question asked was: "In your experience, what are some ways countries can leapfrog the Internet development curve? (Rank top 5)" "Trust symbols" was presented as "Developing national 'trust symbols' for Web sites, and in particular e-commerce platforms, in order to improve Internet security and identity protection."

Strong SME sector

Countries where SMEs are prevalent should strive to ensure that these businesses take advantage of the Internet to boost growth and employment. Among our 57 countries, Australia, Austria, Czech Republic, Estonia, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovak Republic, Spain, and Switzerland have particularly large SME sectors. As revealed by our survey of 2,484 SMEs in eight aspiring countries, there is a strong rationale for SMEs to carry more of their businesses online: SMEs reporting a high level of Web expenditure also report an average growth rate of 10.5 percent compared with a 1.2 percent growth rate in SMEs reporting a low level of Web expenditure.[518] This suggests that aspiring countries may be able to enhance economic growth by promoting Internet use within the SME sector. Some countries in this category have successfully propelled growth by:

- Developing broadband infrastructure for businesses.
- Taking steps to lower the cost of hardware and access to the Internet.

McKinsey's SME survey shows that in the aspiring countries we studied in depth, SMEs that provide broadband Internet to 76 to 100 percent of their employees report nearly double the growth rate (6.3 percent versus 3.3 percent) as companies that do not provide any broadband to their employees.[519] This strongly suggests that countries with strong SMEs should take steps to provide broadband Internet access to those businesses, including in rural areas where low population density could require mobile broadband. A notable advantage of broadband over narrowband is that it enables SMEs to take advantage of cloud computing.[520] SMEs lacking a specialized IT department favor those solutions because they require little maintenance or upfront cost and are often easy to install. China's 12th Five-Year Plan and the Resolution of the State Council on Fostering and Developing Strategic Emerging Industries emphasized the development of cloud computing as a crucial part of the next-generation IT industry. While more than 60 percent of the worldwide public cloud services market is currently in the United States, cloud will play an increasingly large role in aspiring countries. For example, the Asia Pacific market is estimated to grow at almost 40 percent a year through 2015 from its current level of $750 million in 2010.[521] There are countries with regulatory barriers that prevent certain types of data from being transferred across national boundaries, and this can restrict options for SMEs to access and use cloud services. Finding ways to resolve the policy objectives underpinning these regulations, while promoting global competition for cloud services, can broaden options for SMEs.

Our survey further reveals that SMEs consistently perceive the top three constraints to higher use of the Internet in businesses to be access speed, the cost of access, and the cost of equipment. Therefore, beyond investing in broadband, countries with a large SME sector need to pay particular attention to lowering the cost of IT equipment and access. Examples of measures necessary to achieve this aim include promoting healthy competition among Internet providers and lowering import tariffs on ICT products.

As countries leverage their macroeconomic strengths, they should keep a common set of goals in mind

A robust Internet ecosystem has a set of characteristics, some of which are captured in McKinsey's maturity of the Internet ecosystem—e3—index.

518 1,882 SMEs surveyed in Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam. Low Web expenditure is less than 10 percent of total expenses. Average is 11–30 percent of total expenses. High is greater than 30 percent of total expenses. "What percentage of your expenses are digital, i.e., linked to Web technologies (electronic messaging, intranet, extranet, WiFi, Web sites, Web 2.0 tools, servers/routers, Web connection for employees, ERP—Enterprise Resources Planning, e-commerce, e-marketing, e-supply chain)?" Excludes "I don't know" responses.

519 2,106 SMEs surveyed in Argentina, Hungary, Malaysia, Mexico, Morocco, Taiwan, Turkey, and Vietnam.

520 Cloud computing is the delivery of computing as a service rather than a product, whereby shared resources, software, and information are provided to computers (or other devices) over the Internet.

521 Asia Pacific comprises Australia, China, Hong Kong, India, South Korea, New Zealand, Singapore; excludes Japan. See IDC, "Worldwide and regional public IT cloud services 2011–2015 forecast," June 2011.

The first step to a robust Internet ecosystem requires high-quality infrastructure, including basic features such as reliable electricity supply and roads to allow postal delivery but also fixed or mobile Internet capacity. In addition, secure Internet servers and large international Internet bandwidth are necessary to fully capture the value from the Internet. There is a wide range of technological options, including 3G, 4G, WiMax, satellite, cable, and dial-up.

Another hallmark of a mature Internet ecosystem is the intensity of Web use by individuals, businesses, and government. Getting more individuals online requires increasing digital literacy, decreasing cost of access, and the development of quality offerings, including content in a country's national language. Businesses also derive considerable benefits from the Web, as we have discussed. Engaging them online requires training employees to be able to use the Internet for increased productivity and developing the necessary business broadband infrastructure. Finally, governments need to invest in quality online services that will engage citizens and make them realize cost savings due to increased efficiency.

As infrastructure is deployed and users become more engaged, economic benefits accounted for by the Internet should ensue. These can be supported by promoting B2B e-commerce to increase enterprise productivity and facilitate exchanges between businesses and promoting B2C e-commerce to benefit individuals.

Stakeholders well versed in their country's unique context need to develop ways to enhance the impact of the Internet

All countries share the goal of increasing the economic and social benefit from the Internet and some share macroeconomic strengths that they can leverage. But stakeholders with a local presence who understand a particular country's unique sources of strength—and constraints—need to determine specific approaches. Here, we provide here a few examples of the breadth of solutions and the stakeholders that have been involved in implementing them (for a more detailed discussion, see chapter 5).

A quality education, including digital literacy, is one of the cornerstones of developing the Internet ecosystem. One Laptop per Child is a nonprofit program aiming at providing laptops to children across the world.[522] In 2011, roughly two million children and teachers in Latin America were part of a One Laptop per Child project, as were 500,000 in Africa and the rest of the world. Students with these laptops were then able to teach their family and community how to use it. In Rwanda, 110,000 XO laptops had been deployed as of October 2011. In 2010, the government had financed the purchase of 65,000 laptops by selling cellular licenses to a multinational telecommunications company operating under the Tigo brand in Africa, and to Korea Telecom, which is working with the Rwandan government to extend broadband connectivity nationwide. Coinciding with the distribution of laptops, these programs also conduct training so that teachers feel confident with the technology and can incorporate them into their teaching.

Connecting rural areas can be a powerful means to drive economic and social benefits. CocoaLink—Connecting Cocoa Communities—is a farmer outreach program in Ghana initiated by the Ghana Cocoa Board, the World Cocoa Foundation, and the Hershey Company.[523] This program uses voice and SMS text messages delivered in Twi and English to connect cocoa farmers with useful information about improving farming practices, farm safety, child labor, health, crop disease prevention, postharvest management practices, and produce marketing—all at no charge. Between its inception in March 2011 and July 2011, some 1,500 farmers in 15 western regional communities had already signed up to participate. CocoaLink's stated goal is to reach 8,000 Ghanaian cocoa farmers and family members by 2012 and more than 100,000 by the end of 2014.

522 One Laptop Per Child Web site.

523 Ghana News Agency, "COCOBOD links cocoa farmers via mobile phones," July 15, 2011, www.ghananewsagency.org/details/Economics/COCOBOD-links-cocoa-farmers-via-mobilephones/?ci=3&ai=31064 (accessed December 1, 2011).

Individuals sometimes take matters into their own hands in surprisingly impactful ways. In the 1960s in Argentina, the state telephone monopoly ENTel provided services to profitable urban areas but avoided the expense and complexities of doing the same in thinly populated rural areas. A special regulation allowed the creation of telephone cooperatives and qualified nonprofit organizations to provide telephone services in their areas if ENTel declared them to be unprofitable. Individuals and local businesses together started creating Community Telecommunication Cooperatives (CTCs) to improve their connectivity.[524] Today, in addition to telephony services, CTCs provide Internet services, broadband connections, and WiFi, among other services. Over time, CTCs have created federations to build synergies and obtain better deals. The Federation of Telecom Cooperatives and the Federation of Cooperatives of Telephone Services of the Southern Zone represent 350 CTCs between them.

Countries sometimes face considerable geographic challenges. South Africa, for example, is insulated from most of international data traffic, and most of its neighbors' Internet ecosystems are not yet mature. South Africa has therefore been proactive in supporting the development of submarine cables that connect it to the Internet. As a result, its cable capacity is expected to reach 13.8 terabytes per second by 2012.[525] While the country scored a modest 26 percent on McKinsey's maturity of the Internet ecosystem index in 2010, South Africa is positioning itself to have a more mature Internet ecosystem in the future by investing in one of the core foundations of its Internet ecosystem.

524 ITU, "Argentina: Cooperatives in a competitive terrain," www.ictregulationtoolkit.org/en/PracticeNote.1973.html (accessed December 1, 2011).

525 Many Possibilities blog, www.manypossibilities.net (accessed December 1, 2001).

4. The future of the Internet in aspiring countries

Aspiring countries have experienced exciting growth in their Internet penetration and ecosystems over the past few years. Moving forward, we expect to see continued increases in Internet impact as aspiring countries' growth continues to outstrip that of developed countries.

The Internet landscape for aspiring countries can change dramatically in a few years

The potential for the Internet to increase its impact in aspiring countries is high, as accelerated adoption rates have translated into a faster rate of Internet development. As aspiring countries close the gaps in Internet use and maturity that they currently have with developed countries, we expect to observe usage profiles with regard to some Web technologies being increasingly similar between aspiring and developed countries.

Decreasing costs of accessing the Internet as well as devices will enable broader Internet use and increased network effects, thus increasing the engagement and consumption of consumers, and creating a greater consumer surplus. As the quality of infrastructure improves, richer engagement for all four major user groups—consumers, entrepreneurs, enterprises, and governments—as well as access to previously underused applications and services will be unlocked. As costs fall and quality rises, aspiring countries are likely to experience a broadening of Internet activity and a new availability of local and tailored content and services. The increased vibrancy of Internet ecosystems in these countries will encourage further participation from multinational players, which will also increase the economic impact of the Internet in aspiring countries. With the entrance of more local and multinational players, we expect to see broader protections created for all Internet stakeholders that will reduce existing barriers to the development of Internet ecosystems, including payment security, privacy concerns, and copyright protection.

To give a sense of the potential for a greater impact from the Internet, we highlight some examples:

- **Individuals.** We looked at how total consumer surplus in aspiring countries would grow if Internet penetration increased to the level observed in developed countries. Maintaining consumer surplus per user at its current level in each country—at an average of $12 per user per month across aspiring countries—we found that the total consumer surplus would increase from $135 billion to $364 billion per year across all aspiring countries. The main factor driving this increase will be increased Internet penetration, which will require investment in Internet infrastructure in order to lower the cost of access and equipment, as well as increased digital literacy.

- **Entrepreneurs.** We estimated how many additional Internet-related businesses would be started every year (including in the informal economy) if the number of Internet-related businesses started per capita were to catch up with the number in developed countries. Assuming half of the gap is filled, we estimate that the number of Internet-related businesses started would rise from 143,000 to 393,000 per year across all aspiring countries, with 58 percent of that increase coming from India and China. To achieve this, aspiring countries need to make it easy and cheap to start a business while developing early-stage financial capital and Internet access.

- **Enterprises.** We assessed what the incremental revenue from online retail for companies would be in aspiring countries if today's gap with the developed world in terms of share of revenue derived from online retail were to partially close.[526] We found that this partial closing of the gap would result in online retail increasing from $42 billion to $84 billion per year across all aspiring countries. Achieving this growth would involve developing secure online payment platforms, more secure Internet servers, and increasing Internet penetration for both businesses and individuals.

- **Governments.** We evaluated the number of individuals who would use e-government services if the share of such people were to reach the same levels witnessed in developed countries. We found that the number of individuals using e-government services would reach 359 million users, roughly one-third of today's online population.[527] Reaching this figure would require, among other measures, governments to invest in considerable development of their online offerings (e.g., driver's license, tax fillings) at the same time as more citizens becoming digitally literate and Internet penetration into households increasing.

Although we expect many similar patterns to emerge as aspiring countries develop, there will also be new and different Internet trends. Our country and constituent profiles have demonstrated that there are many innovative new business models as well as disruptive market structures that have already emerged in aspiring countries. These include tailored versions of models that exist in developed countries (e.g., food delivery, group buying) and innovations that are unique to aspiring countries (e.g., mobile health platforms, cashless payment structures). These unique models will continue to spur Internet growth in aspiring countries, driven largely by innovation among users and local entrepreneurship.

The growth of aspiring countries' online presence will make the Internet experience richer for all users. This diversification is currently taking place. For example, the top ten languages currently online represent 80 percent of Internet users.[528] Within this top ten, developed world languages (e.g., English, German) have a higher penetration but languages from aspiring countries (e.g., Chinese, Arabic) are growing at rates of more than 1,000 percent. This growing diversity in the Internet's languages, content, and cultural contexts will not only improve the experience of users in aspiring countries, but also create value for all users regardless of geography—value that will be reinforced by recent advances in translator technologies.

Although the outlook for the Internet in aspiring countries is exciting and ripe with opportunity, there are three broad sets of potential obstacles that need to be overcome: (1) the cost-effective availability of the Internet; (2) the ability of individuals to fully use the Internet; and (3) policies shaping the Internet environment.

The Internet is often not available to large segments of the population in a cost-effective manner. The cost of fixed-line broadband access may be high, and mobile access is either similarly cost-prohibitive in the case of 3G, or available only in lower-quality Internet connectivity options such as WAP. Having a robust Internet infrastructure is critical, whether mobile or fixed line, and the cost of Internet access and devices needs to be affordable. Even then, as we have noted, there will always likely be some users whose per capita income is lower than it needs to be to enable them to access the Internet. From a broader infrastructure standpoint, the brick-and-mortar preconditions of a thriving Internet ecosystem, from reliable electricity to efficient parcel delivery systems, also need to be in place.

526 We used the McKinsey e-commerce platform index (eCP) to assess the level of e-commerce enablement in aspiring countries. Countries with eCP lower than 30 percent were assumed to close 25 percent of the gap, countries with eCP between 30 and 40 percent to close 50 percent of the gap, countries with eCP between 40 and 50 percent to close 75 percent of the gap, and countries with eCP above 50 percent to close 100 percent of the gap.

527 E-government usage in developed countries was assessed using Eurostat data on "Percentage of individuals aged 16 to 74 using the Internet for interaction with public authorities."

528 Internet World Stats, "Top ten languages used in the Web," www.internetworldstats.com/stats7.htm (accessed December 1, 2011).

Language barriers, lack of education, and lack of digital literacy can also limit the ability of individuals to access the Internet. While online translation tools are making it easier for speakers of uncommon languages to use the Internet, more progress is necessary to remove this hurdle. Education is another hurdle to using the Internet. A lack of basic literacy inhibits even the use of free services such as online video that do not explicitly involve reading or writing. Digital literacy is an important second-order concern. Even many highly educated people do not know how to access and benefit from the Internet. From a basic understanding and appreciation of what the Internet can provide to having the training to use cloud-based enterprise productivity tools, digital literacy can be a major stumbling block for leveraging the Internet effectively. ICT-focused education programs, as well as enterprise training, can help to overcome this barrier.

Various policies can help or hinder Internet ecosystem development. Regulatory barriers and firewalls can impede the free flow of information, which is a necessary precondition for empowering users to fully leverage the Internet. Well-intentioned and important controls on content and data management to safeguard children, for instance, can, however, be restrictive in business operations.

Protectionist barriers are another potential hurdle, blocking the ability of "foreign" companies to compete using the Internet. Such barriers can reduce the competitiveness of local companies. Consumers lose out when competition is reduced, and consumer surplus is among the most important forms of Internet impact. Many of these protectionist barriers can eventually be circumvented. As John Gilmore put it, "The Net interprets censorship as damage and routes around it."[529]

We believe that a broad set of Internet stakeholders, including policy makers, nongovernmental organizations (NGOs), investors, local enterprises and entrepreneurs, and global technology vendors all have a role to play in ensuring and enhancing the Internet impact in aspiring countries (see chapter 5 for our broad recommendations for each set of stakeholders).

We have developed a range of critical indicators to monitor the Internet's progress

One of the goals of this report has been to measure the impact and benefits of the Internet, to identify the main sources of success within our sample of aspiring countries, and then compare this analysis with a larger set of countries, both more developed and less developed. One way in which we have accomplished this is through the use of indexes, each of which measures a host of Internet-related variables. These indexes are effective tools for tracking and measuring progress over time. They can be refreshed annually to provide insight into the emergence and impact of Internet ecosystems at a very granular level.

We have used three indexes previously developed by McKinsey and presented in previous research.[530] They are the iGDP, e3, and i4F. For each of these, we have gathered and analyzed additional data to calculate the indexes for more countries than McKinsey had done previously. In addition, we have introduced two new indexes to better understand the impact of the Internet in aspiring countries. The first of these is the ENE Index, which measures the ease of Internet entrepreneurship. The second new index is the eCP Index, which assesses a country's e-commerce platform.[531]

There are two categories of indexes. Lagging indicators—the e3 and iGDP fall into this category—measure the current state of the Internet and its concomitant impact. Leading indicators—i4F, ENE, and eCP are all in this category—measure critical underlying factors that drive future Internet development and growth. Together, these five indexes can enable countries and researchers to monitor progress in both the preconditions that are necessary for a robust Internet ecosystem and the subsequent impact of that Internet ecosystem.

529 Philip Elmer-DeWitt, "First nation in cyberspace," *Time,* December 6, 1993.

530 McKinsey & Company, *Internet matters: The Net's sweeping impact on growth, jobs, and prosperity,* 2011.

531 The Global Connectivity Index does not function as a tracking metric, because index components like export/import ratio are not indicative of Internet progress or growth. Rather, this index helps to quantitatively frame the archetypes.

As McKinsey did in its *Internet matters* report, we have detailed the methodology behind each index in an effort to encourage open-source tracking and improvements. We welcome any suggestions on how our analyses can be improved and will continue to update our methodology as necessary.

Current indicators

The iGDP indicator reflects the direct contribution of the Internet to a country's GDP, assessed using the expenditure approach. This index, measured as a share of GDP, includes Internet-related private consumption, private investment, public expenditure, and trade balance.

The e3 Index measures the current state of maturity of a country's Internet ecosystem based on three indicators of Internet means and use: environment, engagement, and expenditures. This index provides a broad view of a country's current Internet landscape based on metrics such as private, corporate, and government use, bandwidth, broadband penetration, number of personal computers and mobile phones, and online spending.

Leading indicators

The i4F Index represents the forward-looking health of a country's Internet ecosystem based on four foundational components: human capital, financial capital, infrastructure, and business environment. As such, the i4F Index evaluates key drivers of Internet growth such as higher education, R&D investing, and funding availability.

The ENE Index is another representation of forward-looking dynamism, in particular reflecting the state-of-play in starting new Internet businesses. The index has three components: ease of starting a new business, ease of financing a new business, and Internet accessibility. The index broadly measures the Internet entrepreneurship atmosphere of a country based on metrics such as cost and capital requirements to start a new business, quantity and size of venture capital deals, and cost of domain registration.

The eCP Index looks at the viability of e-commerce in local markets. The index measures three key components: the ability to pay online, parcel delivery, and Internet readiness. It looks at drivers such as the number of credit cards in circulation, number of cashless payments, reliability of postal services, cost of shipping parcels, and the costs of setting up a local Web site.

5. The role of different stakeholders in accelerating the impact of the Internet

Internet stakeholders across countries can play an active role in achieving and accelerating the full potential of the Internet in aspiring countries. Public policy makers, including governments as the providers of services, as well as local and global technology vendors and Internet players, entrepreneurs, enterprises large and small, investors, and individuals all have a part to play.

Public policy makers

Policy makers can help capture the benefits of the Internet by supporting the development of the foundations necessary for the development of robust, effective, and open Internet ecosystems. There are four critical ways in which policy makers can play a role: (1) enabling access, (2) ensuring understanding about how to engage with the Internet, (3) enabling talent to enter the ICT world, and (4) enabling individuals to fully leverage the Internet.

Policy makers have multiple options to facilitate access to the Internet in a number of ways. They can decide to lay down the infrastructure needed for access themselves, take measures to ensure that third parties do so effectively and efficiently, and/or guarantee sufficient competition and the kind of price levels that ensure that the cost of access is reasonable for businesses and individuals. Aspiring countries that have facilitated access include Nigeria and Mexico. For example, over the last 20 years, Nigeria has auctioned mobile spectrum in the country, creating competition and lower prices for mobile phone use. As a result, Nigeria's mobile population has grown significantly, allowing the mobile phone to become one of the most prevalent mechanisms for Internet access in the country.

Once the infrastructure is in place (whether mobile of fixed), policy makers must ensure that digital literacy is at sufficient levels. Steps that policy makers have effectively taken to improve digital literacy include distributing Internet-enabled devices and providing education on Internet-related technologies. Measures taken include initiatives such as Malaysia's distribution of one million laptops to rural students as well as the work of One Laptop per Child in Latin America and Africa.

Policy makers can also play a key role in supporting ICT-related innovation and entrepreneurship by pushing talent into the local ICT ecosystem. Establishing globally competitive universities and training programs creates pipelines of qualified talent that can be employed in the R&D organizations so critical to ICT companies. Immigration policies can also bring talented individuals, including people who have left their homelands but want to return, into the workforce. Governments can also anchor innovation hubs, as in the case of Taiwan's Industrial Technology Research Institute.

Policy makers also have a role in enabling Internet companies and entrepreneurs to thrive in their local markets. This includes supporting competition and transparency, and providing rights of way and spectrum access without discrimination. To help bridge the domestic Internet ecosystem to the global one, and ensure that local businesses are globally competitive, policy makers can support international standards and facilitate international competition.

Government as provider of services

Governments can use the Internet to better serve their citizens by providing a wider range of services to citizens in an efficient and effective way. E-government capabilities have often allowed governments to provide more services, at any time, to more people than they would otherwise have been able to.

By creating online substitutes or supplemental services for tasks that were once required to be performed offline, governments can increase response rates and the effectiveness of their efforts. For example, in South Africa, from 2006 to 2011, individual tax returns filed online have increased from less than 20 percent to more than 95 percent, and at the same time added more than 100,000 people to the list of tax filers. Creating these substitutes may also create labor benefits for governments, as workers once dedicated to providing a service now performed online can be redeployed to work on other activities.

By applying Internet technologies and management innovations pioneered by best practice private-sector and public-sector organizations, governments can deliver services and information much more efficiently and effectively than before. Coupled with training in using these services, governments can create a great deal of social benefit including, for instance, the syndication of information on disease and natural disasters.

Local technology vendors and Internet players

Domestic technology vendors and Internet players have the opportunity to stimulate local demand and Internet use. These user groups directly benefit from growth in the local Internet economy as they supply users of the Internet and are members of the domestic ecosystem. These companies can use the Internet to expand their customer base or just offer more products to their existing customers. Local ICT companies can also turn to the domestic market to access talent, express needs (which can then inform products and services offering), or even provide business content, ideas and designs (e.g., crowd sourcing).

These companies are certainly liable to benefit from their strong understanding of local conditions. At the same time, however, they may face constraints on their growth due to their limited access to capital, particularly in comparison with international players. They also face competitive threats from other local domestic players, international companies, and innovative start-ups. To capture the growing customer base in their domestic markets, domestic technology players can customize Internet content and services for unique local needs. In order to accomplish this before multinational companies capture significant market share, domestic players can partner with global players to gain scale.

Regardless of which growth strategy they choose to pursue, local providers must leverage their relationships in the market and their knowledge of local behavior and preferences to develop compelling solutions to attract and hold customers. They may also be able to work with policy makers, receptive to having locally established ICT companies and the intangible benefits these companies create, to gain legislative advantage over foreign competition.

Global technology vendors and Internet players

Increased Internet penetration in aspiring countries will also present global IT hardware, software, and Internet services providers with the potential to increase their market size and revenue. Global players can tap into new markets and even create markets where there were none before. These players can also enter aspiring countries to leverage talent and the comparative advantages that are present by operating in these countries (e.g., lower costs of manufacturing). In addition, global content and services players (e.g., providers of video content) can benefit from potentially larger user bases, as well as new sources of rich and diverse content.

The potential to tap new markets can be captured by extending e-commerce, continuing advances in infrastructure, and taking advantage of changes in legislative policy. Global players can facilitate the process of capturing new markets by working with other user groups to overcome current challenges. Where e-commerce is constrained by weak delivery systems, co-investment with local organizations, including governments, in reliable postal delivery may return economic benefit, for instance. Where policy constrains global players, open communication with policy makers can also prove worthwhile.

Global technology companies can also increase the Internet's impact in aspiring countries by supporting local education and digital literacy efforts through partnerships with local governments (see Box 56, "Successful public-private partnerships provide a range of services"). Along with such partnerships, it will be important for global players to communicate with local policy makers about the benefits that global connectivity can bring. One example of a global Internet player forging local partnerships to enhance its impact is eBay's work with MercadoLibre in Latin America; eBay owns 20 percent of MercadoLibre and works with the company exclusively in the Latin American region.

Box 56. Successful public-private partnerships provide a range of services

- **Irancell.** Irancell, the second largest mobile phone operator in Iran, is a joint effort between the government of Iran and the South Africa-based telecommunications company MTN Group.[532] MTN owns 49 percent of Irancell and provides technologies and services such as GPRS (General Packet Radio Service), mobile banking, WiMax, and entertainment content. With a reported 30 million subscribers in 2010, Irancell has helped increase mobile penetration in Iran to 92 percent.[533]

- **Smart+Connected Communities.** This is an effort spearheaded by Cisco. Smart+Connected Communities are partnerships with local governments and other private enterprises to build communities with rich technical infrastructure. This infrastructure enables connected experiences for residents, as well as back-office exchanges for those who manage the community. Examples include New Songdo in South Korea and several Chinese cities.

532 ITU company profile, December 2011.
533 MTN Group Integrated Business Report, 2010.

Entrepreneurs in aspiring countries

Increased Internet penetration and use in aspiring countries provides entrepreneurs with access to new and larger markets. As discussed in chapter 2, entrepreneurs also play a key role in addressing local constraints with their targeted solutions. Additionally, increased Internet use by entrepreneurs seems to heighten the potential for profits and growth.

Where entrepreneurs successfully innovate to address local constraints, their promotion of Internet use can create a self-reinforcing cycle. Among the examples we have described are innovative cashless payment solutions, marketing through social networks, and various online sales and buying platforms. Each of these promotes Internet use, which in turn can enable their further adoption. To become even more successful, entrepreneurs in aspiring countries can leverage and adapt existing Web solutions from developed markets such as group buying or social networks, and use the Internet to expand their reach into new markets.

Being a business entrepreneur in an aspiring market often means being a social entrepreneur, too, as others have noted. Developing the conditions for business success often means creating the conditions for enhanced social welfare (see the next section on investors).

Internet use by entrepreneurs that have created SMEs also appears to help growth. Those companies spending more on Web technologies appear to grow faster and derive more benefit from the Internet. In addition, entrepreneurs may use the Internet to market themselves abroad and circumvent local constraints to capital. As a result, entrepreneurs may consider working with policy makers to create local environments conducive to the growth of Web-based companies. This could include supporting initiatives aimed at fostering local talent, creating more reliable postal systems, and decreasing the cost of starting a Web-based business.

Investors

ICT-related businesses in aspiring countries are an attractive investment option for investors, including private investors and sovereign wealth funds, because these countries represent large markets with relatively high rates of growth. Their higher potential for differentiated investment strategies further increases the appeal of aspiring countries' Internet markets. For those investors with a dual mission of creating financial and social returns, Internet growth in aspiring countries can help to meet both aspirations. Examples include environmental causes, aid providers, or development-focused sovereign wealth funds.

Investors looking to capture these benefits can help support the Internet ecosystem by providing seed funding for local entrepreneurship and fostering local venture capital environments. Local entrepreneurship is often limited because of the absence of early-stage funding, and the lack of a thriving and profitable venture capital sector, which causes potential investors to shift focus onto late-stage profitable Internet start-ups. By providing early-stage funding and demonstrating examples of early success, investors can support local entrepreneurs and encourage the development of local venture capital. These efforts also enhance entrepreneurial activity by providing new businesses with expertise and best-practice management principles.

Stanford's Y Combinator, as we have noted, is a successful example of supporting early-stage entrepreneurship and encouraging venture capital activity in Silicon Valley. To be successful, foreign investors will need to build local presence and expertise in aspiring countries.

Enterprises in aspiring countries

The Internet is a vital tool for enterprises. As we discussed in chapter 2, Web services offer productivity, cost, and revenue benefits to companies. For enterprises in aspiring countries, such Web services are often required to compete with large multinational companies. In addition, the Internet provides local companies with the opportunity to address local constraints (e.g., using cashless payments to address a lack of traditional payments infrastructure) and thereby gain additional local market share and revenue.

To capture the potential benefits, enterprises will benefit from deploying Web technologies and services to both employees and customers, as well as working with local governments to build the infrastructure necessary to facilitate Internet-related business activity. Employees can be more productive by using basic Web communications tools (e.g., e-mail, instant messaging), as well as more sophisticated solutions (e.g., knowledge databases, customer relationship management). Companies' Web sites enable customers to access more services at the time of need, as well as build deeper brand affiliation by leveraging discussion forums, online customer service, or peer ratings. A robust Web presence also allows companies to expand their reach beyond immediate geographies to reach global markets. Enterprises can leverage global best practices to enhance the benefits of using Web technologies.

NGOs and economic development-focused entities

The Internet is a valuable tool for fulfilling the broader missions of social-sector organizations, including, for instance, improving health, providing microfinance, protecting the environment, or broadening education opportunities. The Internet helps these organizations to source money, deploy money, create impact, quantify that impact, and influence policy makers.

The Internet helps these organizations locate funding by creating a means to access more potential donors and to syndicate their aims more widely. Once funds are received, the Internet opens new avenues for their distribution. As mobile banking continues to enhance financial inclusion, the process of donating small amounts to many people becomes easier. Once donations are secured, the Internet creates a way to capture data on the impact of that money being spent in the field.

To capture these benefits, NGOs can partner with governments and private companies to improve Internet infrastructure or delivery services by leveraging the existing infrastructure. These social-sector entities can also support local players to help build the local Internet ecosystem. These local players may be nonprofit organizations, or private and for-profit ventures such as entrepreneurs looking to address local constraints. Lastly, NGOs and development-focused entities such as large universities can drive knowledge transfer to aspiring countries in order to leapfrog Internet development.

Individuals

Robust Internet ecosystems provide individuals with a wealth of benefits, as we have discussed. These benefits accrue in particular to engaged online users, but also to less engaged online users and even those individuals who never access the Internet. This is because society as a whole benefits from increased transparency and the free flow of information.

The most impactful action that individuals can take to drive the positive impact of the Internet in aspiring countries is to continue to adopt and use Internet-based products and services. Where adoption is constrained, people can raise their concerns with policy makers to help create change. The Internet extends a level of freedom to the individual beyond that found in the bricks-and-mortar world, and individuals can choose whether that freedom is used for good or ill. The principles of good citizenship and civil society, from respecting the law to supporting civic organizations and dialogue, apply online as well.

Appendix: Methodology and approaches

1. Qualitative metrics to determine set of aspiring countries
2. The Internet's contribution to GDP
3. The Internet's contribution to GDP growth
4. Consumer surplus
5. E3 Index
6. I4F Index
7. Ease of Internet entrepreneurship (ENE)
8. E-commerce platform (eCP)
9. Global connectivity (GCI)
10. Ranking countries along five dimensions to identify country clusters

1. Qualitative metrics to determine set of aspiring countries

For the purpose of this report, we have defined aspiring countries as those dynamic and significant enough that they can aspire to become developed countries within a reasonable time frame.

- **Significant:** Nominal per capita GDP between $1,000 and $20,000 in 2010, and nominal GDP in 2010 is above $90 billion
- **Dynamic:** Nominal per capita GDP has grown at a compound annual growth rate above 3 percent in the 2005–10 period

2. The Internet's contribution to GDP (iGDP Index)

There are three methods for calculating the GDP contribution of a sector:

- **Production method** measures the value companies add by producing goods and services
- **Revenue method** measures the gross revenue of institutional sectors, including employee pay
- **Expenditure method** measures the total spending by consumers and government on goods and services

None of these methods accounts for the Internet's value to the overall economy of a country or society. The production method is the most common method used to calculate a sector's contribution to GDP. However, calculating the Internet's contribution to GDP using the production method would have required unreliable estimates of Internet-related revenue and margins for all companies in all sectors. Thus, we have decided to use the expenditure method using OECD data.

This method looks at four factors: private consumption, public expenditures, private investment, and trade balance. To calculate the Internet contribution to GDP, we assessed the contribution of Internet-enabled goods and services included in each of these four categories. To the extent possible we have used the same data sources for each category across all countries in order to provide comparable figures. The categories were:

- **Private consumption:** This is the total consumption of goods and services by consumers via the Internet or needed to obtain Internet access. This includes personal computers and smartphone sales (prorated), B2C e-commerce, residential broadband subscriptions, and revenue from mobile Internet use. Private consumption from the Internet is driven primarily by online purchases of goods and services.[534]
- **Private investment:** This is private-sector investment in Internet-related technologies[535] (telecom, extranet, intranet, cloud, Web sites, and so on).
- **Public expenditure:** These included Internet spending for consumption and investment by the government (software, hardware, services, cloud, and telecom)[536] at pro rata of the Internet.
- **Trade balance:** This is exports of goods (including Internet equipment) and services, plus B2C and B2B e-commerce, from which were deducted all associated imports.[537]

534 PC sales: Pyramid Research, IDC, 2011. Smartphone sales: Gartner, 2010. Smartphone time spend online: iConsumer US, 2010. Online retail: Euromonitor, 2010. Online gambling: H2 Gambling Capital, 2010. Online travel: PhoCusWright, World Travel and Tourism Council, 2010. Internet mobile revenue: Pyramid Research, 2010. Broadband revenue: Pyramid Research, 2010. Internet penetration: ITU, 2010.

535 Input-output tables: OECD Stat Extracts, 2010. GFCF expenditure: Global Insight, 2010.

536 ICT spending by vertical (government, health care, education): Gartner, 2010. Share of public spending in education: UNESCO, 2010. Share of public spending in health care: World Health Organization, 2010.

537 Input output tables: OECD Stat Extracts, 2010. Import and export expenditure: Global Insight, 2010. E-commerce B2B and B2C import and export data: IDC, 2010; Gartner, 2010.

For each component of the contribution to GDP, we then looked at the assumptions regarding the underlying portion related to the Internet:

- For electronic equipment (computers and smartphones), we applied a ratio based on the overall time spent on the Internet against the total time using the product.
- For goods and services sold on the Internet, we recognized them at their full e-commerce value because they indicate the importance of the Internet industry as a link in the distribution chain, even though certain Internet transactions might have occurred in the absence of the Internet.
- For Internet mobile and fixed subscriptions, we took 100 percent of individual expenses.
- For ICT goods and services, public expenditure, private investments, and trade balance, we used a bottom-up analysis based on the description of each subcategory (hardware, telecom, software, and services) in the McKinsey TMT (High Tech, Media, Telecom) database. This allowed us to allocate a share of ICT goods and services to the Internet (we estimate that 70 percent of software and services, and 40 percent of hardware and telecom, is related to the Internet). A separated bottoms-up analysis was done for semiconductors used in television, radio and communications equipment, which found that 25 percent of their value was attributable to the Internet.

All exchange rates used were extracted from OECD Stat Extracts database.

3. The Internet's contribution to GDP growth

The Internet contribution to GDP growth is defined as the increase in Internet contribution to GDP divided by the overall GDP growth during the same period.

4. Consumer surplus

McKinsey & Company conducted an online survey of 4,500 consumers in the spring of 2010 in France, Russia, Germany, Spain, the United Kingdom, and the United States. Consumer surplus was assessed from consumer use and benefit from 16 Internet services, clustered in three broad categories: communication (e.g., e-mail, social networks); entertainment (e.g., gaming, podcasts); and information services (e.g., search, comparison). The survey was representative of the online population, and included socio-demographic elements, Internet use, stated services interest, and willingness to pay as well as a conjoint-analysis–based trade-off of services with price and privacy risk.

We used three methods to triangulate consumer surplus in aspiring countries:

Method 1 (main method): Scaling these results to aspiring countries involved three significant reductions. First, the maturity of the Internet ecosystem (variables from the McKinsey e3 Index) was used to prorate for consumer utility potential in a country. The per user consumer surplus was then adjusted for strength of e-commerce ecosystem. Understanding that less developed e-commerce ecosystems will allow for less consumer surplus, the Search and Comparison survey categories' consumer surplus contribution was reduced by 5 percent of the difference between the surveyed countries' e-tail/retail ratio, and that of the studied aspiring country. We assessed traffic patterns of the top five global search engines (covering more than 80 percent of global search volume) for source and loss of traffic, and the top 30 Web sites where consumers go after their search, and found that e-commerce accounts for 1–5 percent of searches worldwide.

Method 2: The per capita GDP (adjusted for purchasing power parity) was used to prorate the consumer surplus in a country.

Method 3: The maturity of the Internet ecosystem (variables from the McKinsey e3 Index) was used to prorate the willingness to pay (WTP) in a country. The difference between WTP and consumer surplus was estimated using the average revenue per subscriber (ARPS) for fixed Internet (broadband and narrowband).

We believe our scaling methodology provides a conservative estimate of consumer surplus for aspiring countries, as the three methods of prorating likely double-count the needed scaling effect. We look forward to another party doing a statistically significant, robust survey of consumption habits and their associated economic benefits in our studied countries, as a way to triangulate our estimates.

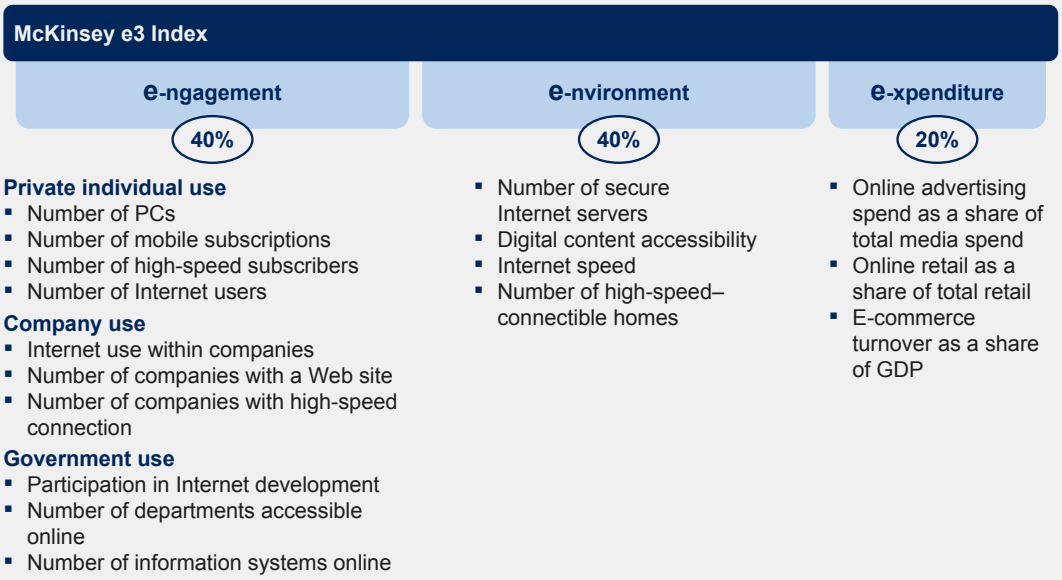
5. E3 Index

The e3 Index measures Internet connectivity in a country based on three components (Exhibit A1):

- **e-nvironment:** quality of infrastructure as indicated by Internet speed and penetration.
- **e-ngagement:** use of the Internet by individuals, companies, and governments.
- **e-xpenditure:** Internet expenditures including advertising and e-commerce.

Exhibit A1

McKinsey's e3 Index measures the accumulation of means and Internet usage in a specific country



SOURCE: Netcraft; World Bank population estimates; World Economic Forum *Global Information Technology Report*; Pyramid Data Tracker; Computer Industry Almanac; International Telecommunication Union ICT indicators; World Digital Media Trends; Euromonitor International; United Nations Conference on Trade and Development *Information Economy Report*; McKinsey analysis

To evaluate these components we measured them across 17 indicators, most of which were informed by the World Economic Forum's Global Information Technology Report and IDC. The average of these indicators creates a score for each component, which is then multiplied by the weight assigned to the component to calculate total e3 score.

It is important to note that e3 is a relative ranking of select countries. This index is a comparison value specific to the set of countries, and not an absolute measurement that can be used in isolation. For example, a country's e3 score will be different if measured against a set of developed countries, versus measured against a set of developing countries.

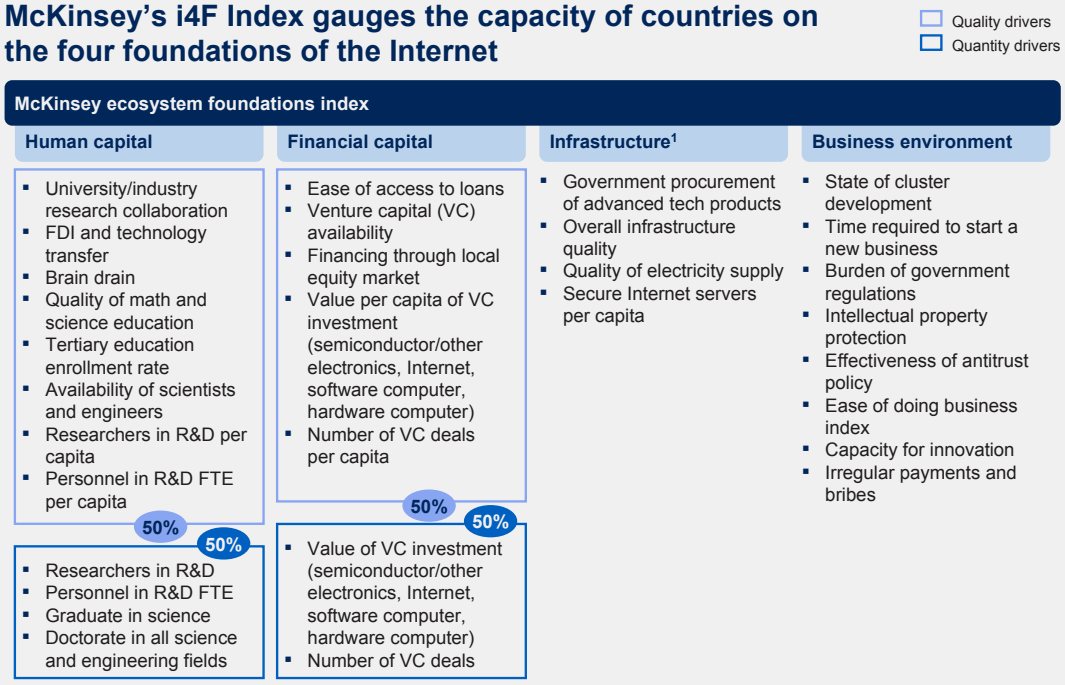
6. i4F Index

The i4F Index measures the Internet-enabling ecosystem in a country and is based on four components (Exhibit A2):

- **Human capital:** measures education and research. The score is divided between the quality (50 percent) and the quantity (50 percent) of human capital.
- **Financial capital:** measures availability of financing for Internet and ICT companies. The score is divided between per capita availability (50 percent) and global financing opportunities (50 percent).
- **Infrastructure:** measures the penetration and quality of Internet-enabling infrastructure.
- **Business environment:** measures a country's attractiveness to business due to regulatory and societal effects.

Exhibit A2

McKinsey's i4F Index gauges the capacity of countries on the four foundations of the Internet



1 Infrastructure is viewed as being a "threshold" factor where increases above a certain level do not confer additional advantage. All ratings above 60 (our defined threshold) are set to 60.

SOURCE: World Economic Forum; United Nations; UNESCO; Venture Expert; International Institute for Management Development: World Bank; McKinsey analysis

These components were measured across 31 different indicators, most of which were informed by the World Economic Forum's Global Competitiveness Report, IMD, and the World Bank database. Each component is scored based on the average of its indicators, and the four components determine the index score at equal weight. We maximized the infrastructure component value at 60 percent, because infrastructure is not a differentiating parameter once a country has reached a certain level of infrastructure development and quality.

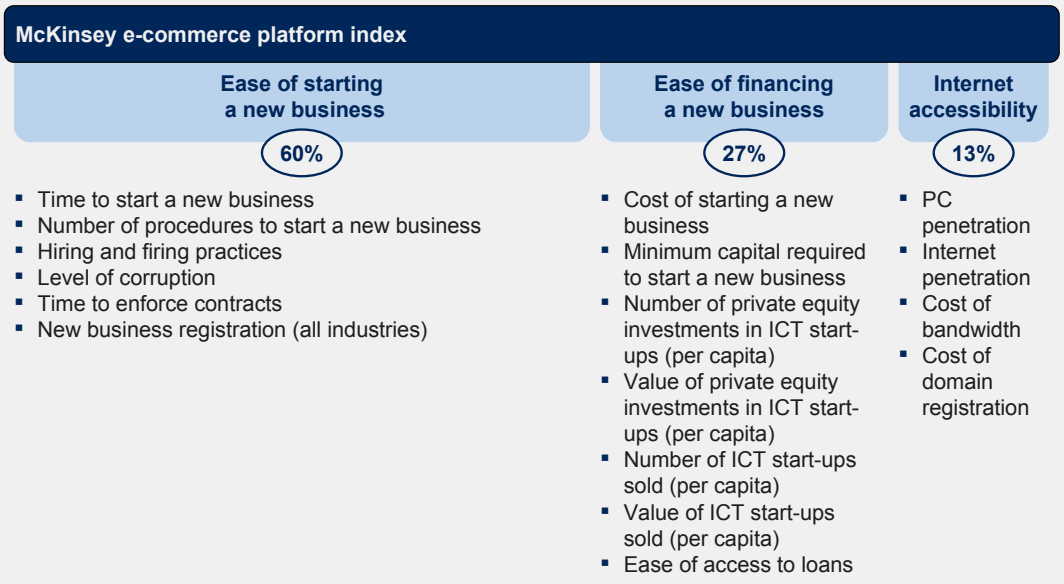
7. Ease of Internet entrepreneurship (ENE Index)

The ENE Index measures the ease of starting successful Internet-related entrepreneurial ventures and is based on three components (Exhibit A3):

- **Ease of starting a new business:** an industry-agnostic view of the overall business ecosystem in a country.
- **Ease of financing a new business:** measures availability and attractiveness of financing for ICT start-ups, as well as the cost of financing a new business.
- **Internet accessibility:** measures extent and cost of Internet access for both enterprises and their target consumers.

Exhibit A3

McKinsey's ENE Index measures the ease of successful Internet-related entrepreneurial ventures



SOURCE: World Bank; Computer Industry Almanac; ITU; Capital IQ; World Economic Forum, *Global Competitiveness Report, 2010–2011*; World Economic Forum International Finance Corporation; Speedtest.net; domain name registration Web sites; Transparency International; McKinsey analysis

To evaluate these components we measured them across 17 indicators, most of which were informed by the World Bank, Capital IQ, and the World Economic Forum Executive Opinion Survey. The average of these indicators creates a score for each component, which is then multiplied by the weight assigned to the component to calculate total ENE score.

To determine the weights for each category, we optimized for the highest correlation between ease of Internet entrepreneurship and the number of Internet-related businesses that are registered each year. The number of Internet-related businesses that are registered every year is estimated using country-specific data (e.g., Eurostat) and World Bank information.

It is important to note that ENE is a relative ranking of select countries. This index is a comparison value specific to the set of countries and not an absolute measurement that can be used in isolation. For example, a country's ENE score will be different if measured against a set of developed countries, versus measured against a set of developing countries.

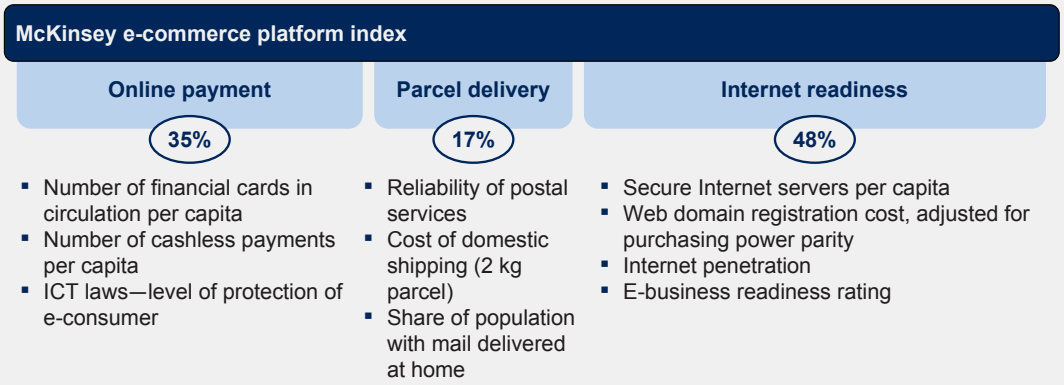
8. E-commerce platform (eCP Index)

The e-commerce platform index (eCP) scores a country's B2C e-commerce foundations based on the three components (Exhibit A4):

- **Online payment enablement:** ease and security for consumers wishing to pay online.
- **Parcel delivery:** reliability, cost, and reach of parcel delivery.
- **Internet readiness:** network readiness for e-commerce.

Exhibit A4

McKinsey's e-commerce platform index measures the development of B2C e-commerce foundations



SOURCE: IMD World Competitiveness Online; World Economic Forum *Global information technology report 2010–2011*; postal operator Web sites; Universal Postal Union; ITU/ICT Indicators Database; EIU; McKinsey analysis

Online payment enablement is composed of the number of financial cards in circulation, the volume of cashless payments, and the legal protection provided to the e-consumer. Parcel delivery is based on the reliability of the postal system, cost of domestic shipping, and the percent of a population with delivery to their homes. Internet readiness accounts for a country's volume of secure servers, Internet penetration, and domain registration cost, and general readiness for e-business.

We ranked 57 countries based on all those factors, weighting each category as indicated in Exhibit A4. We calculated the weights to maximize the correlation between the 57 countries' e-commerce platform index score and the amount of online retail per capita in each country. As a result, a country gets an e-commerce platform rating, on a scale from 0 to 100 percent. A country with a high e-commerce platform index is considered to have high e-commerce enablement.

9. Global connectivity (GCI)

The Global Connectivity Index, or GCI, measures the connectivity of a country with the rest of the world along four components (Exhibit A5):

- **Flow of information:** measures both existing and potential flows of information and communication.
- **Flow of people:** measures flow of people both in and out of a country for a variety of reasons, including academics, travel, and business.
- **Flow of goods and services:** measures current trade levels and any restrictions placed on trade.
- **Financial flows:** measure both inward and outward FDI and portfolio investments.

Exhibit A5

McKinsey's Global Connectivity Index measures countries' connectivity with the rest of the world along four key flow components

McKinsey Global Connectivity Index

Flow of information	Flow of people	Flow of goods and services	Financial flows
▪ International bandwidth capacity per capita ▪ International phone calls ▪ Share of top 250 most visited Web sites that are international ▪ Share of international audience on top 20 domestic Web sites ▪ Prevalence of country's main language	▪ Number of students studying abroad ▪ Students coming from abroad ▪ Tourist inflows ▪ Tourist outflows ▪ Business visitors inflow ▪ Business visitors outflow ▪ Foreigners in the country ▪ Diaspora abroad	▪ Restrictions on trade ▪ Trade as a share of GDP	▪ FDI inflow as a share of GDP ▪ FDI outflow as a share of GDP ▪ Portfolio investments inflow as a share of GDP ▪ Portfolio investments outflow as a share of GDP

SOURCE: TeleGeography; Pyramid Research; ITU; UNESCO; Euromonitor; World Bank; UNCTAD; IMF; FDI markets; Dealogic; EIU; Global Insight; CIA World Factbook; CEPII; Ethnologue: Languages of the World; McKinsey analysis

To evaluate these components we measured them across 19 indicators, most of which were informed by the World Bank database, Economist Intelligence Unit, and Global Insight. Each component is scored based on the average of its indicators, and the four components determine the index score at equal weight.

It is important to note that GCI is a relative ranking of select countries. This index is a comparison value specific to the set of countries, and not an absolute measurement that can be used in isolation. For example, a country's GCI score will be different if measured against a set of developed countries, versus measured against a set of developing countries.

10. Ranking countries along five dimensions to identify country clusters

- **Resource rich.** Countries ranked according to rent from natural resources (percent GDP). Natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents. Rent is defined as the surplus value after all costs and normal returns have been accounted for, i.e., the difference between the price at which an output from a resource can be sold and its respective extraction and production costs.

- **Hub of trade.** Countries ranked according to goods exports, corrected for trade distance (percent GDP). Goods exports are multiplied by a coefficient, obtained by multiplying the weighted (by trade volume) average of the distances with main partners (more than 5 percent of trade), by the number of such main partners.

- **Innovation potential.** Countries ranked according to gross domestic expenditure on R&D (percent GDP). Gross domestic expenditure on R&D is defined as total intramural expenditure on R&D performed on the national territory during a given period, whether financed publicly or privately.

- **Strong local consumption.** Countries ranked according to final consumption expenditure (percent GDP) and non–import-based national economy (percent GDP). Both metrics are normalized by strongest performer in the world. Consumption counts for 80 percent of metric, non-import for 20 percent.

- **Strong SME sector.** Countries ranked according to employees in SME (fewer than 250 full-time employees) (percent total workforce) and formal sector (percent GDP). The two metrics are multiplied by each other.

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