

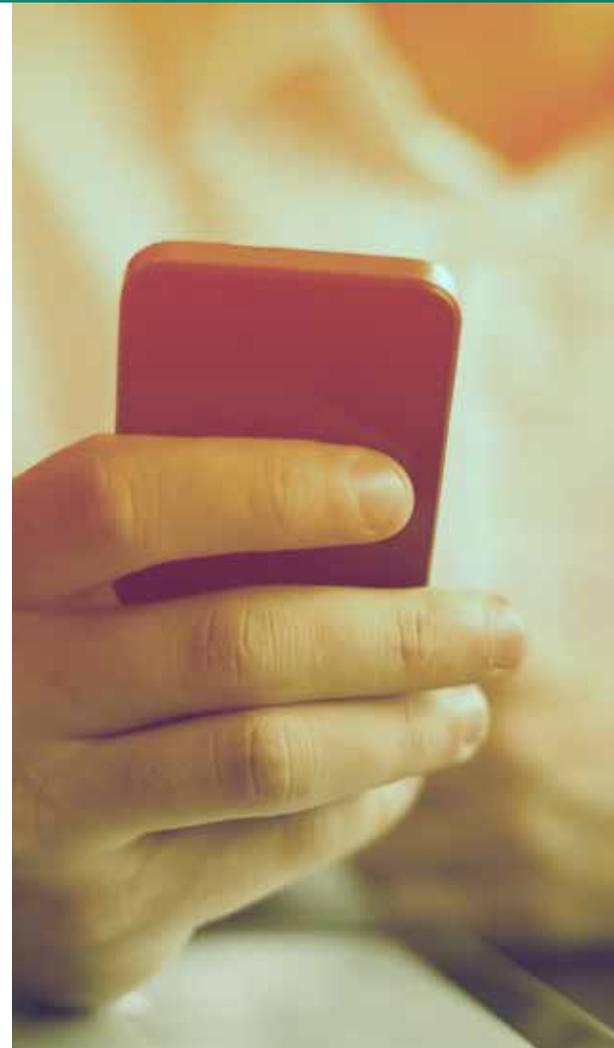
PERSPECTIVES

December 19, 2014 // Ben Bajarin

The Next Phase in Mobile

The first phase of mobile is nearly complete. What's next?

The first phase of mobile is nearly complete. Two billion people are now connected to the internet with a pocket computer. More people use their smartphones to regularly access and interact with the internet, software, and services than PCs. The PC's growth is flat to declining and likely has found its niche as a business/hyper-productivity tool. The larger world has moved beyond the PC. The first phase of mobile was bringing it to the developed world in countries like the US, Japan/South Korea, UK/Europe, and tier 1-3 China. We are nearing the end of this phase and it is time to look to where the next phase of mobile will take us.



Low-Cost Hardware

There is no escaping the reality that, in the first phase of mobile, hardware companies could be successful selling smartphones above \$400. For many in developed markets or those with high disposable income (approximately 800m-1 billion people), that will continue to be the case. But, as we connect the next two billion people, the availability of low cost hardware will be the catalyst.

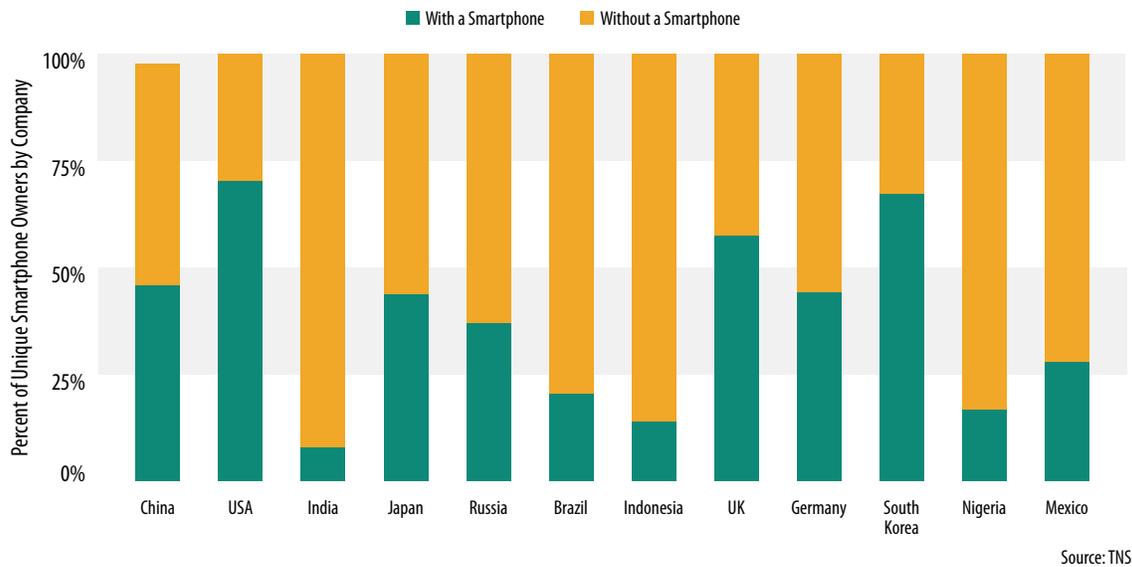
With the current hardware cost trends, I estimate by 2020 there will be smartphones on the market costing \$20 or less. The vast majority of smartphones sold to the next two billion people will cost less than \$100. This reality will challenge to their core the many tech companies who succeeded in the first phase.

Connecting this next phase of consumers means we are going well beyond PC literate and even tech literate people. With an installed base of just over 1.5 billion PCs, a healthy percentage of smartphone owners in the first phase probably had some level of PC and technical literacy. Consumers connecting during this next phase will have little to no tech proficiency and questions remain as to literacy in general in many rural areas of the world. Given most of these low cost smartphones will run Android, the distinct difference between customers in the first phase and the second phase will likely create a fascinating conundrum for Google.



Sub \$70 Smartphones from India

Low cost smartphones will help us to not just take the next two billion people mobile but help them get on the internet for the first time. **It is this low cost hardware which will bring more people online in the next five years than the PC did in the previous 30.**



Google's Android Conundrum

There are many challenges facing Google in this next phase and navigating them will be critical. During the first phase, Google's business model worked due to the economic status of many current Android customers. As we look at Google's active installed base today, we have to realize that, from an advertising business model viewpoint, they have, at this moment, the most profitable customers they will ever have. Today's nearly two billion smartphone users are made up largely of the mid-to-high end income tiers. Android has just over a billion smartphone users, and iOS and Android Open Source (AOSP) in China both have around 400m smartphone users to date. This makes up the near two billion smartphone computers in use. The challenge for Google is the next two billion will connect with extremely low cost hardware and be much lower value customers for their advertising business model.

The first issue they have will be Android itself. Google's approximate one billion plus current Android users are mature or quickly maturing. Their demands with the phone and the operating system itself are evolving and their expectations are rising. Android also has to keep pace with iOS to a degree and Apple is not sitting still in mobile computing. How does Google continue to have Android appeal to this mature customer AND a first time owner of a computer of any type in rural Africa? The makeup of consumers in this next phase of mobile will be dramatically different and have very different needs than those who connected in the first phase. One of the biggest questions in this next phase of mobile is, what happens to Android? We can see how this tension comes into light with the extreme differences in customers for Google between the first and second phase

of mobile. It is probable Google needs to bifurcate Android and have offerings for vendors or device specs above a certain price range and with a certain capability set and another for devices and customers with lesser capabilities. While it is too early to know for sure, we can speculate this is exactly what Google is doing with Android One. Perhaps we are seeing the early bifurcations of Android where Android One is the version Google leads with for the next phase in mobile. Or perhaps a version of ChromeOS is Google's end game for the lower tier users in the next phase of mobile.

Ultimately, Google's business model is in question. In terms of average revenue per user, Google's existing base is worth the most. How many low ARPU customers will Google need to equal a high ARPU one? Do they need 5-1? 10-1? Are there even enough people on the planet left to connect to get them that scale?

Connecting the next two billion consumers to the internet is critical, but whether or not it will be profitable, or rather who stands to profit, is a huge question.



“Ultimately, Google’s business model is in question”

Localization vs. Globalization

Another major debate happening is to what extent will local smartphone manufacturers rule their regions? This first became obvious as we witnessed Samsung face issues with their brand and smartphone sales in markets like China, where Xiaomi, a local Chinese vendor, has surpassed Samsung as the largest smartphone vendor in quarterly sales. Other companies like Lenovo are eating into Samsung's share as well. Every indication is trending toward local hardware OEMs growing in size and continuing to challenge foreign brands.

What makes this new dynamic fascinating is the size of markets like China and India are enough it doesn't matter if local companies go global. It is likely we could have half a dozen or more local vendors each shipping 20+ million smartphones a quarter ONLY to their region. The dynamic changes from the way it has in the past where only one or two vendors ship that many smartphones every quarter let alone into just one region.

Local players appear to have several advantages over foreign ones. First, they see the trends on the ground sooner and can move faster to adopt and integrate them. Second, they are closer to local service providers and can also integrate key local services faster. Third, there appears to be growing local pride we are sensing in both China and India for their regional technology. It seems more and more consumers are wanting to support their home grown companies over foreign ones. We call this trend “home field advantage” and it is one to watch.

Interestingly, this dynamic of local vs. global has not quite impacted Apple in China. It is hard to speculate if it ever will, although this is a key debate given the importance of China to Apple. What is allowing Apple to maintain its allure in China is that Apple is viewed as a luxury brand more along the lines of Burberry and Louis Vuitton. Apple sits among aspirational brands in a way no other technology company in China does. This allows Apple some leverage and, in a culture like China, it is likely sustainable. Samsung started in China with more low end products and they attempted to become aspirational but it never panned out because of their roots as a low cost cell phone manufacturer. By playing globally as a luxury brand, Apple has a sustainable foundation against some of the home field advantage dynamics. Whether or not a local brand can rise and compete with Apple as a premium player remains to be seen.

Business Model Innovation

A key part of the second phase in mobile is going to be business model innovation around hardware and software/services for the mobile internet. Outside of Apple, it will become increasingly difficult to sustain a business model monetizing hardware alone. This is where a company like Xiaomi, or even Amazon, could be well positioned from a business model standpoint. Companies who begin as a service(s) provider are in a good spot to leverage their business model to become a hardware-as-a-service provider. This does not mean the hardware is given away for free but it does mean the pressure is not on monetizing hardware — which allows for more aggressive pricing.

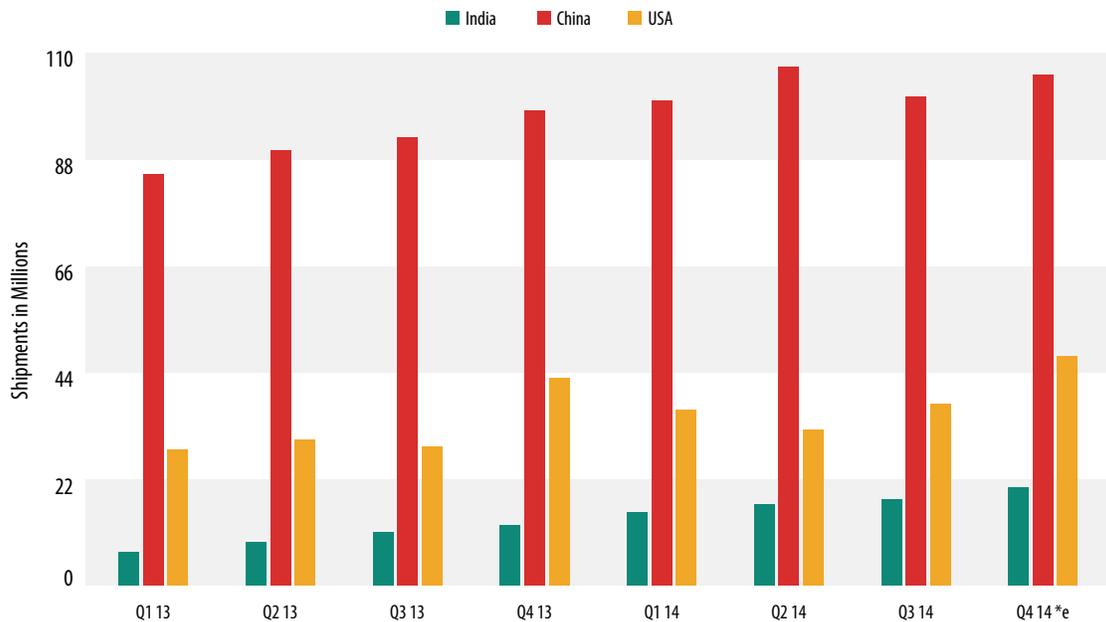
While the US remains a key market to watch and study, I am not convinced it is the market where we will continue to see innovations in and around mobile business models first. Instead, I will be looking more to other countries like China and India, which are largely becoming “mobile first and only” areas. These regions will start solving problems from a mobile first vantage point, in a way areas with high PC penetration and usage, like the US, will not.

Chinese companies get pilloried by those in the West for blatantly copying US companies' hardware and software. When you look at the technology and internet market as it has developed in China, it makes sense there was no real reason to innovate when they could just copy what works, make money, and have a successful business. But outside of hardware, and with companies like Alibaba, TMall, Taobao, Weibo, AliPay, and more, we are seeing some real innovation around software and services as well as new mobile internet interaction models from China. We are also seeing business model innovation from China in ways we are not seeing in the West, because China is coming at this from a mobile first vantage point. Which begs an interesting question of, when do US companies start copying the things we see in China, as the US itself moves to a mobile primary market place.

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India will play a key role in this next wave of mobile. There are infrastructure issues that need to be solved but the Indian market will be a key enabler of the low cost smartphone as the market for premium in India is much smaller than other large markets like the US and China. India is behind in infrastructure with less than 5% of existing smartphone owners on 4G networks. Compared to over 30% of consumers in US on 4G networks and over 15% in China.

India is going to ramp fast, providing a land of opportunity and new challenges with regard to the mobile Internet. However, India is where China was 3 years ago and may likely benefit from the best of the West hardware concepts and the best from China mobile internet ideas as both get vetted and perfected before they penetrate mainstream India.



Source: IDC, CounterPoint, Creative Strategies, Inc.

*Our model showing India catching up to the US in quarterly smartphone shipments and likely to pass the US in 2015.

The Brains Behind The Next Wave

Currently, smartphone vendors ship around 300m smartphones each quarter on a world wide basis. That number will continue to increase as we go from 1.1 billion smartphones sold a year to closer to two billion smartphones sold each year somewhere around 2018-2019. 300m smartphones a quarter will eventually reach the 400-500m smartphones each quarter. What makes this interesting is all the major semiconductor factories making the chips that power the smartphones of the current 300m smartphones per quarter are presently maxed to capacity. If factories are maxed today trying to meet the demand of 300m smartphones per quarter, how will they meet demand when it moves from 300m to 500m? This is a crucial yet rarely discussed reality with significant implications to the future of consumer electronics.

Furthermore, a 400-500m shipment per quarter figure assumes refresh rates of smartphones stays around the two year mark. Once phones are sold for less than \$30, could they become an annual purchase? If so, it further complicates our chipset manufacturing capacity issue by conceivably pushing quarterly smartphone shipments beyond 500m.

Semiconductor factories who play their cards right and scale accordingly are well positioned to be in demand for quite some time.

Embedded Security

Privacy and security will become increasingly crucial areas during this next phase in both developed and emerging mobile markets. As the sophistication of our mobile devices grows and insinuates itself into more of our finance and identity, security will become essential. Whether or not consumers demand it or are cognizant of it, security components will begin to be embedded into all smart devices by default. This includes hardware or silicon encryption, software, and biometrics will at some point become default features of our mobile devices.

The key to a more secure world is to integrate deeply and make it seamless and, to some degree, invisible to the end user. This is where companies like Apple will have a lead but inevitably over the course of the next ten plus years of the next phase, embedded security will be commonplace.

Consumer Packaged Technology

At least in the beginning of the next phase, we will see a plethora of smartphone OEMs shipping significant quarterly volumes. They will be made up largely of Chinese and Indian brands. Once growth slows, it will be interesting to see if there is consolidation and, while there still will be many brands, perhaps they are mostly owned by only a few parent companies. In this dynamic, the technology industry could begin to shape up like the consumer packaged goods.

As smart devices come down in price, beginning with smartphones but also extending to wearable technology and even into mainstream connected appliances in developed parts of the world, we may very well see mega-corporations emerge and own or create many local tech products — each targeted to a region along with localized marketing and internet services. A tech version of this chart may exist in 20 years.



Summary: The World is Going Mobile

As I look at where the technology industry is going, it is clear it is increasingly mobile. *What is after mobile? More mobile.* What the shape and form of those mobile devices will be is another question but they will still be mobile devices. How we interact with software, services, the internet, each other, may all look different than today but it will still be within a mobile paradigm. Mobile is becoming the foundation for everything — hardware, software, and services.

When you look back and study mega-trends that have moved markets since the beginning of the industrial revolution, we notice a series of innovations become adopted, evolve, and then lay the foundation for the next major wave of innovation. Many critical steps happen before a new era of innovation takes shape. I believe we are laying the foundation for the next era of mobile computing. Powerful semiconductors coming to objects that are not fixed to the wall or a desk will bring about massive opportunities in the global mobile computing era where nearly everyone on the planet has access to computing in some form.

Intelligence will come, not just to our pocket computers, but the things we wear and even the things we ride in. Having a supercomputer in our pockets that can interact with a plethora of smart objects on our person, in our homes, in our cities and in our offices will dramatically change the landscape. All of this is fuelled by the foundation of today. Mobile devices will act as the primary access points for nearly all types of personal computing.