

# Mobile Technology

*One core lesson, many possible solutions*

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OVER HALF OF PEOPLE IN POOR COUNTRIES, including a quarter of those over the age of 14 in Afghanistan, use mobile phones. Given the ever-increasing proliferation of mobile technology and the range of opportunities that it is unleashing for the world's poor, how will it engage even more people in commerce, allowing them to solve their own problems? In what ways will it continue to be a democratizing force? What new possibilities will it create? And, perhaps most importantly, how can we apply a core lesson from mobile technology to think differently about empowering the poor?

## Dramatically decreasing costs

SINCE PEOPLE IN RICH COUNTRIES—where the digital revolution began—wanted to increase their own mobility and productivity, many of the fruits of this revolution were packaged into mobile devices and related services. Many innovations in

hardware, software, wireless transmission, display, and Internet protocol, were possible because the cost of computing power had been decreasing exponentially for several decades, a phenomenon that will likely continue in the foreseeable future.

This decrease in cost has been so dramatic that even people in poor countries today are holding in their hands computers that are effectively thousands of times more powerful than the computers that guided the Apollo lunar mission in 1969. Moreover, the brushfire of innovations that has been engulfing desktops and laptops in rich countries for the past two decades continues to spread to mobile phones everywhere, including in poor countries.

## One core lesson

THE CORE LESSON from the proliferation of mobile phones in poor countries is not about technology. It is about economics. When people use mobile phones to connect with each



other, they make better use of their time, miss fewer opportunities, and achieve and earn more. As a result, ordinary people have more money to spend on the very services that make them more efficient and productive in the first place. By purchasing mobile services, paying customers generate revenue for mobile companies who, in turn, invest profits to build infrastructure worth billions of dollars.

In stark contrast, aid to governments for building infrastructure to meet basic human needs has often failed. On the surface, this seems particularly surprising because, in such countries, private commercial ventures are providing mobile services—not considered a basic human need—which ordinary people, including the poor, are happily embracing as paying customers. People's own desire to increase their productivity has been so overwhelming that in places where there are still inadequate roads, poor schools, ill-equipped hospitals, unreliable electricity, and little potable water, mobile phones and supporting infrastructure have proliferated to a massive extent.

Most importantly, when productivity tools—the mobile phone being an illustrative example of one—create commercial opportunities that advance ordinary people's lives, those same people become an enormous resource for their countries. Therefore, we should not take a top-down view of the two billion people living on less than \$2 per day and be daunted by the scale of the "problem," but instead should appreciate the bottom-up potential of two billion producers and problem solvers.

Just how big is this potential? Mobile phones provide an indication. There are many studies confirming that economic growth accelerates as mobile phone penetration rates increase. With penetration rates reaching 30 or 40 percent in some of the poorest countries, it follows that, even conservatively speaking, these countries have experienced an additional percentage point of annual economic growth due to mobile phones. But, considering that economic growth has accumulated each year over the past decade, 10 percent of these countries' present-day GDP is easily attributable to mobiles.

Because this increased income is disbursed among the mobile users throughout the economy, it is less vulnerable to abuse than aid that is concentrated in government coffers. And what is more, the resulting purchasing power creates opportunities for entrepreneurs to deliver still other productivity tools to paying customers, further spreading economic benefits. The increased economic clout of ordinary citizens—indeed a dispersion of economic power—strengthens democracy and allows people to demand greater accountability.

## Many possible solutions

WITHIN THE FRAMEWORK OF MOBILE TECHNOLOGY, as the core lesson implies, the most successful innovations will be those that increase productivity and improve the lives of ordinary people. Since mobile phones are essentially hand-held computers, their versatility in tackling a variety of tasks is approaching that of traditional computers. With such powerful computers already in the hands of millions, entrepreneurs

## BEHIND THE SCENES

### THE WORLD BANK IN INFORMATION AND COMMUNICATION TECHNOLOGIES

#### BROADENING AND DEEPENING SECTOR AND INSTITUTIONAL REFORM

Over the past decade, the World Bank Group (WBG) has supported the information and communication technology (ICT) reform agenda in more than 85 countries with a strong focus on 65 low-income countries. The support has played a significant role in helping to liberalize telecommunications markets, privatize incumbent operators, revamp regulatory frameworks, and build capacity. infoDev has supported efforts to strengthen the capacity of ICT regulators. Its ICT Regulatory Handbook is among the most popular reference documents used by regulators and its online toolkit version is now recording over 550 visits per day. Countries which have implemented deep sector reforms supported by WBG have attracted over US\$100 billion in investment between 1997 and 2008. The annual revenue generated by the ICT sector in low-income countries which have liberalized is equivalent to around 4 percent of their GDP. When indirect benefits are accounted for, the contribution of ICT sector to GDP growth has exceeded 10 percent in ratio in some countries. The World Bank has also helped to broaden the reform agenda beyond the telecommunications sector to the entire ICT sector, including that of e-government applications, and has continued its limited support to postal sector reform in 15 low-income countries, as part of its earlier policy work in helping operators separate their state-owned postal activities from telecommunications activities.

will continue to capitalize on their versatility, building new businesses on existing and evolving technology.


For example, Kenya's M-Pesa is facilitating mobile banking transactions; Bangladesh's CellBazaar is connecting buyers to sellers in a sort of mobile Craigslist; and, in Haiti, Ushahidi is using crowd-sourcing to aggregate information for crisis response. A number of telemedicine initiatives across the developing world are bringing better healthcare to underserved areas and, mPedigree is using cell phones to tackle fake drugs in Africa. The advent of broadband access in poor countries—making voice communication through

Internet protocol possible without depending on the mobile network—will no doubt give rise to another wave of mobile innovations and entrepreneurial ventures.

## Broader implications

THE POSITIVE ECONOMIC IMPACT of mobile phones is so profound that it elucidates the general power of productivity tools in creating individual and collective prosperity from the bottom up. Although this point is perhaps less dramatic when applied to innovations beyond mobile phones, it still holds true: When technology allows ordinary people to become more productive, it gains economic traction, proliferates widely, and yields a host of benefits in the process, setting off a virtuous cycle.

The potential of this virtuous cycle has often been obscured by the vicious cycle of poverty and traditional thinking around it. Widespread poverty has been used to justify aid to central governments, which has often given rise to centralization of power, statism, corruption, and stagnation. However, mobile phones, resulting in immediate economic value for people, are breaking this vicious cycle. They are demonstrating that a more virtuous one, based on boosting people's productivity, is possible.

There are no doubt myriad affordable innovations for agriculture, energy, or sanitation that ordinary people could use to increase their productivity and incomes while tackling challenges. Engineers, scientists, financiers, entrepreneurs and others can design and deliver the means for increased productivity that will jump start this virtuous cycle. When we recognize this, we see that the mobile phone yet again delivers more than originally intended. Indeed, it can mobilize our thinking in the right direction. 

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## BEHIND THE SCENES

### THE WORLD BANK IN INFORMATION AND COMMUNICATION TECHNOLOGIES

#### INCREASING ACCESS TO INFORMATION INFRASTRUCTURE

In order to increase access to ICT for low-income people, the WBG has supported innovative financing mechanisms in form of public-private partnership (PPPs), which have included output-based aid (OBA) in Nepal, Nicaragua, Nigeria and Uganda to provide access to over 7.8 million people in rural remote localities. Since 2005, PPPs supporting regional connectivity have been recognized as a powerful vehicle to bring down the cost of international bandwidth and improve affordability of high-speed Internet. Examples of such PPPs are the on-going IFC-supported Eastern Africa Submarine System (EASSy) and the Bank's Regional Communications Infrastructure Program (RCIP) in East and Southern Africa. Together, EASSy and RCIP have triggered a race for connectivity in Eastern and Southern Africa with prices set to decrease five-fold or more. The approach is being replicated and adapted in Central and Western Africa, Western Africa, the Caribbean and the Pacific. Over the past ten years, IFC has also invested US\$3.3 billion, which are committed in form of senior loans, equities, guarantees, and risk management products. Of the amount, US\$1.8 billion are committed in 32 low-income countries (the equivalent of 84 ICT projects that are mainly geared towards extending mobile and data networks). For the same period, IFC helped mobilize over US\$1.1 billion for the account of syndicated banks in the form of B loans and guarantees, out of which US\$460 million have been committed in low-income countries. Additionally, IFC has been expanding access to ICT by developing and replicating Advisory Services programs, such as Village Phone, which are now being rolled out in multiple countries. In 30 of the 32 low-income countries where IFC has engaged, the Bank had been active in ICT policy and sector reform. Similarly, over the past ten years, MIGA has issued 38 guarantee contracts for 21 ICT projects (including 12 in Africa) and close to US\$1.3 billion, focusing mainly on connectivity. In relative terms, the ICT portfolio accounted for 6 to 10 percent of MIGA gross exposure and contributed to support about US\$6 billion of foreign direct investments over the period.