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GUEST EDITORIAL

## ‘Indovation’ for affordable excellence

The Indian dream should not be about ‘some Indians’ doing well, but ‘India’ doing well. Making high technology work for the rich is easy. Can Indian scientists make high technology work for the poor? What follows are my views about the emergence of a new paradigm of ‘affordable excellence’, which achieves precisely this.

- Can we make a high-quality hepatitis-B vaccine priced at US\$ 20 per dose available at a price that is 40 times less?
- Can we make a high-quality artificial foot priced at US\$ 10,000 available at a price that is 300 times less?
- Can we make a high-quality cataract eye surgery available, not at US\$ 3,000, but a price that is 100 times less?

Incredible as it may sound, all such impossible looking feats have been achieved by Indian innovators through ‘Indovation’, which is achieving what at first sight looks impossible, namely ‘affordable excellence’. We think that what is affordable cannot be excellent. And what is excellent cannot be affordable. But this is not necessarily true.

Let me explain the concept of affordable excellence through a personal experience. There is now an Anjani Mashelkar Inclusive Innovation Award in my mother’s name. The award is not for the ‘best’ practice, but for the ‘next’ practice.

A 28-year-old award winner, Myshkin Ingawale found that women in villages were reluctant to give their blood. So he decided to develop a non-invasive diagnostic tool to detect haemoglobin. He used photoplethysmography, spectrophotometry and an advanced software for photon scattering to create TouchHb. This was technological ‘excellence’ and not jugaad. Furthermore, he reduced the cost per test by more than tenfold to Rs 10, thus making it ‘affordable’. This is ‘affordable excellence’.

Innovations leading to ‘affordable excellence’ should not just be low-performance, cheap, knock-off versions of rich country technologies. Can Indian scientists harness truly sophisticated science or technology to achieve high quality goods and services that are affordable to many, not just a privileged few?

Late C. K. Prahalad and I wrote a paper titled ‘Innovation’s Holy Grail’ in *Harvard Business Review* (*HBR*; July–August 2010), where we discussed how India has developed its own brand of innovation – getting more from less for more people – not just for more profit. This is now called the MLM paradigm, i.e. ‘More from Less for More’. This paper provoked worldwide discussion and debate. Only six months after the Prahalad–Mashelkar paper was published in *HBR*, the World Economic Forum held a special session on ‘More from less for more’ on 16 November 2010!

In this paper, we had first analysed the contextual factors that had facilitated India’s ability to achieve ‘affordable excellence’.

First, India experimented with socialism for more than four decades. This kept out foreign capital and technology. But it spurred local innovation. India developed some of the lowest cost nuclear power, space launching vehicles, supercomputers, etc. The Mars mission, which has sent *Mangalyaan* into space, just cost us US\$ 74 million – not a billion dollars!

Second, the Indian economy did not start growing until the 1990s. So local companies were small. Indian entrepreneurs had to develop skills for undertaking small projects with large capital efficiency; a good habit developed in bad times, which they have maintained in good times too!

Third, local companies were aware that catering only to the rich limited their market. Most targeted the aspiring middle class family, which lived on US\$ 5000 a year. They naturally became experts in producing products that could straddle the whole economic pyramid, from top to bottom.

Fourth, India’s very special innovation mindset. Some audacious Indian leaders questioned the conventional wisdom. The combination of miniscule research budgets, small size, low prices, but big aspirations necessarily created the need to think differently.

The concept of affordable excellence is spreading worldwide now. My TED lecture ([www.ted.com](http://www.ted.com)) on the subject has received more than half a million views and has been subtitled in 23 languages. Why so much interest?

The emerging economies are going for ‘affordable excellence’, because they see that the income inequality between the top and the bottom of the economic pyramid is increasing, leading to social disharmony. Can we create, despite the income inequality, high-quality equality with access to education, health and so on? The answer is, yes. And the way is ‘affordable excellence’.

The best visible example is the spread of mobile phones in India, around 900 million of them, covering slum-dwellers, rickshaw-pullers and so on. This revolution was possible, because of a combination of policy innovation, technological innovation and a unique Indian business model innovation, as Prahalad and I have explained in our *HBR* paper.

From my personal lens, I am seeing this growing awareness about affordable excellence around the world. Global Research Alliance (of which I am the President), became a knowledge partner with Vietnam to design and launch the World Bank-supported US\$ 55 million Vietnam Inclusive Innovation Project. Now other nations want similar projects.

I was invited by the European Commission to write a strategy paper titled ‘Organising inclusive innovation for accelerated inclusive growth’ in May 2013. On 11 March 2014, I gave a talk on ‘Innovation under adversity’ in ‘Innovation 2014’ organized by the European Union (EU) in Brussels, speaking to an audience of around 2000. At the end of the talk, someone asked a question: what does it all mean for EU. But someone else answered it. He said that the thrust of the talk was ‘affordable excellence’ to achieve the magic of high-quality access equality despite income inequality. And EU needs it, as much as India and China do. Look at the income inequality in 28 Member States of EU from top to bottom.

I understand that discussions are currently on for including affordable excellence as a theme in the EU’s Horizon 2020 programme. The EU realizes now that quality, sustainability and affordability together are going to be the key to its competitive advantage, not just quality and sustainability.

Multinational companies are moving towards ‘affordable excellence’. Jeffrey Immelt (CEO, General Electric) had recently said, ‘If we do not come up with innovations in poor countries and take them global, new competitors from the developing world – the Mindray, Suzlon and Goldwind will. That’s a bracing prospect.’ And he is not wrong at all. Look at these examples.

India’s Mahindra & Mahindra sells small tractors to American hobby farmers, challenging John Deere’s market share. China’s Haier has undercut Western competitors in a wide range of products, from air conditioners and washing machines to wine coolers. Haier sold a wine cooler for half the price of the industry leader. Within two years, it had grabbed 60% of the American market.

So Immelt sees the threat and he has jumped into the fray by doing what he calls as ‘reverse innovation’. GE’s Vscan, a portable ultrasound device, was developed in China, not for US\$ 20,000, but just US\$ 1500! The same is true of what GE healthcare in Bangalore did for electrocardiogram (ECG) machines. The team developed a portable, high-quality ECG machine for just US\$ 600, as against the standard US\$ 10,000 machine! Several global companies are now increasingly going for affordable excellence.

Top academics of the world are researching on affordable excellence. Harvard University researchers led by George Whitesides (incidentally the highest cited scientist in the world) have recently developed an inexpensive detector, costing just US\$ 25. The paper is published in *PNAS* (2014, **111**, 11984–11989). This can be used by healthcare workers in the world’s poorest areas to monitor diabetes, detect malaria and environmental pollutants, and perform tests that are done by machines that cost thousands of dollars. Whitesides has shown that ‘relevance’ and ‘excellence’ can go together!

What can we do in India? The Government can incentivize the Indian scientific institutions to focus on affordable excellence. When I was the Director General of CSIR, we had started a public–private partnership called New Millennium Indian Technology Leadership Initiative, which was directed exclusively towards affordable excellence. That was a game-changer. We need to launch national grand challenges for vaccines to therapeutics to tablets. We did make the US\$ 35 Akash tablet, after all. What can Indian industrial enterprises do? Indian Merchants Chamber has started an annual national award of Rs 20 lakh for inclusive innovation. Tata trusts donated to IIT Bombay Rs 95 crore recently for promoting research on ‘affordable excellence’ with an MIT team. Also 2% of the net profit of Indian industry is now reserved for social corporate responsibility. Can we not promote ‘affordable excellence’ which brings equity and quality together?

Indian science does need to look at a true win-win combination of ‘excellence’ and ‘relevance’ together, and especially ‘relevance’ for the resource poor. I firmly believe that Indian scientists have special genes, that can give India the global leadership in ‘affordable excellence’. After all, we have been masters at thriving on the powerful combination of scarcity and aspiration for so long!

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