## CHAPTER 1

# THE RISING TIDE

## Three Trends Driving the Emergence of the Young World



The decade of the 2010s will witness the convergence of three critical trends that each exert a powerful pull on the economic trajectory of the world: the aging of the developed economies, the spread of ubiquitous data networks across the globe, and the rise of indigenous entrepreneurism as an alternative a path to economic development from the top-down economic assistance model that prevailed in the postcolonial period. These trends on their own are relatively well-known and planned-for; their interaction gives rise to profound uncertainties.

Demographers, sociologists, technologists, economists, and political scientists tend to study each of these trends in isolation. Consequently, forecasts about the future of the workforce, the future of technology, and the future of the developing world tend to reflect the siloed expertise of the individuals and institutions conducting the analysis.

In the real world, these trends are unfolding in tandem. They abut and reinforce one another at various points. These areas of overlap and interrelationship suggest strategies for businesses, governments, nongovernmental organizations (NGOs) and individuals seeking to address the significant challenges of the next two decades, and they provide

one set of answers to questions about the size, shape, and nature of the next generation of innovation.

## DEMOGRAPHY AND DESTINY

When I was working on *Generation Blend* in 2007, I was intensely concerned with the problems caused in the workforce by the retirement of the large Baby Boom generation (around 78 million in the United States) and the lack of skilled replacements in the cohort immediately succeeding them (known as Generation X in the United States, numbering only 53 million). If the United States did not find a way to compensate for the impending loss of knowledge brought about by the retirement of the Boomers, organizations would find themselves without the skills and capabilities to perform at previous levels.

The aging workforce is a problem in the global dimension. Declining fertility rates (number of children per woman of childbearing age) correlate to rising levels of per capita income. Life spans also increase with prosperity. This dynamic means countries get older as they get richer, with fewer working-age people to support greater numbers of increasingly elderly retirees.

There is an optimum point on the growth-demographics curve where a society on the brink of economic maturity has a surfeit of working-age people available to fill new opportunities created by investment and innovation. Harvard demographer David Bloom, who studies the effects of young populations on economic development, refers to this as the "demographic dividend."[1] The effects of the demographic dividend could be seen in the rise of Japan in the 1970s, the Asian "Tiger" economies (Singapore, Taiwan, South Korea) in the 1980s, and in China's frenetic growth rate today.

By the mid-2020s, most of the developed world and China will be past the "dividend" phase and into the aging portion of the curve, many at an alarmingly steep rate. Meanwhile, today's poorer parts of the world will just be entering into the years of maximum demographic opportunity.

## THE RICH OLD WORLD

The United States, Europe, and Japan experienced baby booms in the years following World War II, and the surge of young workers coming

into their economies, combined with the war-thinned ranks of middle-aged and elderly, produced a demographic dividend that drove an economic expansion of unprecedented magnitude.

The resulting prosperity, along with increased participation of women in the workforce, led to a drop-off in birthrates in the next generation. In the United States, fertility rates eventually began creeping back toward replacement level (2.1 children per woman, reached in 2008); in Europe and Japan, they continued to decline, while increasing life expectancies combined with low birthrates to create a rapidly-aging population, especially at the most elderly end of the scale. See Appendix A for detailed data on the impact of aging populations worldwide.

Demographic projections even cast a pall over the otherwise-triumphant story of China's emergence as a global economic power. Today, China looks to be surging ahead of the world in output and savings. In fact, China is in a desperate race against time to get rich before it gets old. "China will be also experiencing a rapid population aging after 2015," write two labor economists at the People's University of China in a 2009 study. "One fifth to one quarter of the Chinese population would be older people at age 65 or over after 2035. The year of 2029 would be a turning point in China's age structure transition, when for the first time in Chinese history the elderly population would exceed the child population."[2]

One much-talked-about consequence of the gray tide sweeping over the developed nations are the obligations due to retirees in terms of healthcare and pension transfer payments, which aging electorates will insist that their governments honor. These threaten to place a crushing burden on the shrinking numbers of young people in the workforce, and could drag down living standards as countries disinvest trillions in accumulated capital to support mushrooming populations of elderly retirees.

There are more subtle implications as well. Old countries behave differently and have different priorities for the way they allocate resources than younger ones. Risk tolerance, ability to change direction and strategy, and innovation will all likely be affected. The transfer of skills and knowledge will consume disproportionate resources. So will the upkeep of legacy systems, obsolete practices, and outdated institutions.

Then there's the technology adoption issue. High-growth business opportunities in the knowledge economy increasingly depend on digital information systems, communication platforms, and social networks. Members of the Net Generation grew up alongside this technology and have an innate, experiential awareness of its capabilities that their pre-digital elders lack. As the technology continues to evolve and develop, with consumer technologies blending into business applications and vice versa, young people will continue to be the leading adopters and implementers. Soon, access to these systems will be nearly ubiquitous, around the globe and up and down the socioeconomic ladder. Societies with high ratios and/or high absolute numbers of young people can not only expect the traditional benefits of a demographic dividend, but also significant first-mover advantages in the application of information and communications technology (ICT) and social networks to business, politics, cultural development, and general innovation.

The bottom line is that the countries that have been the drivers of innovation and productivity for the past several centuries are running out of juice. An increasing percentage of the populations of Japan and Europe have their most productive years behind them—and their years of greatest healthcare costs ahead of them, or upon them. Even absent any other externalities, that situation creates enormous competitive challenges for any economy.

*Is there hope for the rapidly aging old world?* Perhaps, but it lies in discovering new markets, new sources of inspiration, and new partners in the co-creation of value. It depends, in short, on the Young World rising.

## THE POOR YOUNG WORLD

Of the world's current population of 6.7 billion, more than 3 billion are under the age of 24, and many of the world's youngest populations reside in some of the world's poorest countries. Exhibit 1.1 plots selected countries on a matrix of median population age and per-capita GDP.

What's apparent from this chart is that there is an almost complete disjunction between the rich old world and the poor young world. Only oil-rich Gulf States such as Saudi Arabia and Qatar are both young and relatively prosperous. China and Russia, as noted above, are conspicuous outliers in the bottom right quadrant, as the oldest poor

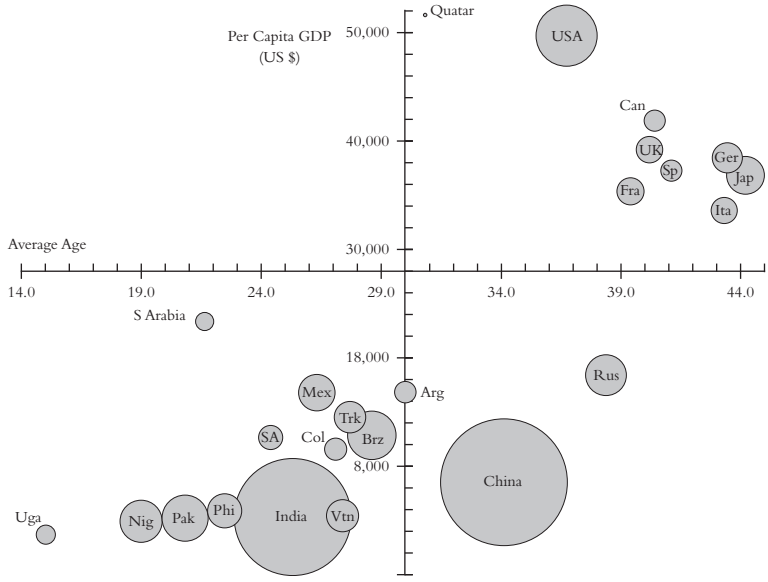


**Exhibit 1.1** Age and Wealth, 2008 (size of dots roughly to scale with countries' populations)

*Sources*: *Economist—Pocket World of Figures*, 2009 Edition, Economist Intelligence Unit (www.eiu.com), World Bank—HNP Stats (www.worldbank.org). Data from 2007–2008.

country and the poorest old country respectively. The United States, by these metrics, is well-positioned both economically and demographically, especially relative to other Organization for Economic Co-operation and Development (OECD) countries.

In this book, the term *Young World* refers to the cluster of countries in the bottom left quadrant, including India, Nigeria, Mexico, Brazil, Indonesia, Colombia, South Africa, the Philippines, and Vietnam, where youthful, tech-empowered entrepreneurs have the greatest potential to drive economic growth and uplift the standards of living.

Needless to say, these are remarkably different countries and cultures in most respects. They are also exceptionally dynamic and volatile. Each has its own unique set of local uncertainties and driving forces for change, and any forecast regarding these countries as a generalized bloc will almost certainly fail to account for at least a couple of important discontinuities—natural disaster, resource depletion, political turmoil, cultural or religious developments, and so on—that will either accelerate change or knock any given country off the path of prosperity.

**VANGUARDS OF THE YOUNG WORLD**

**Latin America**

- Mexico
- Colombia
- Brazil
- Chile

**Africa**

- South Africa
- Ghana
- Kenya
- Nigeria

**South Asia:**

- India
- Vietnam
- Malaysia
- Indonesia
- Philippines

In the aggregate, however, what these countries have in common—youth, rapid adoption of new technologies, and a growing number of indigenous businesses—have a greater potential to shape their destiny than the factors that separate them. Over the next 10–25 years, the global wave of youth fueled by Young World countries will assume greater significance, either as a disruptive force pushing the world toward increased turbulence and chaos or as a new wave of cooperation uniting talent and innovation to tackle global challenges.

**Rebalancing the Global Population.** Though estimates are constantly being revised, a 2008 study by the United Nations[3] forecasts that the global population to peak in 2050 at somewhere between 7.79 and 10.76 billion (median: 9.2 billion) before gradually tapering off.*

* Note that the difference between the low and the high estimate is nearly 3 billion people, so the median estimate should be read as "9.2 billion, plus or minus the current population of China." The consequences of hitting the high number are considerably greater in all dimensions, especially in terms of resource and environmental impact. This is just one of many uncertainties that readers should keep in mind when evaluating these forecasts.

By that time, Asia (57%) and Africa (22%) will combine to represent nearly 80% of the total global population, with North America and Europe constituting a paltry 5% and 7% respectively (see Exhibit 1.2).

The disparity between the aging north and the youthful south is also expected to widen. Today, 366 million Europeans are in their working prime, age 25–59, compared with 192 million age 60 and older (Exhibit 1.3). By 2050, 281 million working-age Europeans will need to support more than 300 million retirees, including more than 66 million over the age of 80 (Exhibit 1.4).

By contrast, the working age population of Asia is projected to increase from 1.9 billion today to more than 2.4 billion in 2050, with another 645 million age 15–24 coming up behind them. Over 1.2 billion will reside in India alone, which will surpass China with the world's largest working-age population by 2030 (Exhibit 1.5). In the same timeframe, only 28% of Asians will be over age 60.

The trend of the numbers is clear. What remains uncertain is whether the Young World can take its dividend to the bank, by converting the

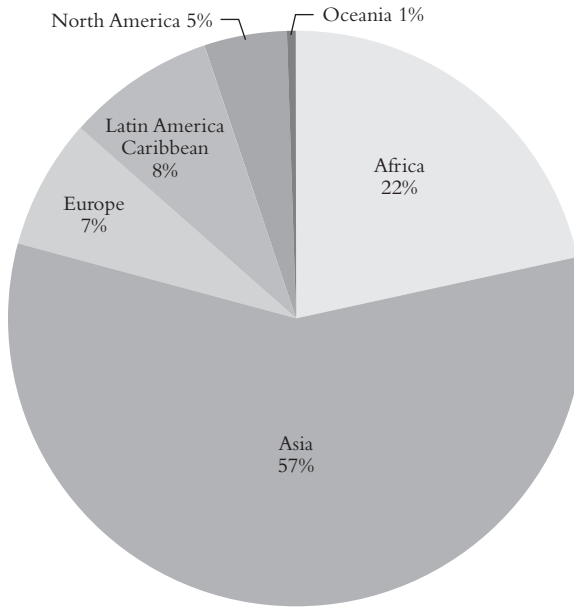


**Exhibit 1.2** Regional Population Distribution in 2050 (UN forecast, 2007)

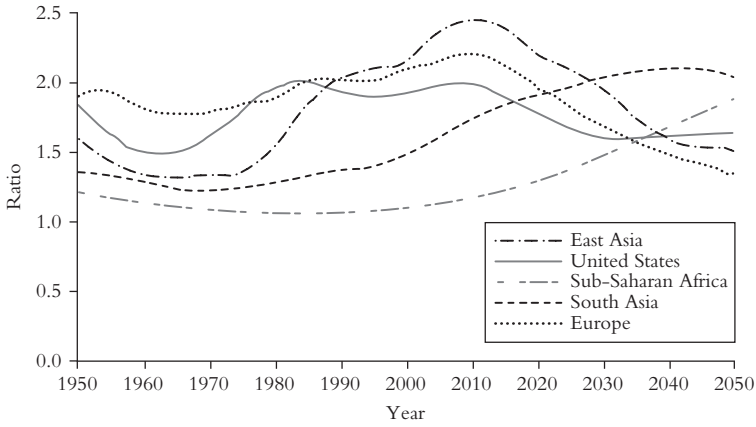


**Exhibit 1.3** Ratio of Working Age to Dependent Population

sheer numbers of young people into a qualitative advantage in talent that will propel their economies forward. That will take enormous investments in education and workforce development—although, as we will see in Chapters 2 and 3, not all the investment need come from the traditional sources.

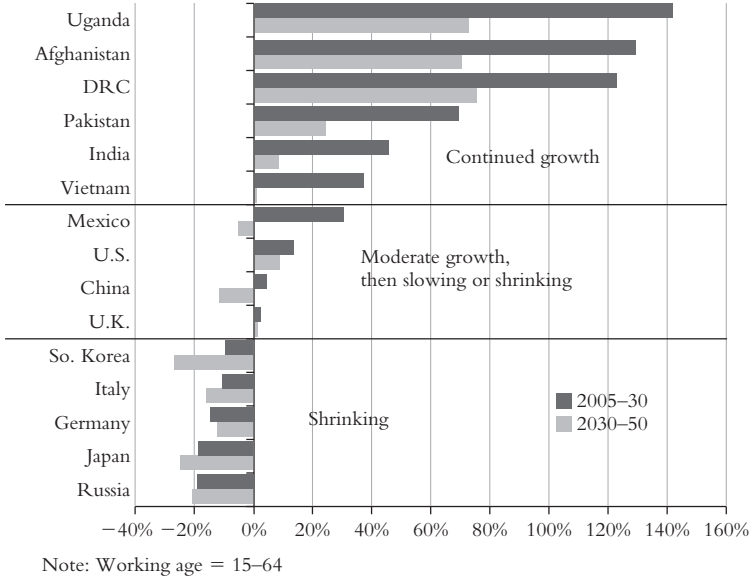


**Exhibit 1.4** Change in Working Age Population, 2005–2050

*Source*: United Nations. *World Population Prospects, 2006 Revision,* Medium Variant.

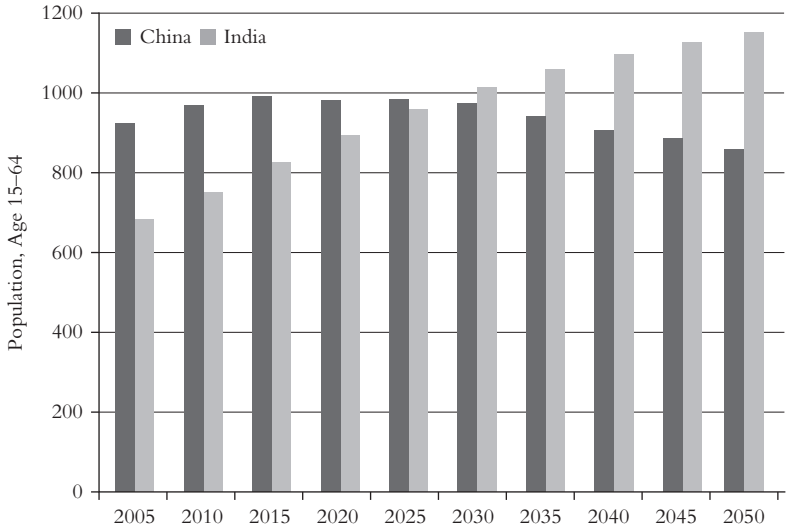


**Exhibit 1.5** Working Age Population Forecast, India and China, 2005–2050
*Source:* U.S. Census Bureau International Database, 2009.

*India Shining*. In some parts of the emerging world, those investments are already taking hold. India's top tier educational institutions, the Indian Institutes of Technology (IIT) and the Indian Institutes of Management (IIM), screen their applicants with one of the world's most rigorous admissions tests, producing graduates who rank with the best of Harvard, Stanford, and MIT. Below this top tier, India's higher education system of more than 18,000 universities enrolls 11 million students per year—most of whom lack immediate qualification for employment by multinational or top-level indigenous companies, but are good candidates for training and development and provide a baseline skilled labor force for small and medium-sized businesses.

*Asian Tigers Roaring*. Elsewhere in Southeast Asia, Thailand is home to more than 300,000 college-educated professionals, mostly in the younger demographic, while the Philippines boasts well over half a million. The Philippines has long had one of the world's most literate populations and, with an English-speaking heritage and large numbers of overseas workers with strong ties to the homeland, shows great promise as a burgeoning center of entrepreneurism and economic development.

*Latin America Faces Uneven Prospects*. The educated elite in Latin America are as well-prepared as any young people for the global knowledge economy, but the distribution of skills (and income) remains especially poor in this part of the world. Latin students lag behind most of their global peers in math and reading, according to the OECD. Most of the region's 200 million Millennials are currently underskilled for employment in high-level information work jobs. Despite these barriers, Mexico and Colombia have emerged as important centers of tech-driven entrepreneurial innovation, along with Brazil and Chile, which are already far along the road to economic prosperity.

*Bright Spots in Africa*. While much of sub-Saharan Africa remains mired in abject poverty, the continent is beginning to produce larger numbers of educated young professionals, and investments are intensifying as part of the Millennium Development Goals articulated by the United Nations. South Africa, despite lingering inequalities, has emerged as a regional hub of economic growth and innovation, but East Africa and parts of coastal West Africa are also demonstrating more promise than they have since the earliest years of independence (see Exhibit 1.6). Nigeria, home to the world's third largest entertainment industry, is also becoming a hotbed of high-tech development, as is neighboring Ghana. Kenya, Rwanda, and Uganda are among the leaders in East Africa. These results, as we shall see, are generated almost exclusively by the efforts of young indigenous entrepreneurs.

*Still Too Much Room at the Bottom*. Not all the signs are hopeful. Worrisome numbers of global Millennials are coming of age in societies that lack the most rudimentary physical infrastructure: clean water, sanitation, food, shelter, access to healthcare. Sometimes these conditions are aggravated by political instability, fanaticism, and war. Afghanistan, for example, posted the fifth highest population growth rate in 2008.[4] It seems unlikely that this fact will do the country much good in the near term.

Even in areas of persistent poverty, population growth alone is not the culprit. World Bank economist Charles Kenny, who studied the issues closely, writes in the introduction to his new book, *The Success of Development*, "There is little evidence from anywhere that growing populations condemn a country to a declining standard of living. Looking at Africa in particular, while populations continue to expand, there is no link from population growth to declining income, and

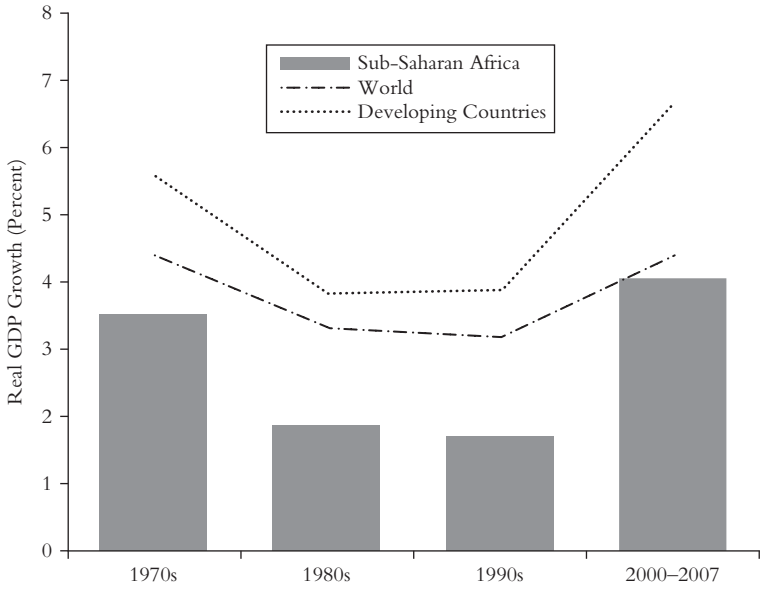


**Exhibit 1.6** Economic Growth Rates in Sub-Saharan Africa Relative to World
*Source*: IMF *World Economic Outlook* and IMF African Department Database.

mortality rates are falling, not rising. Even if the institutions which are central to per capita growth develop slowly, the technologies required for greater output—GDP increases—spread fast. And this is enough to prevent widespread and recurring famine."[5]

Realistically, whatever promises technology and entrepreneurship might hold for young inhabitants of the very poorest and most violent corners of the globe lay further in the future than is practical to forecast from our current vantage point. Nevertheless, some of the countries that today show signs of promise were considered part of this bottom group not long ago, and have managed, through internal reforms, commercial development, and the concerted efforts of regional partners and international donors, to begin to climb toward a brighter future.

## THE SPREAD OF UBIQUITOUS DATA NETWORKS

The ability of Young World countries to cash in on their demographic dividends depends in large measure on the increasing access and falling cost of information and communication technology. Networks

are not just conduits of data: they are conduits of opportunity—opportunity for learning, for participation, for collaboration, and for transformation. They are the means by which some of the Young World's billions will climb to greatness and pull many of their compatriots along behind them. Fortunately, the spread of networks is taking place concurrent with the demographic transition from Old World to Young, driven by the logic of market forces.

*The Digital Divide is Closing . . . Slowly*. Connectivity to the Internet is the ante at the table if you want to play in the knowledge economy. In 2000, there was a vast digital divide separating the developed world, with high-income countries enjoying vastly more widespread and higher-speed access to the Internet than the rest of the world. The past 10 years have seen a narrowing of that gap. As of 2007, broadband was commercially available in 166 countries, including more than 300 million subscribers in what the World Bank defines as "middle income" countries. In 2006, 3.4% of the population in low-income countries and 3.9% in middle-income countries has broadband, compared with 18.6% in developed economies.[6] See Appendix B for data on the spread of connectivity around the world.

The authors of a 2009 study by the World Bank believe that broadband has a measurable economic impact in "improving human capital, a necessary condition for economic growth and competitiveness."[7] Consumers are better able to access the more interesting knowledge-sharing and collaboration services that the industry calls "Web 2.0," including blogs, wikis, social networks, voice-over-IP (VoIP) computer telephony, video, and other activities that require constant, fast connections to the Internet.

When Internet usage within a country reaches critical mass, it can dramatically impact top-line measures of economic growth. In a 2006 study of 27 developed and 66 developing countries, economists George Clarke and Scott Wallsten found that a one-percentage-point increase in the number of Internet users is correlated with a boost in exports of 4.3 percentage points and an increase in exports from low-income to high-income countries of 3.8 percentage points.[8] The World Bank calculates that "a high-income economy with an average of 10 broadband subscribers per 100 people would have enjoyed a 1.21 percentage point increase in per capita GDP growth. This potential growth increase is substantial given that the average growth rate of developed economies was just 2.1 percent between 1980 and 2006."[9]

Part of the limiting factor in the spread of the Internet prior to 2000 was the poor state of landline infrastructure in less-developed countries. Now wireless and satellite-based data services are reducing or eliminating dependency on landlines and bringing high-quality, low-cost connectivity to poorly served regions, including rural communities and second-tier cities that have lagged behind until now.

*The Young World is Going Mobile.* Another factor fueling the spread of the knowledge economy is the increased access to Internet-capable devices. Most people in mature economies connect to the Internet primarily via personal computer or full-function laptop, typically costing $500 or more—a price point that leaves a considerable percentage of the developing world on the outside looking in. Over the past several years, a number of developments have been driving that barrier down. The $100 laptop project, One Laptop Per Child, and similar efforts sponsored by nonprofit or corporate efforts have expanded PC-based connectivity options. Recent new hardware innovations like super-lightweight netbooks and smartphones with near-PC levels of functionality are bringing even higher levels of computing power within the reach of low-income communities and individuals.

Mobile telephony is the leading edge of this revolution. In 2002, the total number of mobile phones in the world surpassed the number of fixed telephones; by 2008, Wireless Intelligence reports there were an estimated four billion mobile phones globally.[10] The deployment of cellular and satellite-based networks has made at least occasional service available to people at the very lowest levels of the socioeconomic scale, and made mobile phones a requirement for anyone with ambition and aspirations, even in countries with per-capita incomes of $600 per annum or less. Since 2000, Young World countries have accounted for increasing percentages of the total number of new mobile subscribers (see Exhibit 1.7). According to forecasts by the World Bank, by 2012, almost all new subscriptions will be in emerging economies.

While the majority of cell phone users in the Young World do not yet have mobile Web access, SMS texting is nearly universal, and local providers often lead their counterparts in the developed world in creating innovative applications on the mobile platform.

Current trends indicate that the convergence between mobile usage and Web connectivity will happen extremely quickly in emerging markets. In late 2008 and early 2009, high-speed third-generation (3G) networks were introduced by the three largest service providers

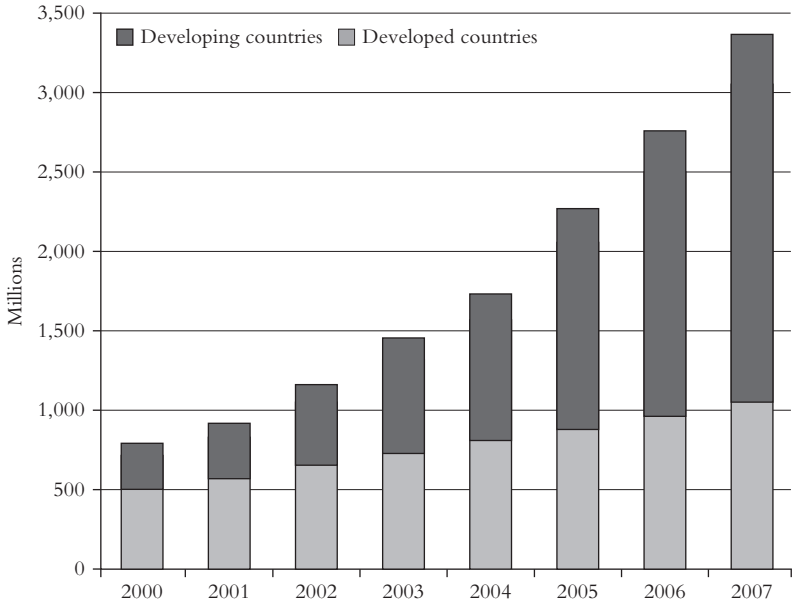


**Exhibit 1.7** Mobile Phone Subscriptions in Developing and Developed Countries, 2000–2007

*Source*: International Telecommunication Union (ITU), World Telecommunications/ICT Indicators Database.

in India. While the cost of the plans, regulatory snarls, and the limited availability of 3G-capable handsets has so far hampered early adoption, providers look forward to mushrooming subscriptions in 2010–2011. Even in Africa, where most of the explosive growth in mobile telephony has been at the low end, Gartner reports that mobile phones with data service capabilities outnumbered the simple SMS-capable phones that dominated the continent in 2009.[11]

According to a 2008 report by Cisco Systems, mobile broadband is poised to be the next big leap forward in terms of driving Internet traffic and access (Exhibit 1.8):

> Mobile operators in many parts of the world are offering mobile broadband services at prices and speeds comparable to fixed broadband. Though there are often data caps on mobile broadband services that are far lower than those of fixed, some consumers are opting to forgo their fixed lines in favor of mobile. This has a familiar ring to it from the mobile voice substitution effect that began in the late nineties and is continuing today. As a result of the mobile broadband

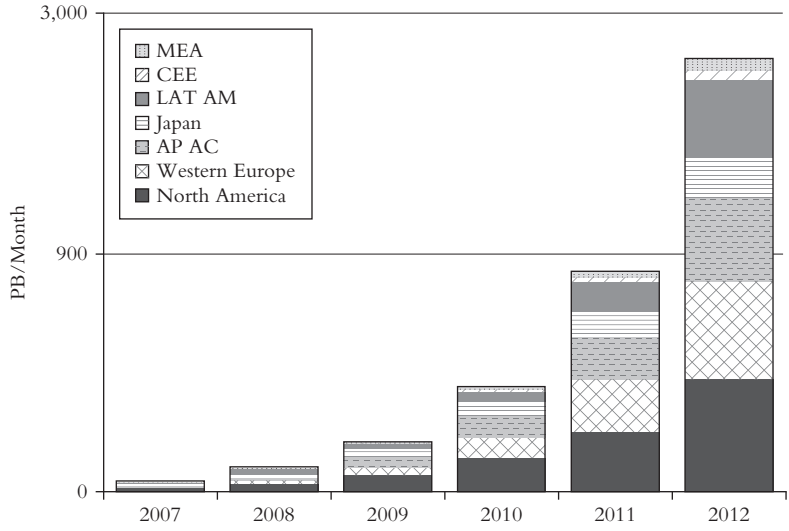


**Exhibit 1.8** Mobile Broadband Forecast, 2007–2012

*Source*: "Approaching the Zettabyte Era." Cisco Systems Whitepaper, June, 2008.

substitution effect, Cisco is projecting very strong growth for mobile data at 120 percent CAGR from 2007 to 2012, which means that ***traffic will roughly double every year***.[12]

The spread of ICT across the globe has many important social and economic implications. Its most profound effect, however, is that it is helping to galvanize more than four billion young people across the planet—including billions in the poor Young World—into a Global Net Generation, united by common attitudes and aspirations, connected and resourced on a scale never before seen in human history.

## YOUTH + TECH: THE EMERGENCE OF THE GLOBAL NET GENERATION

Over the past 20 years, in mature economies, the spread of networks has influenced the social and political development of the generation born since 1980, giving rise to a number of behaviors documented by observers including Don Tapscott (*Growing Up Digital* and *Grown Up Digital*), William Strauss and Neil Howe (*Millennials Rising*), Marc Prensky ("Digital Natives and Digital Immigrants"), and myself (*Generation Blend*).

We each have our own catalog of Millennial generation traits or "norms" that seem to fit, or at least partially explain, the observed behavior of large numbers of this generation as they've established themselves as students, consumers, citizens, and now members of the workforce. The following table summarizes the common descriptors.

**MILLENNIAL NORMS AND BEHAVIORS**

Since the early 1990s, the Millennial generation has been the subject of study and speculation. Here are some of the common traits attributed to them by experts, sociologists, market researchers, and HR professionals:

- *Collaborative and Social*—Millennials are sharers of information and team-oriented, preferring to work and socialize in groups.
- *High Expectations*—Millennials demand transparency, integrity, and responsibility from institutions, government, employers, and one another.
- *Feedback-Driven*—Since childhood, Millennials have received constant attention and recognition for their talents and achievements. In young adulthood, they continue to look to authority figures for mentoring and guidance.
- *Inquisitive*—Millennials scrutinize the claims of employers, government, and purveyors of goods and services, eager to find connections between their life activities and a higher social purpose.
- *Customizers and Experimenters*—Millennials differentiate themselves by customizing everything from their cell phones to their bodies, and playfully mash-up cultural references to create new contexts for their experiences.
- *Blurred Boundaries*—Millennials commingle their personal and professional lives to a significant extent, and do not recognize the same sources of division and authority as their elders.
- *Sense of Urgency*—Millennials are a generation in a hurry, with respect to their own careers, their desire to make an immediate impact in society, and their perception of problems such as poverty, environmentalism, energy conservation, and political freedom, on both a global and local scale.

Naturally such broad generalizations do not apply equally to all members of the cohort. However, polls, surveys, and focus groups conducted by organizations such as the Pew Project on the Internet and Society have gone a long way toward validating the observations of experts with meaningful data. And, as we will see in the case studies in Chapter 3, these norms manifest in the unique approaches of Young World entrepreneurs, and are woven deeply into the fabric of the organizations they create.

One of the unique aspects of the Millennial generation is that it is, by and large, a global generation. Surveys indicate a remarkable commonality in attitudes among young people North and South, East and West, from the most prosperous countries to those at the fringes of the world economy. Some of this results from the global reach of popular culture and consumer culture. When Nike says "Just Do It!" the message is heard everywhere from Cape Cod to Cape Town and appeals to the same action-oriented, ambitious qualities in young people worldwide.

A growing body of data suggests that technology plays a central role in shaping the attitudes of the Net Generation, whether they reside in developed countries that were at the forefront of the information revolution or in countries where widespread Internet access is a relatively recent phenomenon. Information networks fundamentally change relationships between people, processes, and data by lowering (or obliterating) old barriers, eliminating social formalities in personal relationships, flattening hierarchical organizations, eliminating the significance of time and distance, enabling instantaneous distribution of content, ending isolation, and providing a global platform for self-expression. Exposure to them early in life profoundly influences perceptions and expectations, even among young people who do not have any special interest in or aptitude for technology.

In 2007, the Toronto-based consulting firm New Paradigm (now nGenera) conducted an online survey of nearly 6,000 young people (ages 16–30) worldwide, including more than 400 each from Mexico, Brazil, Russia, China, and India.[13] As an online survey, it by definition polled the more connected and digitally literate segments of the population, with likely correlation to higher-than-average socioeconomic and education levels.

The survey discovered that the online habits and attitudes of NetGen youth from the four emerging economies included in the

poll did not differ significantly from their peers in North America, Europe, and Japan. Across the board, more than 65% of respondents from all countries said they would prefer to live without a television than without the Internet, for example. Young people from Mexico, Brazil, Russia, and India were more far likely to consider themselves early adopters of technology than those in Western Europe, North America, or China, and spent more hours per week on the Internet (or were willing to admit that they did; see Exhibit 1.9).

These digital natives are also mobile natives. More than 80% of survey respondents in Mexico, Russia, China, and India reported sending text-messages from their mobile phones in the prior month. In India, for example, mobile phones are also the platform of choice for gaming, listening to music, banking, and online commerce. In this respect, they and the other Millennials from emerging markets are ahead of their peers in Europe and especially North America, although that may be changing with the introduction of more versatile, appealing handsets like the iPhone and the increasing popularity of mobile data plans.

The New Paradigm quantitative study also delved into consumer and workplace attitudes, revealing a high degree of commonality of opinions on a range of social, economic, and lifestyle issues across

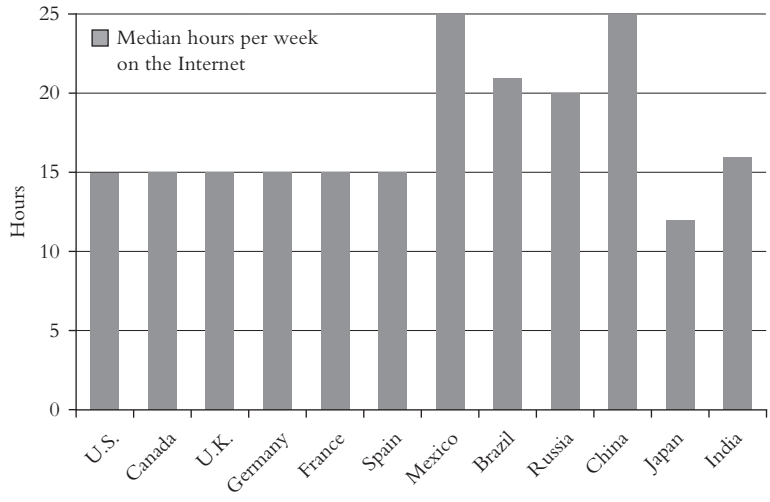


**Exhibit 1.9** Age 18–30, Hours per Week Spent on the Internet

an extremely diverse geographic and economic sample. Although the methodology and nature of the survey make it difficult to draw definitive conclusions, the data point the way toward the idea that the digitally literate youth around the world have more in common with one another than they have with older and/or less connected members of their own societies.

## THE TECHNOLOGY AGE GAP IN GLOBAL PERSPECTIVE

The spread of networks, digital culture, and mass collaboration affect young and old alike. However, there is a fundamental difference between those who established the habits of learning, participation, personal relationships, and work in the pre-digital world, then adapted the new technologies to fit their existing worldview, and those whose expectations and experiences are rooted exclusively in the networked digital world. While the former group tends to look at technology as a problem to be solved or a new tool to integrate into an existing framework, the latter starts with an inherent grasp of the possibilities of networks and data.

For Millennials, PCs, the Internet, mobile phones, digital music, videogames, and social networks are not novelties or innovations: They are part of the furniture. They represent the default modes of communicating, collaborating, and accessing information, against which others are judged. The linear, formal, analog processes of older generations typically strike younger people as less convenient and engaging than ones they can access instantly through networks and social channels.

Millennials have more experience using the technology than they have in the workplace or as participants in civic society, so a number of questions occur to them rooted in their personal understanding of what's possible, versus what they observe as business as usual in the workplace and the world around them.

- Why construct artificial barriers between your personal life, your professional work and your social goals, when in fact all these things are connected and reinforce each other?

- Why go through layers of management and organizational structure when it's possible to connect immediately and directly with an expert or decision-maker?
- Why work in an office when you can work just as productively from home or a coffee shop?
- Why commit to the larger goals of an employer or a government, when evidence is everywhere that institutions never live up to their stated principles?
- Why do I have to settle for my lot in life when so many other possibilities are open to me?

Pre-digital generations never considered these questions, because there were no alternatives. This was true in the industrial-age developed world, and even more so in the traditional cultures that predominate in many emerging economies. Now young people confront these choices and questions on a daily basis—and wherever in the world they live, they are coming to many of the same conclusions.

*Old World Challenge: Generation Blend*. In mature economies, the aspirations of the Net Generation represent a challenge for established institutions, be they cultural, political, or commercial. This vibrant, engaged, impatient, and energetic generation is emerging in the context of societies dominated by increasing numbers of older people living longer and pressing their claims for continued resources and relevance. Organizations need to balance the desire to accommodate the new and unfamiliar behavior of Net Generation workers and consumers with established ways of doing business, legacy investments, and traditional attitudes.

It's a delicate negotiation. Pre-digital generations tend to view digital technology and digital culture as disruptive—for good or for ill. Change is a problem to be solved. Digital generations accommodate pre-digital processes primarily out of courtesy to their elders; below it all, they suspect that their own methods would produce better results if not for the need to keep contact with the laggards who insist on following old rules that don't fit the current situation. Contrary to the suggestions of some observers, Millennials are indeed "backward compatible" with traditional work cultures and work practices, especially when job opportunities are scarce, but organizations that find ways to empower them in full digital-native mode tend to get greater productivity, engagement, and loyalty in return.

In politics and business, the Old World is moving across the technology age gap in fits and starts, and it will not truly reach the tipping point of Net Generation influence until well into the 2020s, when the grip of pre-digital elders on resources and authority finally loosens. The implications for the rest of the world of how aging societies handle this transition are not certain, as we will explore later.

*Young World: Rising Expectations*. The digital age gap also exists in the Young World, but it is far less of a problem for three important reasons. First, other gaps, such as economics, education, and literacy, are far more salient. Second, older people are more likely to reside in poorly served rural communities and less likely than younger people to be literate—an important precondition to the use of information technology. Young people, by contrast, tend to gravitate toward cities in search of better economic opportunities and consequently come into contact with relatively better communications infrastructure and more densely wired populations. Those under age 30 are more likely to have been exposed to information technology at school, in their communities, or through peers. Members of the more prosperous classes own and use technology at roughly the same rates as their counterparts elsewhere in the world and display many of the same preferences and behaviors.

And most importantly, as we've seen from the demographic data, the third reason is that there simply are not enough older people relative to younger ones to make a difference. With the exception of a very narrow stratum of elites, they don't figure into the knowledge economy in the same way that their peers do in more developed countries, where senior executive ranks of large organizations are dominated by 40- and 50-somethings.

This is not exactly breaking news. Observers of the relationship between youth and technology have been shouting "The Net Generation is a global generation!" from the rooftops for at least 10 years. However, it has an interesting corollary for countries where the steepest increases in connectivity have taken place in the past five years, rather than the last two decades: The spread of ICT turns Millennials into full-fledged members of the Net Generation. As critical mass builds in countries with high populations of young people, changes in behavior, society, and culture accelerate. Because countries that are relatively late arrivals to the online age also tend to be ones with more traditional cultures and/or isolated political systems, the

incumbent predigital institutions and leadership are least equipped to deal with the kinds of change that open communication brings.

A case in point is the Twitter Revolution that swept Iran in the aftermath of the country's controversial presidential elections in June, 2009 and shook the regime to its foundations. Iran is a young, well-educated country with a high degree of Internet utilization, albeit within the social and political limits imposed by the ruling religious authorities. It also experienced a surge of new connectivity in the years leading up to the uprising. From 2005 to 2008, mobile phone subscriptions in Iran grew by more than 375%. By 2008, six of every 10 Iranians were mobile subscribers. All of these phones have SMS capabilities, and some have data access, providing their users with a conduit to the wider world that authorities could not control.[14]

Large numbers of reform-minded youth responded to President Mahmoud Ahmadinejad's suspicious claims of electoral victory with an outpouring of dissent on social media outlets such as Facebook, blogs, and Twitter. The authorities attempted all kinds of draconian measures to prevent these conversations, from blocking IP servers to shutting off mobile phone service to physically destroying computers in students' dormitories. The protesters were able to keep a step ahead of them, publishing an ongoing stream of compelling words and images primarily through Twitter, where they reached the ears of the international community and, more importantly, connected the resistance within Iran.

The openness, immediacy, and collaborative quality of social computing on the Internet was able to undo the intensive socialization of young people into the religious, cultural, and political attitudes of Iran's conservative religious leaders. The raw outrage carried in those 140-character posts to Twitter untethered the political discourse from its moorings and, through its own momentum, conjured up the possibility of a more secular democratic Iran that was unthinkable even at the extremes of acceptable political opinion within the country less than a week before. In the end, it took the full might of one of the world's most oppressive governments to suppress the uprising.*

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* This serves to highlight another example of "Chinese exceptionalism." Just several weeks after Iran's Twitter-led uprising, the Chinese government took harsh action against the Uighur population in the western Xinjiang region. Very few firsthand accounts got out, because authorities were able to block Internet and mobile communications, which effectively hindered communication and coordination among the dissidents.

The implications of open communication and collaboration technology on totalitarian political systems are obvious beyond the need for additional elaboration, but they have nearly as much disruptive potential in the world of business and economics. The ideals of democracy, communicated via the Internet, raise the expectations that young people hold for their political leaders. The ideals of entrepreneurship—both commercial and social—raise their expectations for their own potential impact. Every day, all over the world, little revolutions are taking place that overthrow old habits of mind and old limits on the potential of people to succeed and make an impact through their own enterprise and initiative.

As young people get connected, they start to understand what's possible. They start to see role models for themselves from outside their own cultures, and templates for success that did not—indeed could not—previously occur to them. Suhas Gopinath, in Bangalore, India, took inspiration from Bill Gates (a global celebrity, to be sure), 10,000 miles away in Seattle, Washington. Even today, a 14-year-old in Brazil or Nigeria might be taking inspiration from Suhas Gopinath, whom they read about on a Web site. One of the most important efforts taking place along these lines focuses on empowering young women in traditionally patriarchal cultures, providing them with not only the skills but also the confidence to participate fully in the tech-driven business environment.

## YOUTH AND ENTREPRENEURSHIP

Entrepreneurship is a natural outgrowth of youth. Young people have less to lose when pursuing their own ideas, and studies show that great innovators tend to do their most important work in their 20s and 30s. The desire to work for oneself, however, has traditionally been tempered by the realities of the business world. Young people lack life experience, and may be prone to errors of temperament and judgment. They lack the history and relationships that their elders acquire over the years, which can be decisive in building a fledgling business. They lack access to resources. Without a track record and a credit history, who would risk capital on an unproven venture with unproven leadership?

The spread of network access and the globalization of the digital economy lowers or collapses those barriers by:

- *Narrowing information gaps*: Through the Internet, young entrepreneurs have instant access to the global repository of institutional wisdom: the latest business information and strategies, including the experiences of more established companies, which can help new firms avoid the mistakes of their predecessors and capitalize immediately on best practices. They still need the discipline to apply these lessons to their own ventures, but young entrepreneurs who understand how to interpret information can leapfrog over stages of development that used to require years or decades of trial and error.
- *Automating social connections*: Online social networks make it virtually effortless for young people to connect with people and resources useful to their enterprise anywhere in the world. More and more such networks are coming online specifically for the purpose of creating opportunities for young entrepreneurs and job-seekers, as we will see in later sections. These sites automate the hard work of building up and maintaining relationships, gaining introductions to useful people, finding sponsors and mentors, spreading word-of-mouth recommendations, and getting tips that can make all the difference to success. Critics argue that the breadth afforded by social networks is no substitute for the deep trust afforded by personal connections built up over time. That may be so, but in many cases, the transient and transactional relationships facilitated by social networks deliver the same benefits faster and at lower costs to maintain, even as they create the basis for deeper, longer-term relationships over time.
- *Reducing capital requirements for certain business models*: In the global information economy, knowledge and talent can be more valuable to a small business than physical capital. Successful businesses can begin with nothing more than an idea and an Internet connection. In resource-poor Young World countries, which may lack even rudimentary infrastructure necessary to other kinds of industries and access to basic financial resources, this simple fact profoundly changes the whole conversation around economic development. It enables businesses to start and succeed

> at levels low enough to be sustainable even in poor conditions, with economic models appropriate to serve local populations with very limited buying power — or to gain immediate and unrestricted access to prosperous Old World consumer markets purely on the strength of better ideas and better execution.

Because of these three factors, the traditional costs and risks associated with entrepreneurship are far lower today than ever before. This, combined with the examples of conspicuous success by indigenous entrepreneurs in emerging economies, has fundamentally changed the calculus for many young people looking to improve conditions for themselves, their families, and their societies. It has also opened the floodgates of market-driven innovation as a means of improving the lives of the billions at the margins of economic development.

## INNOVATION AT THE BOTTOM OF THE PYRAMID

To date, some of the most visible examples of knowledge economy entrepreneurship in emerging economies have closely resembled models in the developed world. Companies like India's Infosys have built well-resourced, highly professional organizations that mobilize their countries' best-educated talent. Their corporate campuses are oases of 21st century design and amenities amid a desert of poverty and underdevelopment. This kind of conspicuous success offers a beacon to aspiring local entrepreneurs, but until very recently, it was a path realistically open only to the elite. Now, the spread of high-speed networks and low-cost devices is opening another path.

Because so much of the Young World is so poor, a significant portion of indigenous entrepreneurial activity, both social and commercial, is focused on serving the population that business professor C. K. Prahalad refers to as the "bottom [or base] of the pyramid" (BOP): the more than 4 billion consumers making less than $2 per day.[15] This largely untapped market not only represents more aggregate buying power than the top global quintile, but is also composed of extremely shrewd consumers striving for better lives and hungry for innovative solutions to their daily problems. The genius of the "bottom of the pyramid" strategy is that it defines poverty in qualitative

rather than quantitative terms and seeks to alleviate the effects of poverty by improving the value that low-income people can get for their money.

Prahalad's reframing of impoverished populations as potential consumers with an active interest in their material betterment, rather than passive recipients of aid, completely transforms the issue of international economic development and creates a much larger role for commercial enterprise. Suddenly, helping the global poor find their way to better lives is not just a matter of altruism, but a win-win opportunity for businesses, consumers, communities, governments, and NGOs.

*Dignity, Not Dependency*. The shift in thinking has a subtle but profound impact on the mindset of young BOP populations. Rather than stigmatizing consumerism and commerce, Prahalad's formulation enables dignity and choice, and ennobles entrepreneurism as the ultimate expression of "doing well by doing good." Large companies exhibit respect for BOP customers by making investments in products that fit their needs. They also demonstrate a kind of ingenuity in terms of how they approach the market, which in turn rubs off on indigenous entrepreneurs who aspire to their success.

The recognition of the kinds of commercial opportunities that exist at the bottom of the pyramid has transformed the discourse around foreign aid. In *Dead Aid: Why Aid is Not Working and How There is a Better Way for Africa*, African-born economist Dambisa Moyo challenges the prevailing mindset about the effectiveness of top-down foreign assistance for impoverished companies and suggests that better efforts at economic development can come from empowering local producers, local markets, and local entrepreneurs. Whether Moyo's critique is correct or not, the influence of her work indicates growing momentum behind alternative approaches to alleviating the poverty that afflicts much of the Young World, just at the moment when the rising generation is discovering new methods of expression, connection, and empowerment through ICT networks.

The challenge of serving the BOP market is that the consumers lack discretionary income. Prahalad points to numerous examples of businesses that successfully overcome this problem by scaling their offerings to fit the budget and life conditions of BOP customers: single servings

of products priced in the smallest local unit currency (e.g., a penny for a packet of laundry soap, rather than $3 for a box); conveniences designed for the hostile infrastructure that characterizes the living situations of most BOP populations; and brands that promise consistent quality.

*Lean, Sustainable Capitalism*. Making money selling products at a penny at retail means that businesses serving BOP markets have no margin for error. They must operate with extreme efficiency, and their business models must be ingeniously well-crafted. For large multinationals, scaling down takes discipline, but most can afford to absorb some losses while they get the model right.

Local entrepreneurs, however, often start at the bottom. They need to figure out ways to make money under conditions of extreme scarcity from day one. Even if they have access to capital and technology, their immediate customers may not. The products and services they deliver must therefore provide competitive value in the absence of practically all the assumptions that apply in mature markets. They have to be durable, high-quality, convenient to obtain, easy to use, and available at an almost unimaginably low unit cost. The production process necessitated by such conditions is lean in ways that are well-adapted for a resource-constrained future. BOP entrepreneurs are not only tapping a gigantic global market, they are also at the forefront of sustainability.

The result of these strategies broadens the access that poor people have to higher quality products and services, even at low levels of income, while avoiding the economic distortions and moral hazard of direct subsidies. In India, indigenous companies are making a profit providing Lasik eye surgeries at $50, building cars that cost $2,000, and selling nationwide mobile phone service at less than 1 rupee per call (about two cents U.S.). The same is true in Africa, Latin America, and across the Young World. Each time one of these companies succeeds, it spawns an ecosystem of partners and suppliers and contributes to the maturation of local markets, infrastructure, and workforce capacity.

Just consider for a moment how lean, smart, and fast a company has to be to execute under those constraints. Now imagine how formidable such a company could be with access to capital, market visibility, and consumers with enough resources to support higher profit

margins. These kinds of companies are poised to compete with the top-heavy, resource-intensive firms of the Old World.

## TECHNOLOGY AND INDIGENOUS ENTREPRENEURS

Young World entrepreneurs whose business models are optimized to make money under the most hostile conditions are now suddenly able to take their wares directly to prosperous customers in the developed world through the medium of the Internet. They also have the same access to the world's most advanced technology and the world's best information.

Not every Young World enterprise is well-positioned to take advantage of these factors. Manufacturing companies, for example, are dependent on capital, physical infrastructure, local labor, government regulation, and business relationships across the global supply chain. Even the leanest, smartest, most efficient manufacturer in Nigeria is hostage to the irregularities of the power grid, bad roads, corrupt officials and a host of other barriers that make it difficult to break into the global market. Such a supplier could realistically compete only on the basis of extraordinarily low labor costs or the promise of cutting corners on environmental standards, workplace safety, and so on—savings that offset the high ambient costs and risks in the business environment. While economic realities will always create opportunities for these kinds of operations, they are not good models for sustainable development.

Knowledge-based businesses have none of these limitations. Once information devices become cheap enough and connectivity becomes ubiquitous and reliable—and we have seen that trends are headed in that direction, even in some of the poorest regions of the planet—the only capital you need to provide content or services on the Internet is between your ears.

*Platforms Boost Prospects*. Young World knowledge entrepreneurs have immediate and direct access to developed world markets. Popular technologies such as Microsoft Windows, the Apple iPhone, and Facebook provide readymade platforms for application developers and readymade distribution channels that leverage the trust of their brands to bring independently developed products and services to consumers.

In theory, any application that can meet Apple's quality standards can get listed in the iPhone App Store.* Then it's up to consumers to decide, largely on the basis of a transparent system of user ratings, whether it's worth buying.

Huge, resource-intensive developers have the advantage of familiar brands to drive sales and highly productive workforces to develop new products, but they must find the economics of selling iPhone versions of heavyweight platform games at price points as low as $4.99 challenging. By contrast, providers accustomed to delivering lean, lightweight, useful and simple products for BOP markets at low cost enjoy huge advantages. For one thing, their cost-basis for development is almost certainly lower. For another, the marginal return on capital is significantly higher, because even small profits denominated in strong, developed-world currencies have enormous buying power in the local economy. Ninety-nine cents for an iPhone application is a trivial expense to Old World consumers, but a developer in Kenya can feed her family on the money she makes from three or four downloads per day.

*Capacity and Infrastructure Are Forming*. Because the path of ICT-led development holds such promise, it is the focus of a number of initiatives by governments, NGOs, and, increasingly, private businesses interested in fostering economic growth in less-developed countries. Across the Americas, Africa, and South Asia, organizations of all kinds are pouring resources into technology education, skills and capacity-building; connectivity; community-based technology centers; and e-services that build information-based skills into interactions with government, healthcare, and daily activities.

At the same time, in tandem with globalization, access to credit is spreading to small businesses and individuals at the periphery of the world economy. Mobile banking is the fastest-growing technology in Africa and parts of Asia, providing financial services to huge swaths of the population that have never had access to interest-bearing savings or credit beyond the most informal local and family-based channels. As the first wave of microfinance investments bear fruit, private equity

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* I say "in theory," because Apple's selection criteria are rather opaque. As of this writing, several competing smartphone platforms are coming to market with more open application stores, which may broaden opportunities for developers even further.

and venture capital is starting to appear to help nascent firms scale up to serve regional, national, and even global markets.

Not all of these initiatives are top-down. Increasingly, young knowledge professionals in emerging economies are communicating and collaborating via self-organized online communities and social networks and actively participating in local efforts to build ICT capacity. These efforts represent a robust blend of altruism and self-interest. Making progress against the dire social and economic conditions that prevail in many parts of the Young World is a fundamental humanitarian priority. At the same time, no one benefits more from a skilled and empowered local workforce than local employers seeking to expand their businesses.

## THE INFLECTION POINT

The three major trends of demographics, technology, and entrepreneurship are peaking simultaneously, offering an unexpected path forward from the global recession of 2008–2010. All over the world, young people are seizing the opportunities presented by this unique convergence of circumstances to participate as full partners in solving common problems. Successful local entrepreneurs are reinvesting in their communities and giving employment to others. NGOs are partnering with multinational companies and local governments to build capacity that can bring underdeveloped areas surging into the knowledge economy. Networks enable conscientious young people to transcend old limitations and reach out to one another across the boundaries of culture, pressing their demands for change and real solutions.

The next chapter looks at how these trends are being reinforced through massive investments of institutional resources, motivated by a unique alignment of incentives, opportunities, and social goals.