

# **Knowledge Era: Triggering the Paradigm Shift**

By

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## **Preamble**

Till about 1700, all regions of the world were, more or less, at par in terms of prosperity; in the agrarian era there were not any significant difference in gross income or macro-economic growth-rates. From 1700, the industrial revolution began to make its impact on Europe and later, on North America. These regions started growing at a faster rate because of the scientific and technological changes<sup>1</sup>. Industrial revolution sounded the death-knell of feudalism and ushered in a new social order; it also brought in prosperity of a higher order. Industrial revolution was characterised by mass production and the rest of the world became the market. In the decades that followed the capacities were scaled up to bring in more economies in production; Competitive forces demanded better scale-economies. Jobs multiplied and abundance and affluence were ushered in.

In the 20<sup>th</sup> century, after the World Wars, came in automation and the information technology heralding the beginning of a new revolution. Migration of labour started taking place, within the realms of possibility in a world fractured by borders, to absorb the jobs that were differentiated in terms of wage-rates. In this era jobs that were repetitive and routine were automated; jobs that required lower order of skills and hence considered of low value were given to those who demanded lower wage-rates<sup>2,3</sup>. Breaking down of barriers and globalisation spurred this process. Internet technology, that became ubiquitous in the last quarter of the 20<sup>th</sup> century, marked the death of distance and this ushered in a whole new range of possibilities. One of them is the linking of the low wage-rate workers of the developing world with the production systems of the developed world to man the low value jobs without any spatial dislocation. This is the emergence of Outsourcing; Business Process Outsourcing [BPO] is a special segment of this phenomenon.

With competitive pressures continuing unabated, organisations found it convenient to leverage the low wage-rates and the increasing skill levels of the developing world to transfer higher value jobs to the developing world. This osmotic process continues unobtrusively and steadily, despite the valiant attempts to create barriers from segments of the developed world, appalled at the loss of jobs<sup>4</sup>. This is the genesis of Knowledge Process Outsourcing [KPO]. This paper is an attempt to capture the wide-ranging impact of this phenomenon.

### **Context:**

In the context of the 21<sup>st</sup> century, technology has emerged as the prime driver of all changes in all sectors and hence the prime accelerator of economic growth. It is an enabler that makes whole new range of products and services to make life a lot better and easier. Technology has significantly decreased the relevance of distance.

Competition has emerged as another driver for growth and excellence. In fact competition and technology trigger each other<sup>5</sup>: increased competition compels firms to search for better technology and competitive advantage; similarly technological innovations bring about structural changes in the competitive structure.

World is moving towards increasing integration. Flow of information is increasingly unhindered and this is propelling the process of integration. Barriers erected by regimes have gradually crumpled. Unification of Germany and collapse of the USSR are testimony to this phenomenon. The Chinese economy also is moving in the direction of openness. Emergence of European Union is a pointer towards the shape of things to happen in the future. Flow of capital and labour have not yet become as free as the flow of information; but in the years to come these are also expected to be more free. We can expect more cooperation and collaboration among nations in tackling the vital issues of hunger, poverty and ignorance.

Spread of education, decline in illiteracy and poverty are ushering in an era of awareness and openness. These have impact on the governance structures of countries; democracy as a form of governance is increasingly getting accepted among nations as the most appropriate form of governance. Increasing awareness and openness as well as democratic forums to discuss and debate should lead to better conflict resolution and eventually to decrease in sectarianism. These trends should lead to lessening of internal strife in countries, peaceful co-existence among nations and thus lead to lessening of overall global conflicts.

### **Impacts**

The emergence of the knowledge economy has wide-ranging impacts. This article looks at the critical areas namely, [a] skill and knowledge level of the country [b] economic aspects [c] socio-cultural aspects and [d] external image of nations.

#### **a. Skill and knowledge level of the country:**

The *demand for skilled manpower* has gone up with the upsurge in the knowledge sector. Engineering colleges were the first to feel the demand pull; then came institutions offering MCA, science colleges, polytechnics etc. There has been a significant rise in the enrolment to these colleges and also in the capacity expansion of the institutions. The demand for knowledge workers is still expected to grow and hence the education infrastructure will have to expand further<sup>6</sup>. In a recent study Brainbench<sup>7</sup> has observed that of the 30 prominent skill categories relevant to the knowledge economy, US is the leader in 24 while India leads in 6. This has happened in less than 5 years and the trend is

expected to continue. This marks the fast paced skill up-gradation taking place in the developing countries resulting into rich talent-pools in the countries; this is expected to have far-reaching impacts on these economies.

Knowledge infrastructure would automatically take a quantum leap. It is fair to presume that the establishment of IITs and later on IIMs have helped create a talent-pool, both within the country and outside, that enabled India become the prime destination for outsourcing. With increasing demand for skilled manpower, there is acute need to strengthen the knowledge infrastructure of the country<sup>8</sup>. Creation of knowledge infrastructure would offer itself as a profitable business opportunity. Attention of policy makers, entrepreneurs, corporate entities and philanthropists would be drawn into this area and the knowledge infrastructure can be expected to expand significantly and achieve global standards.

There is bound to be an expansion of the knowledge sector. Traditionally public sector R&D labs, universities and to some extent the corporate R&D labs accounted for bulk of the knowledge sector. Now the ambit and definition of knowledge-work have undergone a sea-change to include business analysts, financial analysts, design-engineers, creative designers and a host of other professionals who are engaged in a variety of KPO activities. Design Process Outsourcing and Legal Process Outsourcing are examples of such new activities. R& D activities in pharmaceutical and bio-technology areas have witnessed significant growth in the recent years and this is expected to continue; almost all of these are in the corporate sector with some of them engaged in research for themselves while many others cater to a host of external customers.

The emergence of knowledge sector, with sizeable population engaged in it, has its own ramification on the life-styles, outlook and culture for the sector as well as for the rest of the economy. Traditionally the R&D segment had its own norms of productivity which was not benchmarked internationally in any manner. Now the research activities in the pharma sector has to cater to the international customers on a 24X7 basis; The response time has to be very short so that the customer is globally competitive. This situation places emphasis on high productivity. Such requirements become the norm of the industry and only those who can comply will survive. The knowledge sector would need to innovate continuously.

In the knowledge era, knowledge has become the most powerful instrument of competitive advantage. Hence firms, in their attempt to enhance competitive advantage, would focus on enhancing their knowledge base. This could be in the form of large number of patents, increased investments in R&D, increased outlays for IT and knowledge infrastructure etc. Products, processes and people would become increasingly knowledge-intensive. This can be seen in the continuous updation of IT infrastructure, increased emphasis on training of people, increased networking with universities, more frequent modernisation of production infrastructure etc. Firms would lead this trend and it would percolate to the industry sectors and eventually to the whole economy making it more knowledge-intensive.

b. Economic Impacts:

The immediate impact in the growth of the knowledge sector is the quantum leap in *employment* in the developing countries that had the skills to absorb the jobs that were being outsourced. In 2000, India had 0.20 million employed in the IT/ITES sector; by 2005 the number had risen to 0.7 million. The number of persons engaged in knowledge-work is increasing at a fast pace<sup>9</sup>.

Income generation of the knowledge segment is the next major impact on the economy. NASSCOM study indicates that value of the output from this sector in 2005 was US\$30 billion; this is estimated to go up to US\$60 billion by 2007<sup>10</sup>. Most of the output from this sector is export; this has its own advantage in terms of forex earnings. The sector offers income to all its employees, which is growing at a fast pace, at rates far higher than what they would have got in any other sector. This has significant impact of increasing the average income level of citizens and also of redistribution of income and multiplier effects on the economy.

The consequent rise in the purchasing power has significant impact on the economy. The primary beneficiaries of the sudden rising income is the segment of the young population. This segment with its significantly increased purchasing power demands a new life-style and a whole range of new products. This has tremendous impact on the economy.

KPO segment will emerge as a major segment of the tertiary sector of the Indian economy. To a large extent the high growth rate of the tertiary sector will begin to pull the overall growth of the economy. Goldman Sachs team while projecting the growth patterns in the BRICS story<sup>11</sup> does not seem to have looked at the growth of individual sectors in each economy; but looking at the prospects, there is reason to believe that if ever this country achieves the type of growth patterns projected by Goldman Sachs, the major contribution would have to come from the knowledge segment of the tertiary sector only.

With the increased purchasing power of Indians, with the knowledge segment triggering the growth of every sector of the economy and given the huge population, India would emerge as a major market on the global arena. Significant portion of the economic activities would be happening in India; many of the MNCs and even countries would start their focusing on India leading to a shift in the economic centre of gravity of the globe.

c. Sociological Impacts:

Most of the activities have happened in the primary IT cities like Bangalore, Hyderabad, and Chennai in the south and Gurgaon in the north. Massive migration have taken place into these cities resulting in significant demographic changes of these cities. By 2005 these cities have become saturated; infrastructure is increasingly becoming inadequate and the costs are going high. This is prompting business leaders to look to secondary cities<sup>12</sup>. This process will be aided by planners and entrepreneurs and the growth of the secondary cities is bound to happen in the years to come.

The knowledge sector engages predominantly the younger persons. Coincidentally India is experiencing a *demographic dividend* at this time making available a large and young workforce. This makes it easy for India to absorb the opportunities emerging through the knowledge segment. India needs a large talent pool to man the positions being created by the globalisation and expansion of the Indian corporate sector and the massive expansions in the knowledge segment of its economy. These trends will take large number of Indians to various parts of the globe; Life styles in India would also move towards global patterns and standards.

*Languages and cultures will experience a fusion*; increasingly people would become multi-lingual and multi-cultural. Ethnic or cultural purity would become vestiges of the past. Within India, English would become more popular and acceptable than it has ever been in the past. Would it lead to decline in the relevance and importance of regional languages and cultures? This is something to be watched keenly; in all probability there would be a fusion of various cultures and languages with each influencing the other.

With increasing purchasing power and with better life-styles, people would develop more avid interest in the *liberal arts and leisure culture*. Right through the ages it is peace and prosperity that has nurtured man's interest in art and culture. In the years to come larger segments of population would begin to yearn for entertainment through various forms. This would give a great impetus to the growth and development of the entertainment industry in all its manifestations. Here also we can expect a fusion of the different forms. Indians would begin to spend lot of resources on travel and tourism – both domestic and external.

In the new era the basis of interactions would become more and more information and knowledge based. These interactions are bound to be more egalitarian. Many of the traditional *barriers of religion, caste, region and language would melt away* to bring about far better egalitarianism than was ever possible. The mergence of the knowledge economy would be far more powerful than any affirmative action could have brought about. This would nurture inclusive growth of the society defeating all the forces of exclusiveness prevalent for ages in India. With knowledge as the basis of competitive advantage, managing diversity would be a lot easier than it ever was.

#### *d. External Image*

The emergence of knowledge economy, India's ability to provide large variety of knowledge products and services to the globe and the preponderant presence of Indian knowledge workers across the globe would contribute significantly to the *emerging soft power of India on the global arena*. Some other contributors to the soft power would be Yoga, Meditation, Indian Philosophy, India Music, Indian Cuisine, Ayurveda etc. Many of the Indian firms would become MNCs and many will find place in the Fortune 500 list in the near future<sup>14</sup>. This will add to the increased presence of India and Indians across the globe contributing significantly to the brand image of India on the global arena. Forex deposits of the country can be expected to grow significantly from the current [31March

2007] level of US\$ 200 billion; Indian Rupee can be expected to be much more stronger in the years to come.

**Table – 1: Impact Areas and Challenges**

<b>IMPACT AREAS</b>	
Impact on Skills and Knowledge of the Country	Demand for skilled manpower
	Knowledge Infrastructure
	Expansion of Knowledge sector
	Productivity in the knowledge sector
	Knowledge intensity among firms
Economic Impact	Employment
	Income Generation
	Purchasing power
	Overall growth of the economy
Sociological Impact	Demographic changes, Demographic Dividend
	Fusion of Languages and cultures
	Liberal arts and Leisure culture
	Decline of barriers
Impact on External Image of the country	Soft power of India
	More Indian MNCs
	More Indian firms in the Fortune 500 and Forbes 2000 lists
	Growing power of Indian Rupee
<b>CHALLENGES</b>	
Carrying Second India to Prosperity	Bridge the Rural –Urban Divide
	Carry Development to interior parts of the country
	Re-invent Poverty Reduction Programs
	Re-invent the Affirmative Action Plans
	Improve governance; grass-root democracy
	Improve the reach of educational infrastructure
Helping Neighbouring Countries to Prosperity	India surrounded by Failed states
	Build confidence; improve relationships
	Help them establish better governances
	Help them fight hunger and poverty

### **Challenges**

While the emerging global outlook is very positive for India, the path is not all that smooth. The problems, pitfalls, inadequacies and imperfections that India need to surmount are described under two major challenges: [a] Carrying the Second India to prosperity and [b] Helping the neighbouring countries towards prosperity.

#### ***a. Carrying the Second India to prosperity:***

A major part of India and Indians are not currently equipped to reap the benefits of the emerging knowledge economy. They can be seen in the rural-urban divide of India in a

big way; they can also be seen in the slums and shanty-towns of India. Economic development, literacy, and even the knowledge-led development are happening in the southern and western parts of the country. The interior parts of the country are least affected by development; one could perceive the Second India in these parts also. Large number of districts belonging to Bihar, Jharkhand, Chattisgarh and Andhra Pradesh are under the influence of Maoists with little or no control of the state administration. This segment can also be perceived as forming part of the Second India.

It is not desirable to keep a major part of the population outside the ambit of the emerging knowledge economy; it could lead to social unrest and anarchy. If the present trends continue the disparities would only increase. So there is definite need to re-invent the initiatives of development; special efforts must be made to address the problems and situations of the lesser developed regions and people so that they are able to join the mainstream swiftly and effectively. Governance systems at the state level and at lower levels need to be strengthened and the fruits of devolution should reach the lowest of the lowest and the poorest of the poor. Technological capability must be specially used to address these issues. Educational infrastructure must be made within the reach of the have not. State alone will not be able to achieve this goal. Participation of the private individuals as also the corporate sector must be envisaged innovatively to achieve the goal in the shortest span of time.

India has adopted democratic form of governance and over a period has continuously improved the quality of governance. However imperfections do exist in many aspects; the degree of imperfections also varies from state to state. There are inadequacies in the judicial system also which need to be overcome to ensure effective justice to everyone. Emergence of knowledge economy enables better solutions to many of these situations; we need to direct our efforts and technological facilities to address the acute social issues. Such focussed initiatives only would help us bring the Second India into the mainstream.

*b. Helping the neighbouring countries towards prosperity.*

India is surrounded by a set of underdeveloped countries. Many of them find listing among those countries with high level of corruption or among states that are identified as failed states<sup>13</sup>. Some of these are states created on the basis of exclusivity and have implemented a fair amount of ethnic cleansing. Most of them are far behind India in nurturing democracy. Consequently the internal strife and convulsions that these countries experience find reflections in India because of the porous borders that India has with each of them.

It is essential that each of these countries achieve fair amount of development and establish stable governance systems. India needs to help these countries achieve these goals not out of philanthropy but out of sheer necessity for its own sake. Diplomatic relations need to be improved and economic cooperation need to be strengthened. Given the state of disorder that many of these countries are in and the absence of mutual confidence that India has with some of these, it poses a great challenge on India to establish meaningful relationship with its neighbours. India needs to re-look and realign its approach significantly.

## **Conclusion**

Technology and knowledge are going to be prime drivers of the transformation that world is going to witness in the coming decades. The transformation will be much more swifter than what the world has witnessed. The impacts would be far more epoch-making than what the world has seen experienced. This transformation would give ample opportunity to the developing countries to catch up with the developed countries at least in some of the areas. In an increasingly networked world, the interdependency of the countries will ensure that the developing countries get that opportunity.

Countries like India are bound to be the major beneficiaries. India, because of its legacy has its own share of the challenges. The first is to gain the confidence and carry forward all its people in spite of their diversities. The second is to gain the confidence and carry forward all its neighbours.

## **End Notes:**

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12. Economic Times, Ahmedabad dated 30<sup>th</sup> March 2007 quotes PTI: “.....Alsbridge, the outsourcing experts, announced on Thursday that its internal research shows that India has more growth potential than just the usual hotpicks – Bangalore, Delhi and Mumbai. International companies can now start thinking beyond the three big cities and look at the top 10 up and coming cities of Ahmedabad, Chennai, Hyderabad, Kochi, Kolkata, Mangalore, Nagpur, Pune, Thiruvananthapuram and Vishakhapatnam.”



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14. Economic Times, Ahmedabad 31 March 2007: List of Indian firms in the Forbes 2000 list is quoted at 34; one year back this was 20.