India’s Transition to Knowledge Economy: Opportunities and Challenges
The way forward towards 21st Century

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1. Introduction

Economies around the world in recent past have been reshaped by technology and globalization (McKinsey, 2012). Economic globalization and advances in information and communication technologies (ICTs) led to the emergence of knowledge economy – an economy that creates, disseminate and uses knowledge to enhance its growth and development (World Bank, 2005).

Knowledge economy is one in which production and utilization of knowledge play a crucial role in creating wealth. Knowledge becomes the core of economic development in knowledge societies. Economic activities in knowledge societies are triggered by information, which forms the basic input for producing wealth. Higher growth rates of service sector in relation to manufacturing and agriculture characterize the new knowledge economy. Services are increasingly integrated to all productive activities in knowledge economies.

ICTs today encompasses almost all spheres of human endeavour. ICT sector exlands by leaps and bounds and resultanty it raises production to a greater extent and generates employment opportunities in manufacturing of IT related products. The use of ICT helps raise labour productivity, growth and employment in agriculture, manufacturing and service sectors as well. The structure of traditional market system has been reframed with greater penetration of ICTs and revolutionary changes have been taken place in the nature of human development by improving their quality of life with ICT oriented livelihood and life style initiatives.

The Indian information scenario has been greatly changed with the emergence of knowledge economy since early 1990s when India embarked on liberalized economic reforms. There has been structural changes in the area of information infrastructure. Corporate organizations exploit knowledge resources for profit making and public institutions start generate knowledge for development of the economy and society at large.
Objective of study
The Paper attempts to examine the importance of India’s growing knowledge economy in generating wealth, creating jobs and removing poverty, and underlines the need for reinvigorating its economic policy frame work of speeding up reforms to reap the benefits of knowledge resources.

Methodology and Sources of Data.
The methodology adopted in the study is analytical and descriptive. The study is based on secondary sources of information drawn from various publications. Data are also drawn from publications, print and electronic, of governmental and non-governmental agencies such as Planning Commission, Government of India, World Bank to arrive at conclusions.

The organization of the paper:
1. Introduction
3. Essential Pre-Requisites of Knowledge Economy
4. India’s Emerging Knowledge Economy
5. India’s Strength and policy Initiatives.
6. India’s Challenges and the Way Forward.
7. Conclusion.

Economists generally used to consider land and capital as primary factors of production, which are to be employed by labour in pursuit of production of goods and services. Now it is realized that knowledge is a critical element of producing wealth and creating job in contemporary societies. Some 2300 years back Kautilya, the celebrated author of Arthasastra, proposed to create wealth from knowledge by emphasizing the importance of knowledge as prime mover of producing wealth. India was an economic super power in the last till CE 1700. (Maddison, 2001). India was the nerve centre of scientific knowledge in historical ages. India’s past achievements in science, philosophy, mathematics, astronomy and literature
evidenced that the country had been a leading knowledge society in the last millennia. All the fortunes were lost for the long stretch of the exploitative rule of the colonial British beginning from 1757 till 1947, during which India suffered first and the resultant of which that India became a closed economy, which hardly saw the rise of modern industrial market. (Nilekani, 2008:131) India has now got the opportunity to regain its lost power by leveraging its hidden strength of knowledge resources. Knowledge, unlike other factors of production, fetches increasing returns to scale. In a knowledge economy, knowledge is created, harnessed and utilized in various sectors of the economy. There would be a constant search for new knowledge, and then it would be applied to value-adding activities in any sector. (Mahajan, et al, 2009)

3. The Essential Prerequisites of a Knowledge Economy.

The essential prerequisites for developing a sustained knowledge economy are:
- Educated and trained workforce.
- Innovation System and Technological Advancements.
- Information Infrastructure
- Economic Environment and Institutional framework.

Education and Skill Formation.

Human capital is an important factor for economic development of any nation. Educated and trained personnel form human capital. Development of skills necessarily increases human efficiency and any incentive for human capital is an effective means for economic development (North, 1990)

Educated and skilled workforce is a necessary prerequisite for sustaining a highly developed knowledge economy. Well educated and properly trained working populace can create, share, disseminate and utilize knowledge more effectively and efficiently for improving the production and productivity in the critical areas of economy such as agriculture, industry and services.

Primary education may, therefore, be given primacy in educational reforms and secondary and higher education sectors are to be revamped to equip students to acquire core competencies in the areas of knowledge sectors such as information and communication technologies (ICTs) and information technology enabled services (ITeS). 

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Innovation System and Technology

Technological advancement is possible only through innovation. An efficient system of innovation can only foster development of technologies for better economic gains. Innovation effects novel changes to products, processes and services. An innovation system generally refers to a plethora of institutions, rules and laws pertaining to the setting up of technical institutions and R&D facilities to acquire, create, disseminate and utilize knowledge for improving productivity in every segment of the economy.

Innovation presumes a favourable entrepreneurial climate entailing motivations and incentives sans bureaucratic hurdles and regulatory obstacles. Institutions and institutional mechanisms that create a conducive atmosphere for promulgating R&D work for producing new products, processes and technologies.

Information Infrastructure

Acquisition, creation, dissemination and utilization of knowledge requires a well-knit information and communication technology networks such as telephony, computer systems, and internets. The application of communication technologies help reduce transaction costs and lower distances by economizing time and space.

Economic Environment and Institutional Framework.

Successful knowledge economies will become difficult if the economy lacks a favourable economic environment and a systematic institutional mechanism to pay the way. Good public governance, sound macroeconomic policies, effective regulatory mechanisms, efficient financial system and an independent legal system are all part and parcel of a conducive economic and institutional regime. Macroeconomic policies maintain exchange rates and contain inflation, regulatory system encourages competition and ensures efficient functioning of product markets and factor markets and legal system helps provide early redressals. Macroeconomic stability, free and competitive markets, modernized financial and banking systems, rule of law, democratic governance and transparency, and lesser bureaucratic controls are all the characteristics of a good economic and institutional regime.

4. India’s Emerging Knowledge Economy
India is moving towards the new growth path of higher expansion thanks to the phenomenal success of economic reforms pursued since 1991. It was the positive contribution of the growing knowledge economy, among other things, that paved way for the achieving higher economic growth. A recent study of the World Bank (World Bank, 2005) categorically submits a future prospective projection of high economic growth on the basis of calculating Total Factor Productivity (TFP), which exhibits country’s learning capability. (Figure 1) The study shows that India can easily harness knowledge resources to attain higher economic growth if its public governance system is reoriented for leveraging the hidden strengths of the economy at large.

India has a greater advantage in gaining on knowledge economic potentials. It has a larger number of English speaking educated youth. It is her demographic dividend, which no other country can have in the world. India has got a dynamic private sector with greater entrepreneurial skills. India’s is the largest market in the world. India’s free market economy is another added advantage. It has a well developed financial and banking sector. The country has highly developed science and technology institutes. In order to encash these dividends we may reorient the system of economic governance to find favour with the changing global scenario.

Knowledge has now become the means to raise India the economic super power. We may able to feed the global people by increasing the food grains production with the help of gaining knowledge resources, for which we need to train our agriculturists to tap benefits of bio technology for their agricultural operations. Business Process Outsourcing (BPO) and Knowledge Process Outsourcing (KPO) are the areas, where the prospects of employment are abundant for our educated and technically skilled youth. Knowledge industries are the gold mines for the knowing populace to create wealth and generate employment. We need to equip our mass population to harness the unending sources of fortunes in knowledge sectors.

5. India’s Strength and Policy Initiatives.

Strength
India has got a functioning democracy with greater transparencies, thanks to the recently implemented Right to Information Act. A good industrial environment has been created for promoting private entrepreneurship. Free enterprises are flourishing length and breadth. Infrastructure facilities are
established for developing entrepreneurial skills. Effective capital markets and dynamic financial and banking systems are also characterizing India’s investment environment. Our legal system and independent judiciary are supportive for protecting rights and ownership. India’s corporate governance has been dramatically improved.

The inherent advantages that India is now enjoying are its superlative macroeconomic stability, widening up of large domestic market, emerging middle class with highest purchasing capacity and a remarkable reservoir of low cost trained workforce.

Policy Initiatives.
India’s emergence as a leading economic super power is an unparalleled marvel of the 21st century. India becomes one of the most favoured investment destinations in today’s world. Despite the economic meltdown in the West, FDI inflow into India is still strong. During the last couple of years FDI equity inflows have registered a phenomenal increase. The UNCTAD World Investment Report's (various issues) revealed that a significant increase in FDI inflows in India made possible mainly because of improved investment environment and further opening up of the telecommunications and other industries. The government has taken drastic measures to showcase India as an incredible investment destination. (The Indian Express, New Delhi, February 26, 2009). The World Investment Prospects Survey (2010-12) shows that among 20 most promising investor countries, nearly half of them were developing and transition economies of which India occupies the 6th position (UNCTAD, 2012)

India’s economy has been maintaining macroeconomic stability on inflation and interest regimes with the proper monetary and fiscal policy interventions. A positive investment climate has been created with the promulgations of FDI policy initiatives.

6. India’s Challenges and The Way Forward.

We are living in the era of hyper connectivity. Hyper connectivity is defining relationships between individuals, consumers and enterprises, and citizens and the state. (McKinsey, 2012). ICTs redefine the business models all the world over. It introduces new opportunities to increase productivity and well-being.
of the people. It generates new products and services and helps improve the way public services are delivered.

All economies came to realize that an integrated ICT industry would enhance competitiveness and creativity of their economies and would fuel the sustainable growth of the future world economy. Everywhere the countries have been unveiling their innovative strategies for the ICT industry, which would become the enabler of future economic growth.

India has to move a long way to leverage knowledge economy for the benefit of the people and the nation. Other countries are far ahead in reaping benefits of ICTs for improving the lives and livelihoods of their people. Advanced economies have already leveraged knowledge industries to a greater extent for their economic achievements. Emerging economies are also on the move to gain further momentum for their economies. McKinsey Global Institute recently prepared Networked Readiness Index Ranking (NRI), which shows the degree to which economies leverage ICT for enhanced competitiveness, where India is ranked 69, while China has got 51st rank. Sweden is placed 1st and Singapore 2nd. Among Asian countries India is in 4th place while Malaysia is placed 1st and China is placed 2nd. (McKinsey, 2012)

The convergence of information technology (IT) and communication technology (CT) into information and Communication Technology (ICT) is a recent phenomenon, which impacts consumers, industries and governments more significantly in all countries. This transformation can help economies harness and use new and existing knowledge to enhance productivity of agriculture, industry and services and increase overall growth of the economy as well. There exist greater potential for increasing productivity by shifting labour from low productivity and subsistence activities to more productive and modern sectors.

In developing Asia, India can play a crucial role in making a future world order of greater prosperity by evolving a growth path of new knowledge economy, which can be propelled by the critical mass of educated people, who can create wealth for the growing population. Globalization offers new opportunities. It is out of globalization that the corporates make use of knowledge in their profit making activities. In the meantime governments have to facilitate for reaping benefits from opportunities emanated from the integrated global situations by educating people, creating infrastructure and promoting research and development activities in the state. Globalization gives opportunities to the governments to
tap technology and managerial expertise for the benefit of the common masses in an economy, where knowledge is the new source for creating wealth.

India has a good choice to launch a new pathways of growth for its future progress. The emerging knowledge economy of India opens up new avenues for lifting people out of poverty by enhancing overall productivity and increasing per capita income.

India’s transition to a fully developed knowledge economy will become successful only if the bottom of the society gets out of stains and insanitation. 79% of the Indian people lives in villages with limited basic facilities of living, over 30% of the people are illiterate and 45 lakhs students are keeping out of school. The knowledge economics should become beneficial to the downtrodden people for which they may be provided with basic amenities, and all the students at the age group of schooling are ensured of primary education.

India has the greatest potential for increasing efficiency and productivity in agriculture, small businesses, health care industry, food industry, culture and other informal industries by the effective use of knowledge resources. To make knowledge works for the poor all its people should be educated. Universal education should become a reality. The mind set of the political leadership and the bureaucratic bandwagon may be changed towards implementing the programme of “Education for All” with greatest care and sincerity.

Despite India’s growing economic growth, a large number of obstacles still exist in the multiple roadways against the forward movement of the knowledge economy. In spite of India’s sweeping economic reforms launched in 1991, India’s economy is not fully opened in all senses. The bureaucratic hurdles still persist. Free entry and exist for the industrial firms are still out of range.

India has low cost and skilled work force. But the stringent labour laws prohibits the expansion path of small scale sectors. Foreign investors expect more investment friendly responses from the Indian regulatory regimes. Economic development is a process of continuous forward movement to create a conducive business environment. “A good investment climate provides opportunities and incentives for firms—from micro enterprises to multinationals—to invest productively, create jobs, and expand”. (World Bank, 2005:6)
For a growing industrial economy, and in all senses, for the knowledge economy as well, a good investment climate must persist. Excessive regulations of the entry and exit of the firms should be done away with. Restrictions on the hiring and firing of workers also form a major hurdle for doing businesses in India.

To become a forerunner in the globalized knowledge economy of the 21 century India should gear its enlarging market economy towards a more competitive roadways by focusing its efforts on further liberalization of economic engagements. Road blocks of relentless economic expansions may be removed. Stringent regulatory formalities may be dispensed with.

India can alleviate poverty by leveraging the strength of the knowledge resources and the country, which missed the Industrial revolution, can celebrate the success of knowledge revolution in the near future, if it pursues a good public governance, in which the government, the public sector and the civil society can work together for the common future. India has to accelerate further reform movements by developing a judicious policy mix to harness knowledge as a critical factor of production so as to regain its lost economic superiority, which she enjoyed till the 18th century. “India can no doubt reap tremendous economic gains by developing policies and strategies that focus on making more effective use of knowledge to increase the overall productivity of the economy and the welfare of its population” (World Bank, 2005: p.1)

7. Conclusion

It has been observed that the developing economies are becoming the world’s largest suppliers of low skill labour as global markets are accessed by growing populations all the world over. The low-skilled workers in the developing economies are filling their domestic demands as well apart from meeting the global needs. (MGI, 2012).

McKinsey Global Institute (MGI) has clearly revealed that China added 121 million non-farm jobs in its expanding manufacturing and service sectors in the past decade, of which 80 million were filled by workers shifting out of low productivity agriculture. China created about 33 million jobs in manufacturing. about one–third of all new non-farm jobs were associated with exporting industries. India, on the other hand had
a slower pace. India created only 63 million non-farm jobs, which was enough to keep pace with the growing labour force, but hardly sufficient for more workers to move out of agriculture into more productive manufacturing jobs. India is behind China in creating higher value added manufacturing and export-oriented jobs.

India has to move a long way to harness knowledge resources in order to enhance its economic achievements. India has lesser broad band subscribers as compared to other emerging economies. (Table I). The e-governance propositions are held unsuccessful in many states for disinterested political negligence. There should be a political will among leaders to unleash the immense potentialities of information technology to develop the nation and the people.

To reap the benefits of the expanding horizons of the global knowledge economy, India should put forward the economic reforms with greater emphasis on fine tuning of policy-mix. India missed Industrial Revolution for her policy failures. But India can win Knowledge Revolution with the judicious blending of talents, expertise and economic achievements.

Notes

1. Economic globalization refers to the process of integrating domestic economy with global economy and to the free movement of capital, labour and technology
2. In common parlance ICT is formed out of convergence of information technology (IT) and communication technology (CT).
3. The unprecedented balance of payment crisis erupted in early 1990s necessitated the opening up of the Indian economy with greater integration of domestic economy with global economy through trade liberalization and delicensing.
4. Human capital is defined as the knowledge, skills, competence and other attributes embodied in individuals that are relevant to economic activity. (see OECD,1998).
5. Significant changes in the FDI policy have been made during the period 2004-08. The Government has liberalized FDI caps in in civil aviation, telecom, mining, and petroleum and natural gas sectors. Procedural simplifications have also been made for allowing FDI in various sectors. (The Indian Express, New Delhi, 26, Feb.2009).
TABLE I

Broad Subscribers in Select Countries at the end of December 2012

(In million)

<table>
<thead>
<tr>
<th>Country</th>
<th>Numbers</th>
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<tbody>
<tr>
<td>China</td>
<td>126.3</td>
</tr>
<tr>
<td>US</td>
<td>85.7</td>
</tr>
<tr>
<td>Japan</td>
<td>34.0</td>
</tr>
<tr>
<td>Germany</td>
<td>26.1</td>
</tr>
<tr>
<td>France</td>
<td>21.3</td>
</tr>
<tr>
<td>UK</td>
<td>19.6</td>
</tr>
<tr>
<td>South Korea</td>
<td>17.2</td>
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<tr>
<td>Country</td>
<td>Value</td>
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<td>---------</td>
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<tr>
<td>Russia</td>
<td>15.7</td>
</tr>
<tr>
<td>Brazil</td>
<td>13.3</td>
</tr>
<tr>
<td>Italy</td>
<td>13.3</td>
</tr>
<tr>
<td>INDIA</td>
<td>11.0</td>
</tr>
<tr>
<td>Spain</td>
<td>10.5</td>
</tr>
<tr>
<td>Canada</td>
<td>10.1</td>
</tr>
</tbody>
</table>

Source: Ministry of Communications and Information Technology (Loksabha Qn. #11), published in The Hindu Businessline, August 14, 2012
References

Books
UNCTAD, 2012, World Investment Prospects Survey 2010-12

News Papers.
The Indian Express, New Delhi, 26 Feb 2009