Digitization in emerging economies

Unleashing opportunities at the bottom of the pyramid
## Contacts

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Digitization in emerging countries could deliver as much as US$6.3 trillion in additional nominal GDP and 77 million new jobs over the next 10 years. Capturing this rich return will require a concerted public and private effort to bring digitization to the world’s poorest people — those at the bottom of the pyramid. This population is distributed across middle- and low-income developing countries and numbers 3.9 billion in total, including 95 percent of South Asia’s population, 68 percent of the Middle East and North Africa’s (MENA) population, and 27 percent of Latin America’s population.

Digitizing the bottom of the pyramid over a period of 10 years will require an overall investment of $1.4 trillion (in 2011 prices), a challenging feat given the limited propensity of this population to spend on digital products and services.

This effort will require a collaborative partnership between private and public players, and a combination of supply-side and demand-side solutions. On the supply side, it will take innovation, co-investment, and standardization to lower the costs and spread the risks among industry players; on the demand side, the digital spend propensity of households at the bottom of the pyramid must be expanded by increasing the overall ability and willingness of people to spend on digital products and services.
**Key highlights**

**Digital divide**

Understanding the bottom of the pyramid

- 3.9 billion people in emerging markets
- Income below $4/day on a purchasing power parity basis

Digital divide at the bottom of the pyramid

- Average Digitization Index (DI) of 17.5
- Half of emerging market DI
- A quarter of developed market DI

**Digitization challenge**

Cost of digitizing the bottom of the pyramid

- $1.4 trillion over 10 years
- $47 per person per year

**Funding gap**

- Digital spend propensity of $5.5 per person per year
- Funding gap around $1.2 trillion

**Digitization benefits**

Benefits at the bottom of the pyramid

- $4.4 trillion in GDP — a 300% return
- 64 million jobs
- 580 million people above poverty line

Benefits for emerging markets\(^1\)

- $6.3 trillion in GDP — a 300% return
- 77 million jobs
- Unlocking over $700 billion of markets for the private sector

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\(^1\) Emerging markets benefits include benefits at the bottom of the pyramid
Digitization — the mass adoption of connected digital technologies and applications by consumers, enterprises, and governments — could pay a major dividend in emerging economies. According to econometric analyses by Strategy&, the overall benefits of digitization in emerging economies, which are derived from the innovative business models, products, and services that invariably accompany technological transformation, could include as much as $6.3 trillion in additional GDP, 77 million new jobs, and more than a half-billion people lifted out of poverty over the next 10 years.

Digitization has already had a significant impact on the ability of emerging countries to create jobs and grow their economies. Between 2009 and 2011, it created 17 million jobs in emerging economies and contributed $350 billion to their overall nominal GDP. Further, our econometric analysis reveals that a 10-point increase in the digitization level of an emerging market would lead to a 1.09 percent reduction in its absolute unemployment rate. An increase of 10 percent in the digitization of such an economy would produce a 0.70 percent rise in its GDP per capita.

Indeed, emerging economies enjoy greater reductions in unemployment from digitization than developed economies (see Exhibit 1, page 7). Generally speaking, this job creation differential is linked to the application of digitization. In emerging economies, digitization supports the continued acquisition of tradable, often labor-intensive jobs in sectors such as manufacturing from developed economies. In developed economies, digitization enhances productivity in non-tradable jobs, such as service jobs, which yields fewer new positions but has a greater effect on GDP.

Emerging markets that accelerate the adoption of digital technologies and develop the digital capabilities of their citizens will be well rewarded. However, capturing the digital return on investment will not be easy. It will require an investment of $1.4 trillion (based on today’s digitization economics) and a concerted public and private effort focused on the people at the bottom of the pyramid in emerging economies. These people are the poorest by every socioeconomic measure and thus far, they have been the least affected by the global digitization trend.
**Exhibit 1**
Digitization creates more jobs but less growth in emerging markets

<table>
<thead>
<tr>
<th>Effect of 10-Point Digitization Index Increase on Unemployment Rate</th>
<th>Effect of 10 Percent Digitization Index Increase on GDP per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emerging</td>
<td>Developed</td>
</tr>
<tr>
<td>-1.09%</td>
<td>-0.94%</td>
</tr>
<tr>
<td>Emerging</td>
<td>Developed</td>
</tr>
<tr>
<td>0.70%</td>
<td>0.84%</td>
</tr>
</tbody>
</table>

Note: Based on multivariate econometric analysis; control variables include total capital formation, education levels, GDP growth, credit, and exports.

Source: Strategy&
The progress of digitization within emerging countries in eastern Europe, the Commonwealth of Independent States (CIS, which encompasses Russia and the 11 former Soviet republics), Africa, the MENA region, Latin America, South and East Asia, and the Pacific, which are home to 85 percent of the world’s population and the source of 45 percent of global output, is best illustrated by their Digitization Index scores. The Digitization Index was developed by Strategy& to measure the global adoption of digital technology and to better understand its implications (see “Measuring Digitization”).

The average Strategy& Digitization Index score of emerging countries is 27, and most of these countries are in the constrained or emerging stages of digitization. By contrast, developed countries have an average Digitization Index score of 54 and they are all in either transitional or advanced stages of digitization (see Exhibit 2, page 10).

But there’s more to the story. As we continue to analyze the level of digitization in emerging countries, a more nuanced picture emerges that provides important context for governments, institutions, companies, and other groups seeking to drive digitization and capture its benefits. The average Digitization Index score among the poorest people in emerging countries is 17.5. These 3.9 billion people represent 95 percent of the population in South Asia, 86 percent in Africa, 68 percent in the MENA region, 58 percent in East Asia and Pacific, 27 percent in Latin America, 20 percent in the CIS, and 14 percent in eastern Europe. Their extremely low Digitization Index score stands in stark contrast to an average score of 49.3 for the rest of the populations in these emerging countries, a score that would place their countries in the advanced stages of digitization (see Exhibit 3, page 11).
Measuring digitization

Strategy&’s Digitization Index is a composite score that calculates the level of a country’s digitization using 23 indicators to measure six key attributes:

- **Ubiquity** — the extent to which consumers and enterprises have universal access to digital services and applications.
- **Affordability** — the extent to which digital services are priced in a range that makes them available to as many people as possible.
- **Reliability** — the quality of available digital services.
- **Speed** — the extent to which digital services can be accessed in real time.
- **Usability** — the ease of use of digital services and the ability of local ecosystems to boost adoption of these services.
- **Skill** — the ability of users to incorporate digital services into their lives and businesses.

We measure a country’s level of digitization on a scale of 0 to 100, with 100 signifying the most advanced, to identify its distinct stage of digital development: constrained, emerging, transitional, or advanced.

Countries with constrained digitization levels — those with a score below 20 — face challenges in providing the basic digitization building blocks, such as widespread access and affordability. In these countries, digital services are expensive and limited in reach.

Countries with emerging digitization levels — those with a score between 20 and 35 — largely have addressed the affordability challenge and have achieved significant progress in providing widespread access to digital services. However, the reliability of services in these countries is below par and their capacity is limited.

Countries with transitional digitization levels — those with a score in the range of 35 to 50 — have addressed the reliability challenge and provide their citizens with access to ubiquitous, affordable, and reasonably reliable services. Alongside their jump in reliability, transitional countries have made minor advances in digital attributes, such as speed, usability, and skill.

Countries with advanced digitization levels have achieved a score greater than 50. These countries have made significant strides in addressing information and communication technology (ICT) usability. They have developed a talent base capable of taking advantage of digital technologies, products, and services, and they are improving the speed and quality of digital services.

(For more information, see “Maximizing the impact of digitization” at http://www.strategyand.pwc.com/media/file/Strategyand_Maximizing-the-Impact-of-Digitization.pdf)
Exhibit 2
Developed countries have twice the digitization score of emerging countries

The State of Global Digitization, 2011

- **Emerging Countries**
  - Average Digitization Index Score\(^1\) = 27
  - Around 85% of global population
  - Around 45% of global output

- **Developed Countries**
  - Average Digitization Index Score\(^1\) = 54
  - Around 15% of global population
  - Around 55% of global output

\(^1\) Population-weighted
Note: Emerging countries have a gross national income per capita of less than US$12,475 (as calculated by the World Bank Atlas Method).

Source: World Bank; IMF; Strategy& analysis
Exhibit 3
There is a digital divide inside emerging countries

Population by Digitization Level, 2011

- Developed
- Emerging non-bottom of the pyramid
- Emerging bottom of the pyramid

Source: Strategy&
The main factor in the low digitization level at the bottom of the pyramid is extreme poverty, along with social, and often economic, exclusion (see “Understanding the bottom of the pyramid”).

And yet, the bottom of the pyramid represents the greatest opportunity for capturing the gains in job creation and GDP growth associated with digitization, to say nothing of the salutary effect on the lives of 3.9 billion people. In total, the bottom of the pyramid in emerging countries represents 70 percent of their total population and generates 27 percent of their total household income. Any emerging market wishing to leverage digitization and reap its socioeconomic benefits should therefore seek to push up the digitization score of its citizens at the bottom of the pyramid.

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Understanding the bottom of the pyramid

The people in the demographic segment represented by the bottom of the pyramid earn less than $4 per diem per capita (on a purchasing power parity basis; even less when converted at current exchange rates). They live in mostly rural areas. In India, 70 percent of those at the bottom of the pyramid live in the countryside. Many are illiterate, as is the case for 40 percent of the people at the bottom of the pyramid in Nigeria.

These poorest inhabitants of emerging economies have limited access to basic and governmental services. There are 1.6 billion people with no access to electricity and 1 billion people with no access to clean water. Many people have only limited access to sanitation, including 50 percent of people at the bottom of the pyramid in Brazil, for example.

This highly impoverished section of society has limited access to institutions and markets. Their engagement with the financial-services sector is slight at best. Developing countries have one-third the level of bank deposits per person and one-quarter the level of loans per person of developed countries. In many countries, people at the bottom of the pyramid have no access to healthcare — as is the case for 80 percent of China’s rural population. Access to education is the same story — the bottom of the global pyramid includes 130 million children who are not in school.
A $4.4 trillion opportunity for the poorest

Strategy& analysis reveals that doubling the digitization level at the bottom of the pyramid in emerging economies over the next 10 years could produce $4.4 trillion in additional nominal GDP and 64 million new jobs, and lift more than half a billion people out of poverty. It would accelerate the integration of the 3.9 billion people at the bottom of the pyramid into the formal economies of emerging countries.

Furthermore, a doubling of the Digitization Index score of the world’s poorest inhabitants would expand the overall ICT market at the bottom of the pyramid by $300 billion over the same period. It would also unlock heretofore untapped markets for industries such as financial services, education, and healthcare, whose legacy business models cannot currently serve the bottom of the pyramid. Part of the problem for such industries is that they face prohibitively high transaction costs to serve people in remote regions that lack the necessary infrastructure.

Digitization could significantly lower these costs (see Exhibit 4, page 14). Our analysis reveals that in the healthcare and education sectors alone this could represent a $700 billion opportunity. Digitization would also enable government services to more effectively reach citizens at the bottom of the pyramid, thus creating a platform for greater civic engagement in that demographic.
Exhibit 4
Digitization lowers transaction costs for basic services at the bottom of the pyramid

Cost per Individual Service Delivery

<table>
<thead>
<tr>
<th>SECTOR</th>
<th>TRADITIONAL</th>
<th>DIGITAL</th>
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<td>Financial services</td>
<td>$2.4/transaction</td>
<td>$0.1/transaction</td>
</tr>
<tr>
<td>Healthcare</td>
<td>$16/doctor visit</td>
<td>$0.6/consultation</td>
</tr>
<tr>
<td>Education</td>
<td>$10/teacher hour</td>
<td>$0.2/class</td>
</tr>
<tr>
<td>Government</td>
<td>$1.6/paper form</td>
<td>$0.4/electronic form</td>
</tr>
</tbody>
</table>

Note: Digital costs are derived from existing application in emerging markets, traditional costs are derived from comparable markets.

Source: Strategy&
Although raising the digitization level of the poorest is a worthy and financially rewarding endeavor, it is also highly challenging. In financial terms alone, our analysis finds, an investment of $1.4 trillion over 10 years would be needed to bring digital products and services to the entire addressable population at the bottom of the pyramid.

Driving the level of digitization upward from the bottom involves investments in the four pillars of digital systems: reliable network coverage, affordable devices, a cost-effective go-to-market approach, and relevant applications and content.

- Network coverage will require core, backhaul, and access network infrastructure that is capable of carrying growing levels of data traffic. Telecommunications network coverage at the bottom of the pyramid is particularly poor in rural areas and would entail significant deployment and maintenance costs.

- Digital devices for the poorest people will have to be affordable, user-friendly, and capable of supporting Internet access and basic applications. Costs will include development, manufacturing, and customization to local languages.

- An efficient, effective go-to-market approach for digital services will require significant investments in marketing, sales and distribution, and training. Currently, there are few established tools and limited networks for understanding and reaching customers at the bottom of the pyramid, especially in rural areas. These networks are expensive to set up due to limited infrastructure and staff, as are the customer training programs that will be a necessity at the bottom of the pyramid.

- Applications and content for the bottom of the pyramid will have to be relevant, easy to use, and customized to local languages and cultures. This will entail development and customization costs.
Based on industry economics at current levels, we estimate the annual cost of digitizing the bottom of the pyramid at $47 per person (see Exhibit 5). This cost is more than eight times the annual digital spend propensity of a person at the bottom of the pyramid, which we estimate at $5.5 per person per year, or just 1 percent of annual income. Closing this financial gap between the cost of digitizing the bottom of the pyramid and the ability of the poor to buy digital products and services is a major part of the challenge facing governments and companies.

Exhibit 5
The cost of digitizing the bottom of the pyramid is steep

Cost in $ per Capita, Annually

<table>
<thead>
<tr>
<th></th>
<th>Cost in $ per Capita, Annually</th>
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<tr>
<td>Network</td>
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</tr>
<tr>
<td>Device</td>
<td>5</td>
</tr>
<tr>
<td>Marketing,</td>
<td>18</td>
</tr>
<tr>
<td>training &amp;</td>
<td></td>
</tr>
<tr>
<td>distribution</td>
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<tr>
<td>Applications &amp;</td>
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</tr>
<tr>
<td>content</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
</tr>
</tbody>
</table>

Note: All costs are in 2011 prices.

Source: Vihaan Networks Limited; LIRNEasia; Pyramid Research; Strategy& analysis
The first step in closing the gap is to understand its causes. On the demand side, these include a consumer base that suffers from high unemployment levels, volatile monthly income, a dearth of affordable credit, and low digital awareness, as well as a digital value proposition that is hampered by a lack of relevant content and a low-quality customer experience.

Meanwhile, the supply side has its own obstacles. The business case for investing in access infrastructure and fiber backhaul deployment in rural areas is less than robust. Existing network providers are already burdened by outsized capital requirements, high operating expenses (due to unreliable energy sources, a lack of skilled labor, and security costs), and low average revenues per user. Today’s business model is hampered by a mismatch between investment and return among the major players in the value chain. Specifically, telecommunications operators are required to overinvest (network and go-to-market costs represent 80 percent of the annual digitization cost) in relation to device makers and application and content developers. There is also a lack of established distribution and retail networks and limited go-to-market expertise at the bottom of the pyramid. Moreover, the markets for promising applications such as mobile banking or mobile health are still fragmented with no established business models.
Given the obstacles, increasing the Digitization Index scores at the bottom of the pyramid and reaping the associated benefits will require a fundamental shift in thinking. An effective approach to driving digitization in these highly challenging markets must address and alter both demand- and supply-side economics to bridge the digital divide within emerging markets. Furthermore, it will require high levels of collaboration among a variety of stakeholders.

On the supply side, innovation, co-investment, and standardization will be essential. On the demand side, the ability and willingness to spend on digital products and services will have to be expanded and enhanced (see Exhibit 6). To date, we have seen viable and successful experiments and

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**Exhibit 6**

Supply-side and demand-side measures lower costs, increase spending power

In $ per Capita

<table>
<thead>
<tr>
<th>Total annual digitization cost</th>
<th>$47.0</th>
<th>Annual digital spend propensity</th>
<th>$5.5</th>
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</thead>
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<tr>
<td>1. Innovate</td>
<td></td>
<td>1. Expand ability to spend</td>
<td></td>
</tr>
<tr>
<td>2. Co-invest</td>
<td></td>
<td>2. Enhance willingness to spend</td>
<td></td>
</tr>
<tr>
<td>3. Standardize</td>
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Source: Strategy&
programs that indicate that these prerequisites of bottom of the pyramid digitization are achievable. But they have yet to be combined and scaled, as they must be if emerging countries are to capture the full return on investment of digitization.

Supply-side measures

The essential measures will be to innovate, co-invest, and standardize.

**Innovate:** ICT companies will need to develop disruptive network and device technologies, cost-effective service delivery models, and innovative business models to serve the bottom of the pyramid profitably. These innovations will enable the industry to minimize its costs, thereby addressing obstacles, including the difficult business case for network infrastructure deployment, high device prices, expensive last-mile commercial infrastructure, and the low revenue potential of consumers.

Disruptive technologies that offer similar or lower-quality services at lower costs are required to reduce the network infrastructure deployment and maintenance costs that account for fully 40 percent of the annual digitization cost at the bottom of the pyramid. One example of such a technology is Broadband corDECT, which was developed by Midas Communication Systems and the Indian Institute of Technology (in association with Analog Devices, Inc). Broadband corDECT has low capital, power, and maintenance requirements and delivers a data rate up to 512 kilobits per second per subscriber. Another approach to promoting innovative network technologies is to establish dedicated research and development for the bottom of the pyramid. Hewlett-Packard, for example, has established labs in India and China to develop better technologies for these markets.

Currently, the least-expensive feature phone costs $20. This is prohibitive for a person at the bottom of the pyramid in India who earns the equivalent of $4 on a purchasing power parity basis, or less than $1.90 per diem on an exchange rate basis. Manufacturers need to develop low-cost, locally produced and maintained devices for the bottom of the pyramid population. The Copenhagen Institute of Interaction Design is developing so-called technology crafts, which aim to use existing products to assemble low-cost digital devices locally; for example, a medical triage device built from an alarm clock and a computer mouse. Another way to lower device costs is to aggregate demand through shared access models. These models, such as the national Village Phone program operated by Grameen Telecom in Bangladesh, increase asset utilization and decrease the transaction cost per consumer significantly.
Cost-effective marketing, sales, distribution, and training will require that ICT companies develop partnerships within the communities they serve, especially for last-mile delivery. One such method comes from the consumer packaged goods sector in India, where Hindustan Unilever created the Shakti Amma model. This approach recruits and employs local women to represent and sell the company’s products in remote villages and hamlets. Another method for reaching bottom of the pyramid markets more cost-effectively is the adoption of a tiered pricing model based on customer income, which subsidizes operations across the neediest customer segments.

Telecommunications operators can adopt innovative business models that maximize revenue by monetizing their reach at the bottom of the pyramid. This is a unique competitive advantage that can be exploited with a two-sided business model that sells access to bottom of the pyramid consumers to brand advertisers and retailers in addition to serving the consumers themselves. Jana, a research and promotions company focused on emerging markets, has achieved this by conducting research, offering promotions, and driving loyalty programs for brands such as P&G, Danone, and Microsoft through mobile phones.

**Co-invest:** The challenge of resolving the unbalanced investment and return among industry players, the high up-front investments required, and the long payback periods associated with network infrastructure at the bottom of the pyramid can be addressed only through co-investment. Private and public players will need to invest beyond their domains to ensure the viability of these markets.

Co-investment in network infrastructure deployment can take the form of public–private partnerships, such as the national broadband network programs in Singapore and Australia. Other means for obtaining cost-effective infrastructure include network sharing, such as the infrastructure sharing agreement between electricity providers and telecoms in Kenya. *(For more information, see “Enabling Sustainable Digital Highways” at http://www.strategyand.pwc.com/media/uploads/Enabling_Sustainable_Digital_Highways.pdf.)*

Co-investment can significantly decrease go-to-market costs. For example, ICT players can partner with fast-moving consumer goods multinationals, financial-services institutions, and/or healthcare providers to develop shared sales and distribution infrastructures, marketing campaigns, and consumer training and awareness programs.

Co-investment can also kick-start the development of applications and content at the early stages of growth in bottom of the pyramid markets. This can be achieved by distributing development costs among industry stakeholders, telecoms, and developers, as illustrated by T-Cash in Haiti. T-Cash is a mobile money service that extends financial services to that
country's poorest people. Exemplifying the partnership approach, the wireless operator Voilà and its banking partner, Unibank, developed T-Cash with support from the Haiti Mobile Money Initiative (itself a partnership between The Bill and Melinda Gates Foundation and the United States Agency for International Development).

**Standardize:** Standardized technologies, processes, and practices support the development of bottom of the pyramid markets by reducing fragmentation and maximizing the opportunity to capture scale. Currently, different technology standards across geographies make it difficult to develop plug-and-play solutions for the poorest markets. Furthermore, the lack of proven and established business models and practices at the bottom of the pyramid increases go-to-market costs and slows the uptake of applications by consumers.

Standardization is needed not only in network and device technologies. For instance, developing a standardized global handset recycling initiative could scale the effort of existing private players, such as ReCellular and Fonebak, in the secondhand device market. Such reuse schemes reduce waste, and lead to technology transfer from wealthy to poor countries, creating new business opportunities. Yesterday’s smartphone in Germany is tomorrow’s technology for a poor person in the tropics.

Likewise, interoperable standards for applications such as mobile banking, healthcare, and education can accelerate adoption due to network effects and lower R&D costs, and enhance the competitiveness and dynamic nature of bottom of the pyramid markets. One of the major factors in the success and widespread use of M-Pesa (mobile money) in Kenya is its reliance on the SMS standard.

**Demand-side measures**

On the demand side, the digital spend propensity of consumers at the bottom of the pyramid can be expanded in two ways: by increasing their overall ability to spend and by encouraging their willingness to spend on digital products and services.

**Expand the ability to spend:**
Higher levels of disposable income and greater access to credit at the bottom of the pyramid are the two principal levers that can increase the ability of consumers to spend on digital services, without compromising their need to spend on essential products and services, such as food and healthcare.
Digitization can become a tool for directly generating income by employing members of the community in the value chain of digital products and services and encouraging them to monetize their mobile connections. For instance, Ruma, an Indonesian organization, is training women at the bottom of the pyramid to sell prepaid airtime and other value-added services on their mobile phones. Smart Communications in the Philippines allows for micro-entrepreneurship by encouraging airtime credit transfers by subscribers.

Digitization can also be an indirect tool for income generation by providing access to information. By becoming better informed, people can enhance their own productivity, increase their bargaining power, and make better pricing decisions. The M-Kilimo (mobile agriculture) helpline provides agricultural information, advice, and support over the phone to small independent farmers in Kenya, thereby allowing them to increase their yields and raise the prices of their produce. E-choupal in India is the world’s largest such program, wherein a private-sector player (ITC Agro) leveraged rural Internet access to connect farmers with markets directly for both supply of agricultural inputs and enabling better price discovery for output. Launched in June 2000, e-choupal enables 4 million farmers across 40,000 villages in India to both buy and sell. The model is managed locally by farmers themselves with appropriate training.

People can also spend more if they have enhanced access to credit and liquid investment options. ICT companies can, and should, partner with the microfinance organizations already present in bottom of the pyramid markets to help the poorest elements of society purchase digital products and services. In Uganda and Rwanda, telecom provider MTN partnered with microfinance institutions to provide funding needed by village phone operators.

Enhance the willingness to spend:
The poorest sectors of society are wary of spending scarce income on digital technologies for a variety of reasons. Many are illiterate or poorly educated; they have poor perceptions of digital devices and services; and there are language and cultural barriers.

Overcoming these obstacles requires creating community awareness and increasing the availability of relevant content and applications that address the basic needs of this population. Community awareness programs and training are an effective means of increasing the perceived value of digital goods and services. In Bangladesh, for example, Grameenphone’s “Prothom Alo Internet Utshab” program raises digital awareness among children in rural areas.

The most effective means of building a willingness to spend is the creation of compelling content and applications. Experience shows that when poor people realize that they can use content and applications to improve their
lives and those of their families, millions of them willingly adopt them (see Exhibit 7). A major driver is e-government applications that facilitate interaction with the government and provide access to government services. These applications are critical and currently face high transaction costs.

Exhibit 7
Successful bottom of the pyramid content and apps exist

<table>
<thead>
<tr>
<th>INDUSTRY</th>
<th>EXAMPLE</th>
<th>DESCRIPTION</th>
<th>IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial services</td>
<td>M-Pesa mobile money transfer (Kenya)</td>
<td>- SMS-based money transfer service offered by Safaricom</td>
<td>- 5%-30% rise in household income levels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Allows users to deposit, transfer, and withdraw funds without a bank account</td>
<td>- 15 million unique users 5 years after launch (around 60% of adult population)</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Reuters Market Light, daily mobile update provision (India)</td>
<td>- Provides personalized agricultural information such as crop prices, local and international agricultural pricing information, weather forecasts, productivity tips</td>
<td>- $665 million transacted via M-Pesa monthly</td>
</tr>
<tr>
<td>Healthcare</td>
<td>Health Line, telemedicine (Bangladesh)</td>
<td>- 24/7 medical services</td>
<td>- 7.6% reduction in price dispersion across markets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Services include information on doctors and medical facilities, drugs, laboratory test equipment, advice/consultation, help during medical emergencies</td>
<td>- 8% increase in prices for farmers who sold directly to traders</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Part of English in Action project, delivered by BBC World Service Trust</td>
<td>- 90% of farmers using Reuters Market Light believe they benefit from its services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Offers English learning opportunities via TV, online, mobile, and newspaper channels</td>
<td></td>
</tr>
</tbody>
</table>

Collaboration is essential

Digitizing the bottom of the pyramid will require the combined efforts of multiple stakeholders. There are five major stakeholder groups that will have to coordinate and, in some cases, integrate their efforts if the benefits of digitization are to reach the poorest members of society in emerging countries (see Exhibit 8, page 24).

Consider the collaborative efforts needed to capture the benefits of a disruptive network technology designed to serve the bottom of the pyramid. Such an effort can be successful only if policymakers promote the technology at the national policy level, devise appropriate regulatory
frameworks, and potentially co-invest in commercializing it. Private ICT players must invest, develop, and commercialize the technology. They should also create or boost demand for the technology within its target market by creating income-generating applications, financing access, and raising awareness. Private, non-ICT players must ensure that digital applications in their respective industries are supported by the technology and/or develop new applications enabled by the disruptive standard. These players might also consider co-investment to ensure effective deployment of the technology. Industry associations must promote the technology and develop standards so that the technology can be effectively scaled. Civil society organizations must raise awareness about the benefits of the new technology among industry players and consumers. They could also conduct research and promote the efficacy of the technology and its applications in achieving socioeconomic development goals. (For more information, see “Building Communities Around Digital Highways” at http://www.strategyand.pwc.com/media/uploads/Strategyand-Building-Communities-Around-Digital-Highways.pdf.)

Exhibit 8
Digitizing the bottom of the pyramid requires collective, collaborative action

Relevant Stakeholders for Digitization Initiatives

- Telecommunications operators
- Infrastructure vendors
- Device manufacturers
- Content and service providers
- Industry fora
- Standardization organizations
- ICT policymakers and regulators
- Non-ICT policymakers and regulators (financial services, healthcare, education, etc.)
- Financial services
- Healthcare
- Education
- Agriculture
- Other sectors
- Bottom of the pyramid organizations
- ICT for development organizations

Source: Strategy&
The breadth of the collaborative effort required to digitize the bottom of the pyramid is wide, and the investment may seem daunting at first glance, but the returns could reach 300 percent (see Exhibit 9, page 26). This is enough to offset the effort and the investment required for success.

If emerging countries could double the Digitization Index score at the bottom of the pyramid in the next 10 years, the cumulative impact of this achievement would be a $4.4 trillion gain in nominal GDP and a gain of $930 billion in the cumulative household income at the bottom of the pyramid. Further, 64 million new jobs would be created for the poorest workers, enabling 580 million people to climb above the poverty line. Companies in the global ICT industry that support this effort would share in a $300 billion growth opportunity. Furthermore, digitization will unlock untapped markets for several major industries. This is a $700 billion opportunity in education and healthcare alone.

Digitizing the population at the bottom of the pyramid would drive the overall digitization of emerging countries and enable them to close the gap on developing countries. The knock-on effects in emerging markets outside of the bottom of pyramid are such that the total gain could be $6.3 trillion in additional nominal GDP and 77 million new jobs.

In 2002, the late C.K. Prahalad opened the world’s eyes to the fortune at the bottom of pyramid when he wrote, “The real source of market promise is not the wealthy few in the developing world, or even the emerging middle-income consumers: It is the billions of aspiring poor who are joining the market economy for the first time.” A decade later, this is the most compelling argument for driving digitization at the bottom of the pyramid in emerging economies. Those countries and companies that successfully undertake this task will share in a rich return.
There are large returns from digitizing the bottom of the pyramid

Digitization Costs and GDP Increases

Investment required $1.1 trillion → Nominal GDP increase from global bottom of the pyramid digitization $4.4 trillion → Nominal GDP increase from raising emerging markets’ digitization scores $6.3 trillion

Note: The required investment assumes a 20% reduction in digitization costs due to innovation and standardization ($1.4 trillion is the required investment under current prices).

Source: Strategy&
References


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