Getting It Right at the Bottom of the Pyramid

How GE Healthcare Married Community Needs with Corporate Imperatives and Birthed a Business Segment and a Movement

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The Company

GE Healthcare is a $17 billion unit of General Electric, the $180 billion global manufacturer of aircraft engines, generators and turbines, locomotives and other transportation equipment, medical imaging equipment, lighting, home appliances, and electric distribution and control equipment. GE's genesis was the home laboratory of an inventor, Thomas Edison, who ultimately held 1,093 US patents and wanted to solve problems for people: problems related to illumination, power, sound, communication, and transportation. Edison wanted to change lives by making technological advances accessible to average people.

The Country

India is seventh largest country in the world but (at 1/3 the size of the US) contains four times the population - 1.17 billion people. The population density picture is complicated by the country's vulnerability to natural hazards, misdistribution of resources, persistent poverty, lagging infrastructure development, and poor agricultural practices. Life expectancy lags, and gross national income per capita is $1,070.

The country understands that education is key to changing the economics of the country and since independence (1947) has been working to improve access to and the quality of primary and secondary education available to its citizens. As a result of this focus, India today contains a surplus of the highly-trained researchers and engineers: a fact not lost on multinational corporations. Many players, watching labor clusters and calculating wage rates in the US/EU versus India, have made decisions to develop R&D centers in India, including GE.

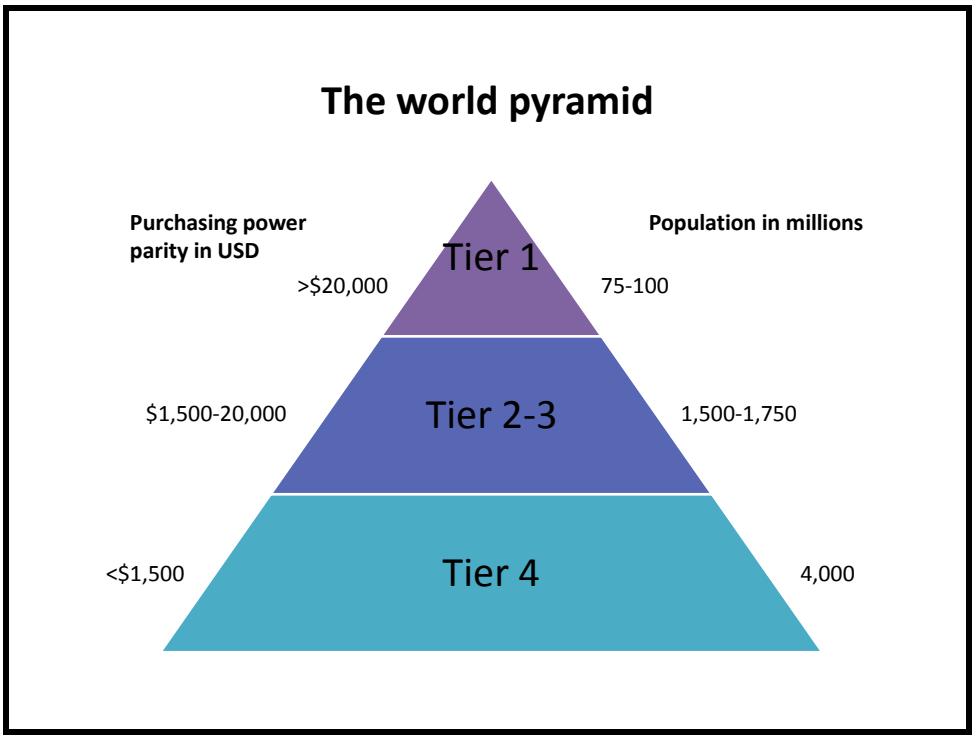
The John F. Welch Technology Centre in Bangalore was inaugurated on September 17, 2000. Spread over 50 acres, the $175 million, 1.15 million sft, John F. Welch Technology Centre houses state-of-the-art laboratories and facilities to conduct research and development for GE businesses worldwide. Today, the center supports 4,200 scientists, researchers and engineers who redefine what is possible in the healthcare, energy, transportation, aviation, financial and entertainment business. In healthcare, R&D initiatives at the center involve work on molecular imaging and diagnostics, capacitive micromachined ultrasound transducers (cMUTs), volume CT, next generation MRI (massively parallel MR, 7 Tesla Imaging Systems), advanced navigation technologies for interventional X-ray applications, X-ray tomo synthesis, time of flight positron emission tomography, and computational biology & biostatistics.

While much of the work done at the center develops high-end products that benefit the lives of those living in developed countries, a team of scientists and researchers changed GE's perspective on the Bottom of the Pyramid forever.

Bottom of the Pyramid Concept

In 2004, author C. K. Prahalad delivered a paradigm-shattering book entitled "The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits." The book challenged the notion that the only way to improve the lives of those living in poverty at the Bottom of the Pyramid (hereafter BOP) was through public and non-profit sector intervention. The book suggested that the private sector has a critical role to play in the alleviation of global poverty- not by donating product but by selling product that benefits the lives of people making less than $2/day.

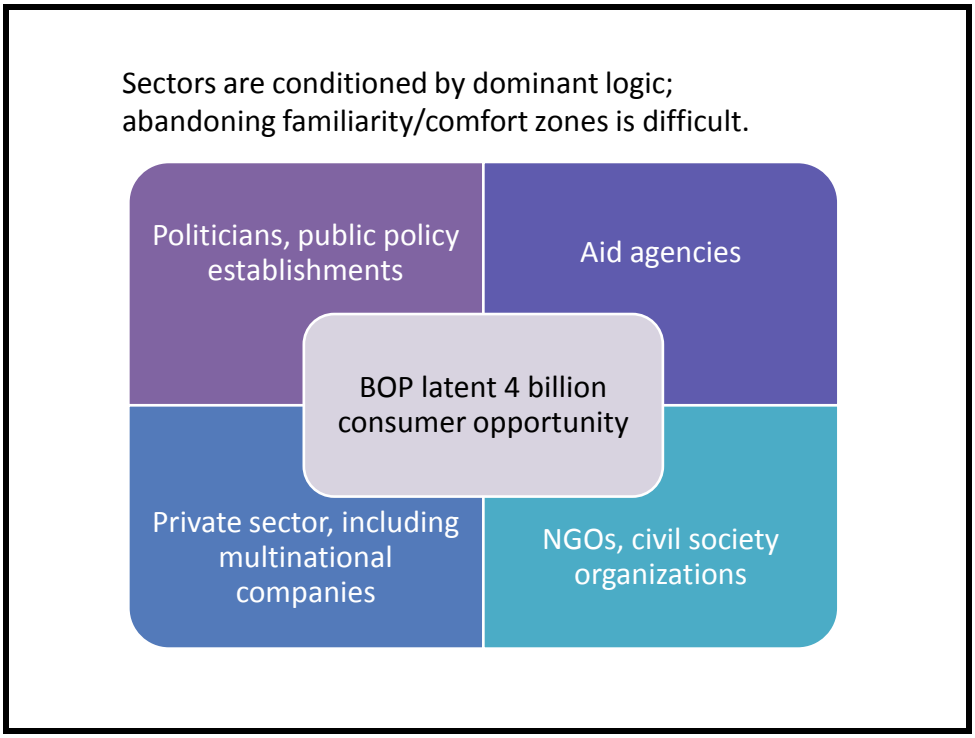
The pyramid developed by Prahalad divides the world into four tiers:



Source: "Fortune at the Bottom of the Pyramid" C.K. Prahalad

Selling to the world's poorest people (approximately 4 billion people) means a reexamination of the "price–performance" relationships for products/services coupled with a new level of capital efficiency. Because of that, selling to the BOP presents a managerial challenge that requires a transformation of managerial practices in established multinational corporations. BOP strategies are about giving the massive population base living on less than $2/day access to solutions that radically improve their well-being. While geography and infrastructure are significant barriers, the greatest limiting factor is cost, according to authors Prahalad and Hart because poor have to pay a "poverty penalty." This refers to the premium that they are required to pay for products for which the rich pay a lower price. The poor pay more for water, food, electricity, etc. because they buy lesser quantities.

A second limiting factor is dominant logic: players in both the public and private sector tend to operate in familiar ways and may be resistant to thinking outside the box.



Source: "Fortune at the Bottom of the Pyramid" C.K. Prahalad

BOP initiatives may require private, public, and non-profit sector entities to develop partnerships or at least understand how to work in parallel within the new paradigm. Established managerial practices in multinational corporations require a paradigm shift in order to meet the needs of the bottom of the pyramid. Decision-makers within multinational corporations have not been conditioned to focus on solving problems for the worlds' poorest.

Successful BOP products deliver on three key questions:

1. Does it solve a problem for the poorest?

2. Is it economically viable? Does the business case hold up to scrutiny?

3. Is it scalable? Is it repeatable elsewhere?

Paradigm Shift

Soon after the opening of the Welch Technology Centre in 2001, a group of GE Healthcare researchers involved in the development of state-of-the-art healthcare diagnostic equipment had a moment of revelation. While working during the day on next-generation equipment destined for the world's wealthiest, they took family members to local clinics bereft of diagnostic equipment, or clinics containing substandard equipment. What equipment existed at the local level in Indian towns and villages had not been manufactured to international quality standards.

The team suggested to GE management that they be allowed to explore the development of a prototype electrocardiogram device that was affordable and portable and could be used in-country in place of existing substandard equipment in local clinics and hospitals. Pushback from management jelled around two issues: the need for a solid business case (economic viability), and a need to fully understand how GE could sell to that end of the market. Historically within GE, approval to proceed with research for new product development turns on the ability to demonstrate a return on investment within three years of launch. Understanding that dynamic, the GE Healthcare team from Bangalore went back to management with a solid business case for developing an affordable and portable ECG for developing countries- a product that would show a return on investment to the company within an acceptable time frame. Evidence that there was a market at the bottom of the pyramid for this kind of diagnostic tool gave management what they were looking for. Approval to begin work was granted with an R&D outlay not to exceed $500,000.00 to develop the device, and a challenge to deliver a working product in 18 months.

The biggest challenge for the team was not functionality: it was bringing the device to market within a price range that would be accepted by Indian healthcare workers and institutions. The research team recognized that a diagnostic device developed for this market would have to sell for $500-1000, and so developed a "value segment." The new value segment focused on two things: a) keeping product costs down while keeping quality intact, and b) learning how/if the existing sales/marketing assets could be leveraged to sell to this segment.

The second biggest challenge to GE was developing a new distribution model for the value segment. Even within India, GE's sales/marketing assets were dedicated to high-end equipment because *that* was the end of the market the company new best. Most of the $400-500 million in revenue that GE made in India was attributable to sales of high-end equipment, not product sold to the BOP. GE is the #1 provider in India of sophisticated ECG, MRI, CT and other diagnostic equipment. But the people that would benefit from GE's value segment work represented a completely different market for GE: different customers, different channels, different support requirements, etc.

GE's Bangalore team had a few natural cost advantages. Computing power improved dramatically since GE brought the last ECG to market- putting faster processing speeds into ever tinier chips- so the new device would therefore have lower material costs (less plastic; smaller LCD screen). R&D costs would be lower since eight of the nine engineers involved with the project would be based in India, and GE made the decision to go with commercially-available chips which were one-quarter the price of customized processing chips. The team got feedback from doctors earlier in the process by using technology capable of delivering fast plastic mold prototypes, which prevented costly change orders later. They disassembled a semi-portable ECG built by GE in the '90s to learn how dust from India's rural roads jammed standard printers, and adapted a printer used in bus terminal kiosks in India capable of functioning in dusty environments. The research team redesigned the battery so it wouldn't be depleted sitting on a distributor's shelf, and simplified the software that interprets electrical impulses for doctors to prevent memory overload.

Prototype accepted, GE began production 22 months after project approval, just a few months over the 18-month target for delivery. In India, GE partners with Wipro (WIT) for health-care manufacturing. Wipro Ltd. is a Bangalore-based technology company with $6 billion in sales and 100,000 employees. Wipro GE Healthcare, also headquartered in Bangalore, is a joint venture 51% owned by GE and handles manufacturing of GE's value-segment medical diagnostic devices. The Wipro-GE team recognized that in order to bring the ECG, named "MAC 400," to market within their cost target, they would have to negotiate hard with procurement people: something local suppliers had not been accustomed to from GE. Local suppliers were ultimately used for all components parts.

In parallel to product development, GE had to develop the value-segment sales, marketing, and distribution model. The company had to create the means to put the MAC 400 into the hands of rural doctors and clinics. GE found a financing partner in the State Bank of India (SBI). SBI has over 16000 branches, giving it the largest branch network in India and reach into a number of rural locations where GE had never operated. With an asset base of $250 billion and $195 billion in deposits, SBI's size and reach made it the perfect banking partner. No-interest loans for rural doctors and clinics were part of the equation.

The sales pitch to rural doctors and clinics was the second part: a business case for the device, showing how the MAC 400, at a cost of $1000, would pay for itself in less than 2 years at a utilization of "x" electrocardiograms per week, delivering an ECG report for less than $1/patient. In addition to meaningful business pitch, the company made strategic equipment donations to drive acceptance and penetration.

GE accepted the fact that the profit margin of the MAC 400 per unit would be lower than the *per unit profit margin* of GE's higher-end equipment. While per-unit margins on the MAC 400 were within an acceptable range, the company understood that selling to the BOP would require a focus on volume: making sales numbers in India and then replicating successful healthcare market penetration in other developing countries.

The MAC 400 has been an unprecedented success. Early feedback from the field indicated that doctors were bringing the device to rural locations that had never had access to ECG equipment and the equipment performed beautifully under a variety of environmental challenges. Since launch in India, the MAC 400 has been sold in over 100 countries and laid the groundwork for a whole family of products designed for the BOP market. Researchers needed only to point to the success of the MAC 400 (and its corresponding $20 million in revenue to GE) to validate the market at the bottom of the pyramid.

In November 2009, GE Healthcare India released its latest ECG device: the MAC I. Smaller than a laptop and with a price tag of Rs 25,000 ($535), the MAC I slashes the cost of delivering an ECG bill to just Rs 9. ($.20 cents): six times lower than prevailing ECG rates and roughly equivalent to the cost of a bottle of mineral water. Again partnering with the State Bank of India, GE is putting this device in the hands of rural doctors with no-interest loans at a price that delivers a fast return on investment. Official early sales expectations on the MAC I are conservative at 5000 units, but informal estimates place sales expectations of the MAC I at no less than 35,000 units- worth another $19-20 million in revenue. Revenue from GE India could top $1 billion within four years, and we believe a growing percentage of revenue will be attributable to the value-segment product lines.

One of the reasons MAC 400 was followed so quickly with the release of MAC I is that GE got its *value-segment legs*. The company, with its manufacturing partner Wipro, quickly developed best-in-class value benchmarks for delivery of low-cost, high-quality diagnostic products. The investment by the doctor is made relatively painless by the delivery of a credit card by the State Bank of India, and is quickly recouped as the cost of the device is leveraged across hundreds of patients.

Not just a product… but a movement

Last year GE Healthcare launched a six-year, $6-billion '*healthymagination'* campaign to deliver low-cost, quality products globally. The three tenets of healthymagination are to reduce costs, increase access, and improve quality. R&D will get $3 billion; GE also committed $2 billion toward financing, and $1 billion to related GE technology and content to drive healthcare IT in rural and underserved areas.

By 2015, GE expects to launch at least 100 innovations that lower cost, increase access and improve quality by 15% and work with partners on innovations across four critical initial need areas:

- accelerating healthcare information technology;
- targeting high-tech products to more affordable price points;
- broadening access to the underserved;
- supporting consumer-driven health.

"*Healthymagination reflects the new opportunities we see in healthcare*," according to GE Chairman and CEO Jeff Immelt. "*Our newest innovations – low-cost digital x-ray machines, portable ultrasounds, more affordable cardiac equipment – will save costs for doctors, hospitals, the government, families and businesses. This will help level the playing field in health care. With our technology, rural and urban areas and developing countries can have access to the best technology, affordably.*"

Not just a product… but a miracle

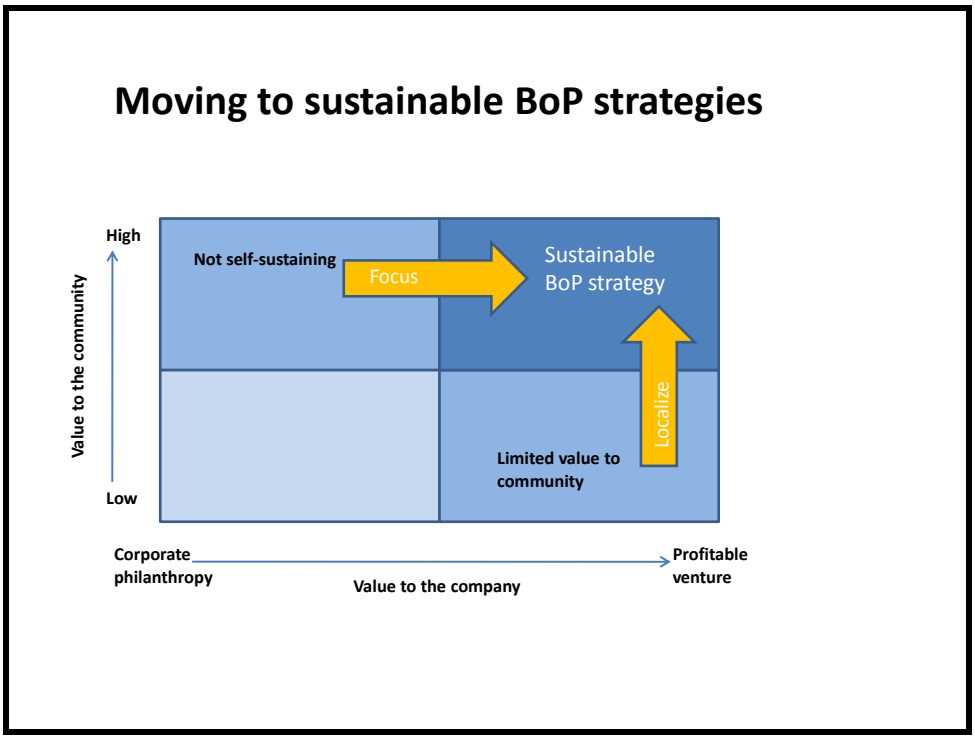
What GE researchers in Bangalore didn't know when they began work on a value-segment ECG is that Indians are at greater risk of heart disease than Europeans, Americans, and Asians. A genetic mutation found in 1 in 25 people in India almost guarantees development of heart disease. Indians suffer heart attacks at an earlier age and often without prior symptoms or warning. According to Medwin Heart Foundation, half of all heart attacks among Indian men occur before the age of 50, and 25% occur before 40. India, a country of more than one billion people, could therefore account for up to 60% of heart disease patients worldwide next year. World Health Organization researchers had long been aware that heart disease was exceptionally prevalent in the sub-Indian continent, but it was only recently that scientists discovered the gene responsible. The research, published in January 2009 in the journal Nature Genetics, explained how a genetic mutation affecting 4% of Indians and 1% per cent of the world's population leads to formation of an abnormal protein that results in cardiomyopathy, a disease causing deterioration of the heart muscle.

In southern India where cardiovascular disease claims a third of lives, a simple therapy like daily aspirin could have a significant impact on early-stage cardiovascular problems. "Because many deaths occur in a much younger age group compared to developed countries, cardiovascular disease has a significant economic and social consequence among families, especially in rural India," according to Rohina Joshi from The George Institute for International Health in Sydney, Australia. "The key finding from this new analysis is that while many treatments for the prevention of cardiovascular disease are low-cost and effective, the uptake of these drugs has been limited in this rural area of India."

GE Healthcare researchers in Bangalore put the means of diagnosing heart problems into the hands of healthcare professionals in a country that needs it more than any other country in the world… India.

Conclusion

GE Healthcare got it right at the bottom of the pyramid by making sure the product solved a problem for India's poorest and that there was a viable and scalable business model. The value-segment paired high value to the community with high value to the corporation.



The genius of GE is that proven success in India has given the company a *family of products* that can be sold in dozens of countries across Asia, South America, and Africa to doctors and clinics serving populations living on $2/day. Local manufacturing and financing partners must be developed along with marketing and instruction in local languages, but initial development costs are then spread across an even broader basket of sales figures.

If this was only about revenue, the story would be good. But the reality is that the story of GE Healthcare at the bottom of the pyramid is not only about positive return on investment: it is about saving lives. The company is gaining proponents one family at a time, and one doctor or clinic at a time. If the basic rules of corporate marketing include product, price, place, and promotion, GE Healthcare as an unbeatable combination: the right mix of life-saving products, a price the BOP can afford, delivered in rural villages beyond the reach of cardiac specialists, sparking a thousand stories that begin with the words "they saved my father's life…"

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