

# INNOVATION TO SERVE THE BOTTOM OF THE PYRAMID

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## Preamble

Poverty is probably as old as civilization or rather as old as mankind. In the primitive days 'Might is Right' philosophy was dominant. With the stronger physical strength used to go along with more wealth. As the civilization progressed, in addition the physical strength mental or intellectual strength added to the prowess of the people. In such scenario there were always underdogs who were physically weak and could not fight it out with the strong and mighty and remained as weaker section (both physically and metaphorically). Or in other words poor. Even today instead of poor we call them euphemistically weaker section of the society. In the days of monarchy, the rulers used to fight battles with the rival monarch to expand their kingdom and area of influence. At the same time they used to look after the weaker subjects. Kings and Queens used to hold audience where common people used to come forward with all their grievances. All rulers in every part of the world used to look after the poor subjects and used to help them with grants and other ameliorative measures like free meals etc.

With the advent of 'Government of the People, by the People and for the People', the onus shifted to the government, which is the elected representative of the people. With the growth in the economy due to successive industrial revolutions, the government started getting richer and started various welfare measures for the weaker section of the populations. By the time, most of the European nation states have become very wealthy due to their colonial power, and started social security measures for their home country, while exploiting the colonies.

## Poverty & Population

With the ending of the Second World War and independence of the colonies subsequently, world economy started growing at a break neck speed; economic strength replaced physical strength as the harbinger of prosperity. As it happened in the past, some people lagged behind in the race for wealth due to various reasons as lack of education, primary health care, opportunity for growth and finally their intellect or lack of it. As we entered the eighties of the last century, technological

revolution swept the world. The developed countries were in the forefront of the growth due to their historical advantage; there were some section of their population that was lagging behind the main stream but the majority of the poverty stricken people were in the newly independent countries where due to inequitable distribution, rich became richer and poor became poorer.

The poor or we would rather call them poverty stricken people became a big burden to the society. Most of the newly independent states particularly those believed in democracy did tried to do some thing for these unfortunate people who were left behind due to various reasons not of their own. India is in the forefront of these states being democratic as also one of the largest.

Before we go for defining the Bottom of the Pyramid let us take a look at some milestones in the growth of population in this planet. As per study conducted by UN, following are the few important figures.

**Table 1 World Population Milestones**

<b>Population</b>	<b>Year</b>	<b>Years Later</b>
1 Billion	1804	
2 Billion	1927	123 years later
3 Billion	1960	33 years later
4 Billion	1974	14 years later
5 Billion	1987	13 years later
6 Billion	1999	12 years later
World Population May Reach		
7 Billion	2012	13 years later
8 Billion	2026	14 years later
9 Billion	2043	17 years later

Source: United Nations (2001a)

The impact of migration on population growth is increasing in more developed countries. The 35 million net migrations to Western market economies between 1970 and 1995 accounted for 28 per cent of their population growth, while the loss due to migration reduced population growth by hardly 2 per cent.

The twentieth century has seen maximum changes in many aspect of our life and can be called a century of changes. It has seen unprecedented changes in technology, unprecedented economic development and finally an unprecedented growth in population as can be seen from Table 1. From 1900 to 2000 world population grew from 1.6 billion to 6 billion persons, out of which 85% of the growth-taking place in Asia, Africa and South America (United Nations 2001a). The population growth is slowing down as has been seen in the UN studies reflected in Table 1, yet it is likely to cross 8 billion people by 2030. As has been seen earlier, developed countries are likely to have growth of 2% whereas less developed countries will grow by 45 %. In 1900, about 85% of the population was rural leaving just 14% as city dwellers; by 2000, the urban population increased to 47% whereas rural population declined to 53% and by 2030, about 60% of the world population is likely to be in urban conglomerates. Or in other words, all the growth in population between 2000 and 2030 is likely to be concentrated in the urban region.

The quantum leap in global production of goods and services due to technological, economic and social revolution that took place in the twentieth century enabled the world to sustain the much larger urban as well as total population. According to study by De Long in 1998, the real GDP in the world increased 20 to 40 times between 1900 and 2000. During this period world population increased 4 times and urban population increased by 13 times. This benefit went to both developed

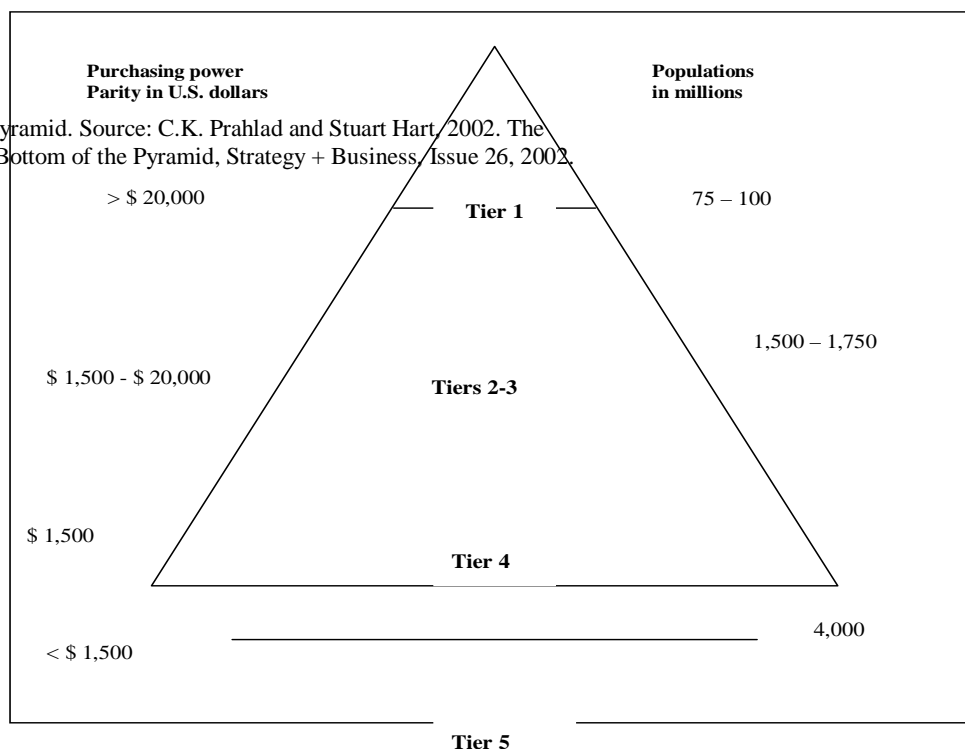


Figure 1. The Economic Pyramid. Source: C.K. Prahalad and Stuart Hart, 2002. The Fortune at the Bottom of the Pyramid, Strategy + Business, Issue 26, 2002.

as well as less developed countries. However, the growth was more in the developed countries than in less developed or developing countries. This uneven growth led to more difference in the standard of living in the two worlds of North and South. Relatively, rapid and uneven population as also economic development in both the worlds, led to environmental degradation in the physical condition of our planet. According to J R McNeill (2000), the twentieth century saw topsoil erosion equal to previous 1000 years. The total energy consumed in 100 years of twentieth century is 10 times that of previous 1000 years. World's food production has grown at a faster rate than the population growth but how long can it sustain? Increasing scarcity and degradation of agricultural and other environmental resources leads us to think how long we can keep the food production ahead of the population growth. Throughout the world, fragile ecosystems and bio diversity are under threat. Forest areas are diminishing, industrial and agricultural effluents are polluting the water and air in way that was not seen in the past millenniums. Fresh water is already in short supply in many regions and situation is likely to deteriorate rather than improve unless there is some revolutionary technology to make fresh water from seawater in a commercially viable cost. This is likely to be further accentuated rather than ease.

### **Defining Bottom of the Pyramid**

After this short preamble about the population study let us examine what is the bottom of the pyramid. C K Prahalad and Stuart Hart had drawn the economic pyramid that has drawn the attention of the entire world

According to this 4 billion people are at the bottom tier with an income of less than USD 1500 purchasing power. This is known as Bottom of the Pyramid (BOP). India has the dubious distinction of housing more than 400 million of people who can be called poor or poverty stricken. Due to its history, independent India has always looked with suspicion any private corporation lest they take over the control of the country as was done by the East India Company in the 18<sup>th</sup> century.

Policy makers of independent India believed in Distributive Justice and took some steps like taxing the rich heavily and subsidizing food, fuel and education that did only a ripple effect on this enormity of the problem faced by multitude of people. The intentions were good but here are many problems such as high taxation rates did not give any impetus to the business to grow. Tax evasion became the order of the day thereby creating a parallel economy that was not creating further wealth. Public Distribution system became the target of the unscrupulous traders and businessmen. This led to the distortion in the economy and poor or poverty stricken people got little relief. Subsequent draught and escalation of the petroleum prices did not help either. With the advent of new technology, some section of the population did get richer and started crossing the poverty line. To avoid concentration of wealth in few hands, licensing policy was introduced to the detriment of the economy of scale. Under this scenario, India did progress economically but the growth was much slower than what it could have been. Having defined Bottom of Pyramid (a

la C K Prahalad and examining the continuous growth of population who may be termed poverty stricken, let us examine what is 'Innovation'.

## **Defining Innovation**

According to concise Oxford Thesaurus, 'innovation' means new method/device, measures introduction, modernization, novelty, change, transformation, metamorphosis, neology and many more. Meaning of innovation as per Cambridge Learner's Dictionary is "a new idea or method that is being tried for the first time", or "the method which is being tried for the first time". The first definition given by the Cambridge dictionary i.e. "a new idea or method that is being tried for the first time" and also one of the meaning given by Oxford Thesaurus "transformation" or "metamorphosis" make more sense than others.

Let us see the present scenario in the world of business. As we enter the 21<sup>st</sup> century, entire paradigm of business and life style has taken a dramatic change—digital network keep on expanding, national borders get blurred, distance shrinks, working across time zone accelerates, complexities overwhelms and finally uncertainty dominates—a world that was not imagined even in early nineties. The affluence created by the revolutionary technology both in developed and select developing countries, has increased the education and intellectual levels of workers who demand more respect and recognition from their organizations without which they are likely to change job and go to a greener pasture where their talents and thinking ability would be allowed to blossom in full. The innovative mind must be allowed to function fully otherwise the companies will not be able to last.

To encourage innovation, employee involvement has now been accepted and understood by world-class organizations like 3 M, Microsoft, Wal-Mart, Hewlett Packard, IBM, Motorola, Infosys, Wipro, Tata Consulting Services or any successful company one can name. These international companies have moved away from bureaucratic structure and modified their hierarchies to team based flat organization with minimum "white space". These organizations encourage cross communication by all employees, supported by new technology such as e-mail, intranet and internet. They also reward employees who play a positive role in influencing direction and decision-making process of the company/ies.

In today's world, unless companies start thinking of innovative way of doing business (read competitive advantage), they are less likely to survive rather than prospering. Examples of great corporations who were leaders yesterday becoming a part of history are many. Companies like Pan Am, International Harvesters, Enron and Arthur Anderson are of recent history. There is no dearth of Indian examples like Metal Box, Binny, Calico, Nirlon, and Illustrated Weekly etc. Why great organizations fail? There are many reasons but some of them are very glaring such as:

- Lack of innovative ways of looking at things

- Refusal to forget past
- Inability to get an idea of what future trends are going to be
- Failure to distinguish between resources and resourcefulness
- Inability to question status quo

George Bernard Shaw said:

“The reasonable man adopts himself to the world. The unreasonable one persists in trying to adapt the world to him. Therefore all progress depends on the unreasonable.”

Even our own poet laureate Rabindranath Tagore said:

“*Orey sabodhani pathik bareko patho bholo*” means Oh! Careful traveler, forget your path for a change. Similar statements are made by modern day management guru, Gary Hamel:

- *The Rule Makers — The incumbents*
- *The Rule Takers — They play by the rules*
- *The Rule Breakers –*
  - i) The revolutionaries
  - ii) The Innovators
  - iii) The ones who will own the futures
  - iv) They win and rewrite the rules

Collins and Porras did a six years study of eighteen companies that had outstanding performance over time periods between fifty and two hundred years and put their learning in a book named *Built to Last*. Some of their findings are as follows:

1. Continuous effort to improvise
2. Willingness to take calculated risk with prudence
3. Re-assessment of total risk portfolio with a new perspective
4. A strong feeling about organizational philosophy and core ideology
5. Not focusing on profitability alone but also to take care of quality of life of the Employees, community relations, environmental concerns, customer satisfaction and stakeholder return
6. These companies demanded strong ‘fit’ between company culture and individual culture.

This culture of innovation has to be brought in and this creates the difference between successful or not so successful organisation in the 21<sup>st</sup> century. So either the employees felt the company to be an ideal place to work or left. This has to be followed with earnestness and business should find the ways to tap the potential of the BOP. This is where the fortune lies in these days of fierce competitive business scenario. There are many innovative ways to tap this huge business potential and two or three cases will be discussed which can lead to unlimited business for next couple of decades. First let us take the case of Sulabh Souchalay. First prime minister and a great visionary Pandit Jawaharlal Nehru said, "When each and every citizen of India can use a clean and hygienic toilet then only we can say we are developed". Even after almost six decades of independence from Great Britain may be half of India's one billion people do not have access to clean and hygienic toilets. This is where Dr. Bindheswar Pathak had stepped in through his Sulabh Souchalay, a Non Government Organization (NGO) that runs thousands of public toilets through out the country. It is a non-profit organization and hugely successful in providing clean toilet at a very nominal cost. One may ask the author what is Imagineering— it is nothing but

### **Imagine + Engineering = Imagineering**

They have to imagine and engineer the same. Add to this the generation of power through digestion of human excreta, which will help the household for their lighting requirement.

### **Basic Hygiene & Health Care**

Sulabh International Social Service Organisation, founded by Dr. Bindeshwar Pathak in the year 1970, is the largest nationally and internationally recognised pan-India social service outfit with 50,000 volunteers on the rolls who work to promote human rights, environmental sanitation, health and hygiene, non-conventional sources of energy, waste management and social reforms through education, training and awareness campaign. It has developed a scavenging-free twin-pit pour flush toilet (Sulabh Shauchalaya); safe and hygienic on-site human waste disposal technology; a new concept of maintenance and construction of pay-&use public toilets, popularly known as Sulabh Complexes with bath, laundry and urinal facilities being used by about ten million people every day and generation of biogas and bio-fertiliser produced from human excreta-based plants, low maintenance waste water treatment plants of medium capacity for institutions and industries. It has set up an English-medium public school in New Delhi and also a network of centers all over the country to train boys and girls from poor families, especially scavengers, so that they can compete in open job market. Sulabh has thus set up a modern, humane social order based on goodwill and mutual cooperation. The United Nations Centre for Human Settlements has recognised Sulabh's cost-effective and appropriate sanitation system as a global 'Urban Best Practice' at the Habitat-II conference held at Istanbul (Turkey), in June 1996. The Economic and Social Council of United Nations has granted Special Consultative Status to Sulabh in recognition of its outstanding service to mankind. The United Nation centre for Human settlement and Dubai

Municipality award out of 1100 entries from 125 countries have conferred cost-effective best sanitation technology to Sulabh with \$ 30,000 and a Gold Trophy. His holiness John Pope Paul II gave audience to Dr. Pathak at the time of conferring the Saint Francis Prize (canticle for all creatures)

The Sulabh has liberated so far 50,000 scavengers from the demeaning practice of physically cleaning and carrying human excreta. Sulabh has set up more than 5,500 pay-&-use community toilet complexes and about 1000,000's Toilets in private houses, which together are being used by more than ten million people every day. This novel self-sustaining system has also helped in ending the uncivilized practice of open-air defecation and keeping the urban life clean and livable, creating enormous impact on the environment and life of the people, especially those living in squatter colonies, the homeless and the people on the move like construction workers or those at places of congregation. Sulabh is also producing and using biogas from human excreta from its 102 plants which is again an innovation in the areas of non-conventional energy.

Today, Sulabh, a non-governmental organisation has built 1,200,000 toilets and 5,500 community public toilet complexes, which are used by approximately 10 million people everyday throughout the country. This success has led to the liberation and rehabilitation of 60,000 scavengers in India. Besides, the organisation has also successfully researched and developed alternative bio-energy sources generated from wastes. These technologies, innovations and methodologies are sustainable, replicable and affordable and they are recommended by the WHO, World Bank / UNDP etc. for adoption in all Third World countries. While giving shape to its dream projects, Sulabh has established coordination with various national and international agencies, including British Council, USAID, BORDA, a German organisation, Commission of European Union, Belgium, GERES, France, CEEIC, HRIIEE, China and Haskoning and Euro consult, a Dutch firm. Sulabh's is a major initiative towards setting up a clean living environment, making possible a good and productive community life in a new and discrimination-free social order.

Dr. Bindeshwar Pathak studied various designs of latrines and work done in this field in India and abroad and developed Sulabh Shauchalaya-technology, which is technologically appropriate, socio-culturally acceptable and economically affordable. It is low cost, requires only two litres of water to flush and can function even where enough water is not available. It does not require the service of scavengers nor does it pollute air and it provides manure on the spot, can be cleaned and easily maintained by house-owners themselves. The two pits work alternately. It has a high potential for up gradation i.e. can be easily connected to sewer when introduced in the area. The Government of India, State governments, various national, bilateral and international agencies like UNICEF, WHO, UNDP / World Bank etc. have accepted that Sulabh Shauchalaya (twin pit pour-flush latrine) is the most appropriate low-cost technological option. They have suggested the adoption of this system in India and other developing countries. The Govt. of India has included low-cost sanitation as a component in the Integrated Development of Small and Medium Towns (IDSMT) Programme. The Housing and Urban Development Corporation (HUDCO) has also started

giving financial assistance for low-cost sanitation to various categories of beneficiaries.

### **Impacts on Health & Environment**

Studies reveal that over 50 infections can be transmitted from a diseased person to a healthy one by various direct or indirect routes from human excreta. A large number of deaths in India are from diarrheal diseases. The impact of safe disposal of human excreta on health has been significant in reducing morbidity and mortality from gastro-enteric diseases and helminthic infections. Out of 950 million people, 700 million either defecate in the open or use unsanitary bucket or dry privies exposing the entire community to health hazards and foul environment. The number of bucket and dry privies in India is about 7.64 millions, of which nearly 5.4 millions are in urban India and rest in rural area.

If an individual with a missionary zeal can achieve so much in such a field one can imagine what a corporate giant can do with the managerial, human and financial resources at their disposal. It requires little bit of 'Imagineering' to tap this huge potential business not only in India but also in the whole of less developed world hosting more than 4 billion people.

### **Personal Care**

Council of Scientific and Industrial Research a department in the Ministry of Science and Technology Government of India, under the stewardship of Dr. Raghunath Mashelkar is doing some excellent job in developing innovative products. While inaugurating a seminar on Technology Management & Human Engineering in last May, he disclosed about development of a revolutionary absorbent material from waste materials like paper, cotton waste and some biodegradable plastics, which can bring in millions of dollars to any business empire. India has a population of one billion plus and if we take approximately 50% women and again another 50% may be in the reproductive age needing sanitary napkins every 4 weeks interval. This works out to be a population of 250 millions needing such sanitary napkins. The present price of a set of 8 napkins is priced between Rs. 55/-(\$ 1.20) on an average. The absorbent materials being developed can help reduce the price of a similar pack to about Rs.10/-(\$0.25). It does not require any great mathematician to calculate the business potential of such product, even if a third of the users opt for expensive multi-national brand. We are not aware that any MNC is working out any such project and normally a MNC executive would say the BOP consumers couldn't afford our product. Here again the elitist viewpoints bring in a mental block. No one can deny that apart from business opportunity, this also help business do a part of in so called Corporate Social Responsibility by providing clean, hygienic habit that may help millions women in the less developed countries from infectious diseases they get from non affordability of proper hygienic habits.

Sebastian Joseph with the help of his son Rejimon Joseph of Kerala (an Indian state in the south) developed a new cardamom variety '*Njallani*' by selecting good berries and cross-pollinating these.

This variety could be multiplied by clonal propagation method. Presently a vast area under cardamom cultivation is covered by this variety. Earlier, his attempt to cultivate food crops failed miserably due to attack by wild animals and consequent financial loss. In those days cardamom was widely cultivated in the high ranges. Sebastian tried to shift towards the cultivation of cardamom. With the help of his son, Rejimon Joseph, Sebastian started experiments. He observed variation in the shapes of the cardamom. He selected the good berries and cross-pollinated them. For this purpose he selected four cardamom plants and put beehives in their midst. He then covered the plants with mosquito net. He would also mark the flowers that produced the berries. These berries were pure clones. Next, the clones, which bore more and bigger berries, were selected. The selected four clones had born 148 berries. Capsule was double the size of the common Mysore variety. He called his selection '*Njallani*' after the ancestral name. Sebastian began to multiply this selected variety by the clone propagation. It was observed that an '*Njallani*' variety has 120-160 capsules compared to 30-35 in the ordinary variety. Instead Idukki is Kerala's largest district and usually called as spice village of the world. Mr. Sebastian Joseph is a marginal farmer and has studied only up to fourth standard. His first attempt at farming was banana cultivation, which failed miserably. But his determination and will power saw him through. With the help of his son Rejimon, Sebastian has developed a new variety of cardamom, which heralded a revolution in the cardamom cultivation. Today 88.7 per cent of the total area under cardamom cultivation in Idukki is under cultivation of '*Njallani*', the superior variety of cardamom selected by Sebastian and his son Rejimon.

The planting of seedlings that take two to three years to bear fruit, he began to plant shoots and was able to shorten the yield span to two years compromising neither on quality nor on quantity of the yield. In his quest to constantly upgrade the cardamom variety, this industrious farmer has recently developed another cardamom variety, which is yet to be named, and which he says can even be grown in the plains and not just hilly terrains. His son Rejimon not only helped him in all these operations but also contributed significantly to the success of his selection. They were rewarded by First National Grassroots Technological Innovation and Traditional Knowledge Awards – 2001. This has helped them earning much more and helped others to earn more to get over the poverty level. There are so many national and multi national companies in the agro-processing industry and if some of them take initiatives to help these innovative farmers to use their mind by inputting their managerial skills and financial help that may bring revolutions to the business scenario. We need open mind and imaginative thinking and engineering.

## **Software & Poverty**

Finally let us have a look at the sunrise new economy area, which is taken as an elitist community where there is no chance of serving the BOP market. This is the perception all business executives and academicians have. Recently a study on "inter generational background of the average Indian software engineers" were carried out by Subroto Bagchi, founder and COO of Mind Tree Consulting, Bangalore and Prof. Anirudh Krishna of Duke University to find out the background of these

engineers who have jettisoned India in the top league of software development and intellectual map of the world. Two studies were made one at Mind Tree consulting with some help from AC Nielson group. The other one done by Prof. Anirudh Krishna using a broader sample. When a batch of fresh engineers joined Mind Tree, anonymous feedback was taken on various demographic indices including occupations of parents and family income. It was found out that 33% comes from rural and agricultural background. This was followed by 20% from small time businessmen like 'Kirana' shop owners and the like. The rest came from salaried middle class out of whom 4% were children of schoolteachers and 2% whose parents were priests. The family income was average Rs.15000/- per month that is equivalent to \$ 4000/- per annum. The starting salary of these engineers is much above that. It may be slightly above the tier 5 of C K Prahalad's economic pyramid but it may be noted that it is average and many are family income is nearer to the bottom two tiers of the same pyramid. The study also mapped ownership of 17 household items like transistor radio and bicycle at the lowest to a refrigerator or a washing machine and a car at the highest level. The study reconfirmed the first finding and went one step further and showed that 12% came not only from rural background but also from a poorer background that are in the Tier 5 of the economic pyramid. The National Association of Software & Services Companies estimates that there are 700 000 people who work on IT sector today which is likely to be doubled in the next five years. It is also projected by NASSCOM that in by 2010, another 1.3 million software engineers will be needed. The growth of software exports from India and other developing countries will be limited mostly by the limitation of capacity and not due to any other reason. If the software companies go out to the poverty stricken people in the urban and rural areas and nurture these talents and help them through education and other help they will be benefited by a workforce that will be loyal to them. Attrition rate in the software/IT field is mind-boggling and this talent pool from the BOP will be more loyal than the other section of the population. It is not advocated that they may be used as bonded labor but it has been seen that such people do remember the good turn done by the corporate sector.

"For the first time in the economic history of India, their socio-economic background will not come in the way as they seek to enter the most exciting part of their lives. However, what could hold them from getting there is the substantial information gap that exists as one goes to the district level." says Subroto Bagchi in his Times of Mind column in the Business Times. This is where the corporate can play an important role. Not only keeping them informed but also to play the role of a gardener to provide nutrients, fertilizers and water to ensure they grow into a full-blown plant (read human being). Ultimately these trees will bear fruits in the form of increasing profit for all the stakeholders.

## **Conclusions**

It can be seen from the above examples that be it in the field of basic health care, personal care of the women folk, or agro based industries and finally in the elitist field of software/IT related

industry, an innovative approach can bring in fortune for the corporate world by serving the Bottom of the Pyramid.

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