Connecting the unconnected

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Emerging markets

In the Western and developed markets we went through a period from the minicomputer manufactured by DEC to the first microcomputer that led to the proliferation of personal computers since 1975. From the desktop, to the laptop, to the mobile phone, to the smartphone. All of these steps were more or less "logical", incremental steps and the development from the first minicomputer to the smartphone took about 35 years. Quite a long time – I wasn't even born 35 years ago.

How different this is in emerging markets such as Africa where relative penetration of pc's and laptops is extremely low. However, looking at mobile phones, emerging markets are picking up at full speed. In the year 2000 emerging markets accounted for around one quarter of the world's 700 million mobile connections. By the beginning of 2009 their share had grown to three quarters of a total that which by then had risen to between 3.6 and 4 billion (World Bank; ITU). To illustrate this huge growth: India added 15.6 million new subscribers to mobile networks in March 2009 alone. And Africa is the region with the fastest rate of subscriber growth (The Economist, 26th September 2009). The GSMA, an industry group, mentioned in their reports that the total number of mobile phone subscribers will grow to over 5 billion by 2013 with half of these new users in China and India alone.

It's easy to see that most emerging markets have leapfrogged the personal computer and laptop stage and are moving instantly to the mobile phone and smartphone.

One of the key underlying reasons for this huge uptake of subscribers in emerging markets has to do with the GDP and Total Cost of Ownership (TCO) of a handset. When you earn the equivalent of US$ 2,50 per day, you can simply not afford a US$ 250 laptop, next to making sure your family has enough to eat and drink and have your children visit a school. However, the market has shown that buying a phone with a price point of around US$ 30 is a possibility. In 2005 Motorola won a tender issued by the GSMA to manufacture a US$ 30 handset and the company went on to sell around 20 million of these Ultra Low Cost (ULC) handsets in emerging markets. Since then, various operators and manufacturers have taken up the challenge to produce handsets that would retail for between US$ 10 and US$ 15. Most recently the world's largest producer of handsets – Nokia – called for mobile TCO to fall to around US$ 5 or less in order to meet the basic communications and information requirements of some of the poorest people in the world (Juniper Research, 2009). Recently, large Chinese manufacturers like ZTE and Huawei have come into play here. Initially supplying low cost wireless equipment to mobile network operators in emerging markets where governments and telecom companies found Ericsson, Nokia Siemens Networks and Alcatel-Lucent equipment too expensive, both companies have also started to sell high quality, low-cost handsets to these carriers. Driven by the explosive growth in this segment, ZTE became the world's sixth-largest handset maker in 2008, and its goal is to become the number three within 5 years.

I think these numbers serve well to illustrate how profound the impact of reducing the cost of a basic handset has been. Driving down the TCO has enabled millions and millions in less fortunate circumstances to gain access to telecommunications for the very first time!

Welfare

Was the evidence on economic evidence mostly anecdotal several years ago, nowadays there exists more and more evidence that mobile phones really promote economic development. Two interesting cases were recently described in The Economist (September 26th 2009).

The first is a study of fish prices on the coast of Kerala, in southern India, carried out in 2007 by Robert Jensen, an economist at Harvard University. Basically he showed that access to mobile phones made markets much more efficient. Through their mobile phones Fishermen could call several markets and sail to that market that had 1) demand for the fish caught and 2) offered the best price for their fish. The study showed that market prices slipped 4% and fishermen's profits increased by 8%. Mr. Jensen concluded that "information makes markets

work, and markets improve welfare".

A second study, carried out by Jenny Aker of the University of California at Berkeley in 2008, showed the effects of the mobile phone on grain prices in Niger between 2001 and 2006. Her conclusions are similar to the results shown above: prices for consumers were lower and profits for traders higher.

Several companies are investing heavily in commerce services that make markets transparent and apart from these companies making some money, they allow the people in emerging markets to increase their welfare. Reuters is doing so with Reuters Market Lite in India which offers text base market information on certain crops. In Uganda it is a cooperation between MTN (Africa), Grameen (Bangladesh) and Google who jointly offer agricultural and market information via mobile phones.

These are just some examples that are quantified, but there are many more examples of improved welfare that are less easy to quantify, but do certainly have a positive impact. Apart from political and social advantages such as reporting human-rights violation (Kenya) and also election monitoring (Nigeria, India), there is also evidence that mobile phones positively impact on healthcare – by sending text messages to subscribers with information on HIV for example, or send patients messages to remind them to take their medicine. Another area that has really changed since the arrival of the mobile phone is banking. Traditionally you need to have an address and you need to be creditworthy in order to open a bank account. In most regions in Africa for example, this is not possible and therefore most people never had a bank account. Now with the mobile phone and the possibility to send money (sometimes in the form of airtime) to other peoples mobile phones, suddenly the "unbanked" are "banked".

Intivation – mobilizing the sun

Well, where does Intivation, the company that I co-founded in January 2003, tie into all of this? It is actually quite simple: now that the mobile phone has become the backbone of many emerging economies, powering these devices has become one of the main challenges.

Traditionally these markets have a very rudimentary power network – or in many remote regions none at all – it could be diesel generated and only operating a few hours of every day. That is why many people in rural areas in India and Africa are forced to visit the closest village once or more than once every week to get their mobile phone charged. They pay between US$ 0.10 and US$ 0.50 for a full charge of their battery and have to travel all the way back home again. If you don't have power in your battery, you will not be able to make calls (to see where you can get the best price for your fish), you will not be able to receive texts with prices and you will not be able to pay through your mobile phone. In other words: no battery, no money, no food.

With the proprietary technology that we developed at Intivation we have made it possible to solar power mobile phones. Incidentally, the use of solar cells in most emerging markets is quite straightforward as there is plenty of sun all year round! We are currently integrating our technology into several so called universal solar chargers; separate chargers that you connect to your mobile phone by a micro- or mini-USB. Like this more than one family can use the same product, making an external solar charger very feasible for the very poor. More sophisticated is the mobile phone that has a fully integrated solar cell in the backside of the phone, and our technology lives on the main board inside the phone. We have successfully launched these solar powered mobile phones in spring of this year and we have sold over half million converters to mobile phone manufacturers such as ZTE and Foxconn in the last few months, the phones developed by these partners have been launched in places like Kenya, Brazil, Uganda, and Indonesia.

Yes, we're in it to build a profitable business doing this, but at the same time myself and the rest of the team – spread out from Amsterdam to Nairobi, Rio and Hong Kong – are also in this for the social impact we're making. The combination of being a commercially viable company and at the same time doing our little good for the world by being green and helping out people who need it, causes a good vibe and makes it a lot of fun to work for.

We have spent the last years extolling the virtues of integrating solar power into mobile devices and bolstered by the current success of the products that carry our technology, we feel confident that in the future a good percentage of all mobile devices will have integrated solar power. In the long run, not only will it help connect the unconnected – e.g. bring mobile communications to the bottom of the pyramid – but even in highly urbanized societies there are huge benefits to having an additional power source that is independent from the electricity grid. Solar power is a renewable, sustainable source, and available in sufficient amounts in most parts of the world. It will give people around the world who've come to rely on electronic devices a highly reliable and convenient power source. And that is just one area where we can make a difference. We see possibilities in fields as diverse as medical applications, ambient technology or even security systems. But for now we are fully dedicated to bringing more solar powered low cost phones to emerging economies and play our part in making sure that anyone on the planet can reap the benefits of mobile communications. ◎

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