areppim: information, pure and simple

insight

13 December 2016
http://stats.areppim.com

# Mobile Phones 2016: A Bellyful of Technology

## Hitting the Ceiling

By the end of 2016 there were 7.4 billion mobile subscribers worldwide, corresponding to a global penetration of 93%, reports ITU (International Telecommunications Union). This averages 9.96 mobile phones for 10 people, or about 1 device per living person.

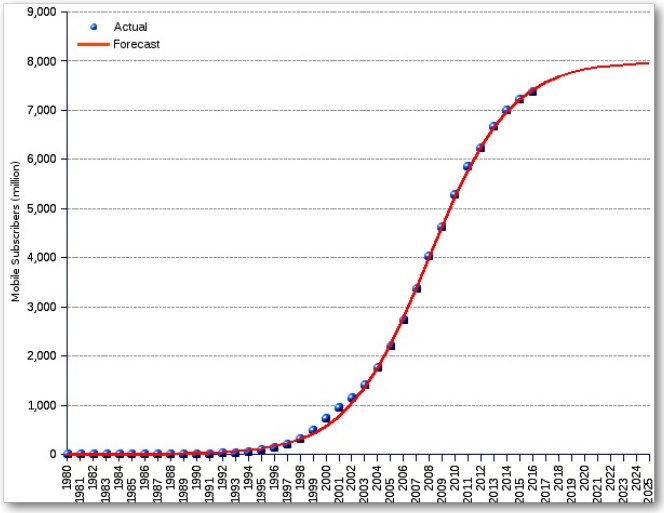


*Fig.1: Mobile subscriptions: actual and forecast.*

Our new forecast (Figure 1 and Table 1) shows ITU's data of actual mobile subscriptions from 1980 through 2016, represented by blue dots, and areppim's forecast till 2025, represented by the S-shaped red line. The model anticipates a global market size of 8 billion subscribers by 2025, corresponding to 99% of the projected world population, and close to market saturation.

Despite the fact that, at the end of 2016, there are almost as many mobile-cellular subscriptions as people on earth and 95 per cent of the global population lives in an area that is covered by a mobile-cellular signal, mobile usage is not yet evenly spread. Indeed, while many people have multiple subscriptions or devices, especially in the developed economies, a large chunk of the population, especially in the developing economies, has not access to mobile services, mostly because many people simply cannot afford the cost.

## Highlights

ITU's "Measuring the Information Society" report issued in 2016 provides a summary of the mobile technology current status. Some highlights:

- Many people still do not own or use a mobile phone. In developing economies, close to 20 per cent of the population, on average, are still not using a mobile phone.
- Most people who do not own or use a mobile phone are among the youngest (5-14 years old) and the oldest (over 74 years old) segments of the population.
- Significant gender gaps exist in mobile-phone adoption and the gap is larger for mobile-phone ownership than for mobile-phone use. Also, people living in rural areas are less likely to own or use a mobile phone than people in urban areas.
- Mobile-cellular prices continued to fall in 2015, and more steeply than in previous years. The Asia and the Pacific region has the lowest average price for mobile-cellular services of all regions.
- Fixed-broadband prices continued to drop significantly in 2015 but remained highest, and clearly non-affordable, in a

number of less developed countries.

- The decrease in mobile-broadband prices goes hand in hand with an increase in the intensity of use.
- People in most low-income countries get lower speeds and quality for their money.
- Mobile-broadband is cheaper and more widely available than fixed-broadband, but is still not deployed in the majority of less developed countries.
- Affordability, mainly the cost of the handset, rather than the cost of the service itself, is the stronger barrier to mobile-phone ownership in several developing economies.

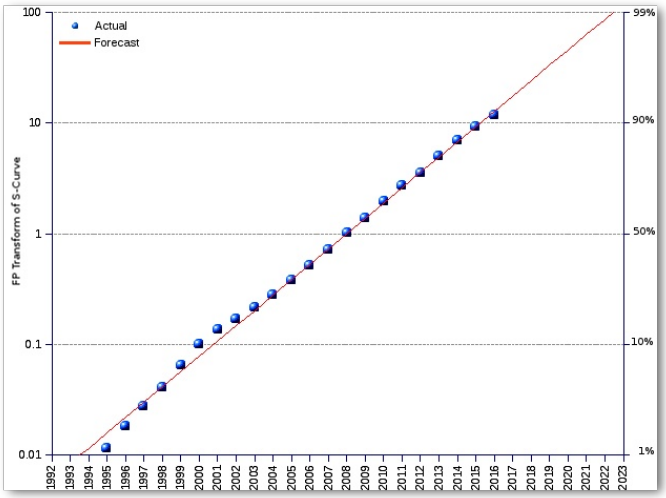


*Fig.2: Mobile phone penetration above 90%.*

## A Mobile-encumbered World

The market penetration of the device grew exponentially, at an annual average rate of 53.8%, much faster than the population, until 2008, when it reached the inflection point (Figure 2 and Table 2). Thereafter, it initiated a steady decline, at the comparatively low annual average growth rate of 6.88% for the period 2009 to 2016, slowly approaching final saturation.

Market saturation may occur at 8 billion subscriptions, somewhere around 2020. The straight red line of the chart (Fisher-Pry normalization of the logistic curve, rendering it a straight line) clearly shows the fast growth of cellular phones to saturation level, with the midpoint in 2008, and a current penetration of 93%. From now on, further growth will mostly be commanded by sheer population growth or alternatively by a technology quantum leap capable of taking the world out of the strict cellular phone paradigm. International Telecommunications Union (ITU) seems to consider that mobile broadband Internet services can do it.

## Unclear Future

All of the above call for a threefold comment:

- First, what do we really mean by mobile phone? The 1980 cell phone was a cumbersome device, offering a plain-vanilla voice telephony service, limited to the geography covered by the specific mobile operator until the introduction of the digital GSM technology in 1991. It evolved thereafter to include the exchange of data, pictures and multimedia, and an array of services such as Global Positioning System (GPS), location-based services or video-conferencing. Today, mobile phones are not even named as such, but rather known as smartphones, They can do almost anything one can dream of. They compete with computers, video recorders, high-definition cameras or location positioning devices, and are used for a wide range of tasks, including but not primarily to place a telephone call. Such an evolution raises a technical issue. It is not statistically congruent to treat

different objects as a single statistical unit — which makes statistical analyses debatable.

- Second, the ITU's highlights according to which many people still do not fully benefit from the mobile technology potential, make believe that the changes induced by the mobile phone in the way many people live, communicate, and entertain themselves, are such a great benefit for mankind that everybody should drool with envy. Alas, the real advantage for the user is mitigated by the congestion of the often worthless, undesired, unpleasant, intrusive, and unsafe services foisted on him by a myriad of service providers recklessly determined to monetize any and everything. From a communications tool that it was built to be, the mobile phone became eventually a device designed to create dependency, and to transform the casual user into a mere 'hit' unit that, added to many others, is expected to generate streams of revenue for the mobile value chain components. Instead of a liberating, it is rather a debasing device.
- Third, the market is saturated and sales growth depends less of targeting yet untapped segments, which are mostly unprofitable or insolvent as suggested by the ITU report, than from grabbing market share from competitors. The turnover of mobile vendor leaders, the downward pressure on handset prices, and the drive to differentiate the offerings by cramming the devices with marginally attractive features are symptoms of the predicament. It is unclear what suppliers will do to get out of the rut. Survival is becoming a big concern.

*Reference :*

*ITU International Telecommunications Union [http://www.itu.int/home/]*

*Source :*

*http://stats.areppim.com/stats/stats_mobilex2016.htm*
*http://stats.areppim.com/stats/stats_mobilexpenetr.htm*

| Mobile Cellular Phone Subscribers (million) | | |
|---|---|---|
| Year | Actual | Forecast [1] |
| 1980 | 0.02 | 1.07 |
| 1981 | 0.06 | 1.48 |
| 1982 | 0.1 | 2.03 |
| 1983 | 0.15 | 2.79 |
| 1984 | 0.32 | 3.83 |
| 1985 | 0.75 | 5.27 |
| 1986 | 1.45 | 7.25 |
| 1987 | 2.55 | 9.96 |
| 1988 | 4.33 | 14 |
| 1989 | 7.35 | 19 |
| 1990 | 11.21 | 26 |
| 1991 | 16 | 35 |
| 1992 | 23 | 49 |
| 1993 | 34 | 67 |
| 1994 | 56 | 92 |
| 1995 | 91 | 125 |
| 1996 | 145 | 171 |
| 1997 | 215 | 234 |
| 1998 | 318 | 318 |
| 1999 | 490 | 431 |
| 2000 | 738 | 581 |
| 2001 | 961 | 777 |
| 2002 | 1,157 | 1,031 |
| 2003 | 1,417 | 1,352 |
| 2004 | 1,763 | 1,749 |
| 2005 | 2,205 | 2,222 |
| 2006 | 2,745 | 2,767 |
| 2007 | 3,368 | 3,368 |
| 2008 | 4,030 | 4,000 |
| 2009 | 4,640 | 4,631 |
| 2010 | 5,290 | 5,232 |
| 2011 | 5,863 | 5,777 |
| 2012 | 6,232 | 6,250 |
| 2013 | 6,666 | 6,647 |
| 2014 | 7,006 | 6,968 |
| 2015 | 7,216 | 7,222 |
| 2016 [2] | 7,377 | 7,418 |
| 2017 | | 7,568 |
| 2018 | | 7,681 |
| 2019 | | 7,765 |
| 2020 | | 7,828 |
| 2021 | | 7,874 |
| 2022 | | 7,907 |
| 2023 | | 7,932 |
| 2024 | | 7,950 |
| 2025 | | 7,964 |
| Average annual change rate | 42.13% | |
| [1] Logistic growth function | | |
| [2] ITU's estimates. | | |

*Table 1: Mobile phone subscriptions: actual through 2016, and forecast until 2025.*

| Mobile Cellular Phones<br>Global Market Penetration<br>1980 - 2023 | | | | | | |
|---|---|---|---|---|---|---|
| Year | World population (million) | Actual | | Forecast[1] | | |
| | | Subscribers (million) | Percent of population | Subscribers (million) | Percent of population | Percent market saturation |
| 1980 | 4,449 | 0.02 | 0.001% | 1.07 | 0.02% | 0.01% |
| 1981 | 4,528 | 0.06 | 0.001% | 1.48 | 0.03% | 0.02% |
| 1982 | 4,609 | 0.1 | 0.002% | 2.03 | 0.04% | 0.03% |
| 1983 | 4,692 | 0.15 | 0.003% | 2.79 | 0.06% | 0.03% |
| 1984 | 4,776 | 0.32 | 0.01% | 3.83 | 0.08% | 0.05% |
| 1985 | 4,864 | 0.75 | 0.02% | 5.27 | 0.11% | 0.07% |
| 1986 | 4,953 | 1.45 | 0.03% | 7.25 | 0.15% | 0.09% |
| 1987 | 5,045 | 2.55 | 0.05% | 10 | 0.20% | 0.12% |
| 1988 | 5,138 | 4.33 | 0.08% | 14 | 0.27% | 0.17% |
| 1989 | 5,230 | 7.35 | 0.14% | 19 | 0.36% | 0.24% |
| 1990 | 5,321 | 11 | 0.21% | 26 | 0.49% | 0.32% |
| 1991 | 5,409 | 16 | 0.30% | 35 | 0.66% | 0.44% |
| 1992 | 5,495 | 23 | 0.42% | 49 | 0.89% | 0.61% |
| 1993 | 5,579 | 34 | 0.61% | 67 | 1.20% | 0.84% |
| 1994 | 5,661 | 56 | 0.99% | 92 | 1.62% | 1.15% |
| 1995 | 5,742 | 91 | 1.6% | 125 | 2.18% | 1.57% |
| 1996 | 5,821 | 145 | 2.5% | 171 | 2.94% | 2.14% |
| 1997 | 5,899 | 215 | 3.6% | 234 | 3.96% | 2.92% |
| 1998 | 5,975 | 318 | 5.3% | 318 | 5.32% | 3.98% |
| 1999 | 6,051 | 490 | 8.1% | 431 | 7.12% | 5.39% |
| 2000 | 6,128 | 738 | 12.0% | 581 | 9.48% | 7.26% |
| 2001 | 6,204 | 961 | 15.5% | 777 | 12.53% | 9.72% |
| 2002 | 6,281 | 1,157 | 18.4% | 1,031 | 16.42% | 12.89% |
| 2003 | 6,358 | 1,417 | 22.3% | 1,352 | 21.27% | 16.91% |
| 2004 | 6,436 | 1,763 | 27.4% | 1,749 | 27.17% | 21.86% |
| 2005 | 6,514 | 2,205 | 33.9% | 2,222 | 34.11% | 27.78% |
| 2006 | 6,593 | 2,745 | 41.6% | 2,767 | 41.97% | 34.60% |
| 2007 | 6,673 | 3,368 | 50.5% | 3,368 | 50.47% | 42.11% |
| 2008 | 6,754 | 4,030 | 59.7% | 4,000 | 59.22% | 50.00% |
| 2009 | 6,835 | 4,640 | 67.9% | 4,631 | 67.76% | 57.89% |
| 2010 | 6,916 | 5,290 | 76.5% | 5,232 | 75.64% | 65.40% |
| 2011 | 6,998 | 5,863 | 83.8% | 5,777 | 82.55% | 72.22% |
| 2012 | 7,080 | 6,232 | 88.0% | 6,250 | 88.28% | 78.14% |
| 2013 | 7,162 | 6,666 | 93.1% | 6,647 | 92.80% | 83.09% |
| 2014 | 7,244 | 7,006 | 96.7% | 6,968 | 96.19% | 87.11% |
| 2015 | 7,325 | 7,216 | 98.5% | 7,222 | 98.59% | 90.28% |
| 2016 [2] | 7,405 | 7,377 | 99.6% | 7,418 | 100.18% | 92.74% |
| 2017 | 7,484 | | | 7,568 | 101.12% | 94.61% |
| 2018 | 7,563 | | | 7,681 | 101.56% | 96.02% |
| 2019 | 7,640 | | | 7,765 | 101.64% | 97.08% |
| 2020 | 7,717 | | | 7,828 | 101.44% | 97.86% |
| 2021 | 7,792 | | | 7,874 | 101.04% | 98.43% |
| 2022 | 7,867 | | | 7,907 | 100.52% | 98.85% |
| 2023 | 7,940 | | | 7,932 | 99.90% | 99.16% |
| Annual average growth, 1980-2008 actual: 53.8%. | | | | | | |
| Annual average growth, 2009-2016 actual: 6.88% | | | | | | |
| Annual average growth, 1980-2013 forecast: 3.92% | | | | | | |
| [1] Logistic growth function | | | | | | |
| [2] ITU's estimates. | | | | | | |

*Table 2: Mobile phone penetration: already above 90%.*