9.1: Introduction

Knowledge economy has been gaining momentum across the world. Accelerated translation of scientific knowledge into technology is the primary reason. No less significant if not relatively more in the present world for devising means and ways for widening the use of technology - wider acceptance and mass consumption of knowledge intensive commodities. Invention of mobile phone and personal computer has made revolutionary change in this direction. We should not undermine the increased requirement of skilled manpower - knowledge worker - in producing sophisticated knowledge intensive products. Entrepreneur or organization is at the base of Knowledge Based Economy too. We cannot ignore the significance of human capital.

Both scientific knowledge and technology are self propelling. The development process is newer kind of skilled persons. Experience suggests negative externality is short lived. In other words applying new knowledge continuously results in innovation which yields dividends – inducing quality of human capital. Wealth generation becomes easier as has been perceptively observed by Peter F. Drucker:

"We now know that the source of wealth is something specifically human knowledge. If we apply knowledge to tasks we already know how to do, we call it 'productivity'. If we apply knowledge to tasks that are new and different, we call it 'innovation'. Only knowledge allows us to achieve these two goals." Indeed, changes in quality of human resource is implicit.
9.2: Human Resource Development: skill, efficiency and organization

Sustaining a competitive advantage increases the probability of long-term survival and financial success of the organization. In knowledge era, this competitive advantage can be obtained by the effective involvement, management and development of workforce. The most strategic way to invest in people is through learning activities. Human resource development has evolved as a critical element of broader business and human resource management strategies. The importance of an appropriately skilled and developed workforce is recognized by many in business as essential to the implementation of continuous improvement programs. An educated and empowered population resulting from proper human development strategies contributes significantly to increased productivity and sustainable economic growth and development.

Human Resource Development (HRD) is the precondition for attaining progress in developing a knowledge-based society, reducing skills mismatches in the labour market, and promoting a country's international competitiveness thereby supporting social and economic development and well-being of the people. In an integrated sense, it also encompasses health care, nutrition, population welfare and employment and poverty.

The experience of the majority of countries suggests that the focus of human resource development policies has been on promoting knowledge and skills through education and training and enhancing the employability; improving access and equality of opportunity to all to live and work in a knowledge and information based society (ILO, 2001).

HRD, or education and skills of the labour force, is singled out as a fundamentally and centrally important dimension for a country’s development into a Knowledge Based Economy. Deficiency of labourers in understanding the new knowledge and putting it in usage will not be fully assimilated.


Human Capital refers to the productive capacities of Human beings as income producing agents in the economy and may be defined as the ‘stock of skills and
productive knowledge embodied in people (Rosen, 1989:682). Human capital formation rests on the proposition that people enhance their capabilities as producers and consumers by investing in themselves through schooling, health, on the job training, searching for information about job opportunities and by investing in migration (Schultz, 1962).

The importance of human capital for economic growth was recognized since early times. However, a formal induction of the concept into economic analysis may be attributed to T. Schultz and Gary Becker during the 1960s.

The relevance of education and acquired capabilities in determining the nature of economic functions performed was emphasized by Plato. He distinguished between the innate abilities of individuals and education for artisans that led to an increase in economic wealth. Aristotle gave importance to the economic role of education in society and emphasized the need for state support to the education sector in society and emphasized the need for state support in order to ensure general welfare (Alex, 1983). Among the classical economists, J. B. Say asserted that since skills and abilities are acquired at a cost, they should be classified as capital. J. S Mill paid attention to the acquired skills of human beings and classified this as capital. Later on, Irving fisher conceptualized capital as including specialized human capital and argued that a skilled individual should be placed in the category of capital. Adam Smith argued that division of labour led to an improvement in the dexterity and skill of workers thereby contributing to production in the economy (kiker). Marshal also stressed education as investment in human capital.

**9.4: Human Capital: Conceptual Transition**

The contribution of Schultz (1961) marks the beginning of the formal induction of human capital concepts into the mainstream of economic analysis. Schultz stated ‘---investment in human capital accounts for most of the impressive rise in real earnings per worker’. He also emphasized the distinction between specialized human capital and general human capital, and pointed out the importance of the latter in generating increasing returns in the economy. Becker (1962) added another dimension of on-the-job training to the formation of human capital and influenced the analysis of firm-specific investments in training, labour relations and
contracts. The limitations of the human capital approach spring from the neo classical framework within which these theories are located. The growth models such as that of Solow also treat human capital in a narrow fashion. This is evident in the way in which only the one way relationship wherein labour contributes to production is considered and the role of labour in creating new technology is overlooked.

The new endogenous growth theories seek to go beyond the Solow growth model and address themselves to the question of generation of new technology. Lucas (1988) emphasises investment in human capital more directly and links it to long term rates of economic growth. These human capital theories indicate how investment in education enables the entire production process to benefit from positive externalities. Educated people not only use technology more efficiently, they are also likely to innovate and spread the benefits of such innovation to co-workers thereby increasing the efficiency of all factors of production. The endogenous growth approach, despite being in the evolutionary stage has provided many critical insights regarding the role of education and investment in R&D in economic development. However, the theory does not pay adequate attention to the set of conditions that are necessary in the economy for translating individual level skills into enhanced productivity. This set of ‘attitudinal and institutional characteristics’ (Abromovitz, 1995:4) which is termed ‘social capability’, is a critical factor in economic development.

Stiglitz (1995:65), pointing to the importance of this factor states, ‘---the externalities and scale effects associated with human capital arise not just from the number of educated individuals, or from the number of years of schooling of each. India may have more college graduates than Hong Kong. Rather, it arises from the patterns of specialization and interaction which may arise; but whether these patterns of specialization and interaction do arise are matter of economic organization as well; they are affected, for instance, by patterns of individual organization and social organization. Governments may affect both’.

Rosen (1999) states the human capital as ‘an investment that people make in themselves to increase their productivity’. More recently, Frank & Bemanke (2007) define that human capital is ‘an amalgam of factors such as education, experience, training, intelligence, energy, work habits, trustworthiness, and initiative that affect the value of a worker's marginal product’. Additionally, some researchers define that
human capital is ‘the knowledge, skills, competencies and attributes in individuals that facilitate the creation of personal, social and economic well-being’ with the social perspective (Rodriguez & Loomis, 2007).

Consequently, human capital simultaneously includes both of the instrumental concept to produce certain values and the ‘endogenous’ meaning to self-generate it. In order to dependently/independently create these values, there is no doubt that leaning through education and training can be an important in terms of defining the concept of human capital. Considering that experience can be included as a category of knowledge, the human capital is a synonym of knowledge embedded in individuals.

9.5: Quality Improving Strategies of Human Resource

Human resource development (HRD) has featured prominently in the international discourse on development. Most countries are implementing a systematic strategy for HRD in support of economic growth and development. The growing complexity of the work place – accelerated through the dynamic impact of globalisation on national economies, production and trade – has put the question of HRD at the heart of contemporary public policy and development strategies.

Developments in the global context make it imperative for all countries to respond effectively to the dynamic and competitive forces that impact on how national economies relate to the global economy. With regard to HRD, economic competitiveness is measured not only by the aggregate skills of a country’s workforce, but – perhaps more importantly – by the flexibility and capacity of the workforce to adjust speedily to the rapid changes in technology, production, trade and work organization. Consequently, the ability to respond to these changes with speed and efficiency has now become the area where many countries seek a competitive advantage.

According to Ziderman (1997:352), ‘There has been a move from primary reliance on policies that emphasized capital investment in plant, machinery and infrastructure, or export-led growth strategies, to a broader approach that assigns a central role to investments in human capital. Expenditures on improved education, training and health are now no longer regarded solely (or mainly) as benefits
stemming from economic growth and rising incomes; increasingly, they are also seen as investments in human capital that make this sustained economic growth possible. This approach is shared not only by national governments, but is endorsed in the investment policies of international aid agencies.’

Most countries and multilateral institutions acknowledge the need to give systematic attention to the role of HRD in supporting national economic growth and development programmes. This Global acknowledgement of the importance of HRD is illustrated by the response of the United Nations, which formally inserted HRD on its agenda through Resolution 33/135 of 1978, following discussions on the subject over many years. The 1989 General Assembly Resolution 44/213 declared:

“…..human resources development is a broad concept … requiring integrated and concerted strategies, policies, plans and programmes to ensure the development of the full potential of human beings … so that they may, individually and collectively, be capable of improving their standard of living” (United Nations Programme in Public Administration and Finance, 1995:5).

The United Nations, in its Programme in Public Administration and Finance (1995, p. 3) makes an emphatic case for HRD and human face as ‘It is generally agreed that if overall human conditions are to improve, there must be increasing emphasis on human resources development. Appropriately, such development provides for increases in productivity, enhances competitiveness and supports economic growth.’

The contribution of education and training to economic and wider development has been demonstrated in varied national contexts. However, experience and systematic research has also emphasized an important qualification: HRD is a necessary condition, but it is not a sufficient condition for economic growth and development. Thus, if HRD is to create the desired development outcomes, it needs to be integrated with the whole range of development strategies currently being implemented. Without doubt, the lack of adequate human resources severely constrains social and economic growth and development. Almost all countries have therefore identified HRD as a key policy and development priority.
9.6: Knowledge Acquisition – Education Attainment

The World Development Report asserted that knowledge, not capital, would be the key to sustained economic growth and improved human welfare (World Development Report, 1998 and 1999). Education supplies the economy with human resources with the requisite knowledge, training and qualification to meet the demand for economic development. Education produces knowledge and skills in the labour force which add to productivity. Education widens choices and broadens horizons of life style and pattern of production. Education is an investment which yields high rate of return.

International trend

Institutions of higher education are destined to play a fundamental role in knowledge societies, based on radical changes in the traditional patterns of knowledge production, diffusion and application. Enrolments in higher education almost doubled between the early 1970s and 1990, the estimated number of students rising from 28 to 69 million, and reaching the figure of 122 million in 2002. According to certain projections, the student population could reach 150 million in 2025. This trend is not confined to the wealthy countries. In Africa, Asia and Latin America, strong population growth has helped to swell numbers at the primary and secondary levels, thereby boosting enrolments in higher education, although to a lesser extent than in Europe or North America.

The BRICS nations are investing heavily in building their human capital. They created their huge platform for the world’s best education and technical training, which helped them launch many small companies and become world leaders. The BRICS countries have attracted global attention to their talent, education, technical knowledge, people management, and large investment in intellectual capital.

‘Brazil is focusing on its own style; Russia has learned and adopted many new practices; India is changing the world’s perception of it through development; China has become self-reliant, and South Africa continues to progress despite its problems. China and India are both on the verge of large development projects. These countries’ successes are entirely due to their investments in HRD projects. This success is not
limited to America, the UK, or the BRICS; any nation can be successful through intellectual development investments, via strategic HRD initiatives.’

9.7: Knowledge Creation in India

India is probably the top HRD builder among the BRICS countries. The article 45 of the constitution proclaimed and promised that the state shall endeavour to provide within a period of ten years from the commencement of the constitution for free and compulsory education for all children until they complete the age of fourteen years. The objective of incorporating education in the concurrent list was to facilitate evolution of all India policies in the field of education. In addition to policy formulation, the ministry of HRD has the responsibility for educational planning. The union government continues to play the lead role in the evolution and monitoring of educational policies and programmes, the most notable of which are the National Policy on Education (NPE), 1986, the Programme of Action (POA), 1986. The National Policy envisages a national system for education, which would take determined steps for the universalisation of adult literacy.

Gross Enrolment Ratio and Adult Literacy

The adult literacy in India as per UNDP Statistical Update 2008 was 65.2% which ranked India at 148 among 179 countries. Adult literacy rate in 2007 was 66% in India as against 90% in Brazil, 90.8% in Sri Lanka and 92% in Indonesia. The combined gross enrolment ratio (GER) in education was 61% in India as compared to 87.2% in Brazil and more than 68% in Sri Lanka and Indonesia. As of 2007, the GER was 78.3% for school education and 12.39% for higher education (age 18 to 24 years). In 2009-10, there are about 1.5 million schools in India with a total enrolment of 250 million students starting from pre-primary to standard XII. The total enrolment in higher education is about 20.7 million in 2009-10. The long term goal included in the Government’s plan for 2007-2012 is to ensure that good quality higher education is accessible to all. India’s gross enrolment ratio in higher education of around 12.40% in 2007 is lower than the world average of 23.2% as well as lower than the average of 22% for Asian countries. The government’s aim is to increase the GER to 25% by end of 2015-16 and 30% by 2020. Already, the Government permits 100%
FDI in the higher education sector. The number of people acquiring post-secondary education would positively affect the knowledge base of the workforce.

The current challenges of HRD in India are to universalize secondary education and provide the right to education to all children, achieve full literacy for adults, upscale higher and technical education and expand opportunities for vocational training.

Study shows on education attainment, the ratios of economically active population with senior secondary education or above were 99.9% in Japan, 90.8% in the US, 86.5% in Canada and 72.7% in Australia in the year 2008. The ratios of the high-performing India and Asian economies were above 70%.

**HRD Investment in India**

Public investment in education as percentage of GDP has been increased from 2.60% in 2004-05 to 3.23% in 2009-10. Public investment in education has been increased from 9.70% in 2004-05 to 10.6% in 2009-10.

**Vocational Education and Skill Development**

Development of vocational skills is an integral part of HRD. Vocational training in India is primarily imparted through the government and private industrial training institutes (ITIs). As of February 2012, there are in total 9,447 ITIs, with a total seating capacity of 1.3 million. The total numbers of government ITIs are 2,244 with a total seating capacity of 472,738. The total number of ITIs has increased during the recent past (2007–2012) by 11.5%, while the total number of seats has increased by 12.2%.

India had not focused on skill development before the Eleventh Five Year Plan, which has created a gap with a large supply of learners. Recent Data shows that only 5% of the population of 19-24 age group has acquired skills under vocational education. Therefore, the Government of India has announced a National skill Development Mission which comprises of a comprehensive skill development programme covering the entire country with a target to achieve 500 million skilled persons by the year 2022. As part of the National Skill Development Mission, 1000
new polytechnics are proposed to be set up in the government as well as private sector.

**Skill Development**

India has seen rapid growth in recent years, driven by the growth in new-age industries. The increase in purchasing power has resulted in the demand for a new level of quality of service. However, there is a large shortage of skilled manpower in the country. In the wake of the changing economic environment, it is necessary to focus on inculcating and advancing the skill sets of the young population of the country. India lags far behind in imparting skill training as compared to other countries (table 9.1). Only 10% of the total workforces in the country receive some kind of skill training (2% with formal training and 8% with informal training). Further, 80% of the entrants into the workforce do not have the opportunity for skill training.

**Table 9.1 - Percentage of workforce receiving skill training**

<table>
<thead>
<tr>
<th>Country</th>
<th>Workforce receiving skill training (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>96</td>
</tr>
<tr>
<td>Japan</td>
<td>80</td>
</tr>
<tr>
<td>Germany</td>
<td>75</td>
</tr>
<tr>
<td>UK</td>
<td>68</td>
</tr>
<tr>
<td>India</td>
<td>10</td>
</tr>
</tbody>
</table>

The accelerated economic growth has increased the demand for skilled manpower that has highlighted the shortage of skilled manpower in the country. Employees worldwide state a variety of reasons for their inability to fill jobs, ranging from undesirable geographic locations to candidates looking for more pay than what the employers have been offering. India is among the top countries in which employers are facing difficulty in filling up the jobs. For India, the difficulty to fill up the jobs is 48%, which is above the global standard of 34% in 2012. The lack of available applicants, shortage of hard skills and shortage of suitable employability, including soft skills, is some of the key reasons in finding a suitable candidate for available jobs in the country.

Table-9. 2: Percentage of employers having difficulty in filling jobs – Country wise (2012)

<table>
<thead>
<tr>
<th>Country</th>
<th>Employers having difficulty in filling jobs (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>91</td>
</tr>
<tr>
<td>Brazil</td>
<td>71</td>
</tr>
<tr>
<td>US</td>
<td>49</td>
</tr>
<tr>
<td>India</td>
<td>48</td>
</tr>
<tr>
<td>Germany</td>
<td>42</td>
</tr>
<tr>
<td>France</td>
<td>29</td>
</tr>
<tr>
<td>Canada</td>
<td>25</td>
</tr>
<tr>
<td>China</td>
<td>23</td>
</tr>
<tr>
<td>South Africa</td>
<td>10</td>
</tr>
<tr>
<td>Spain</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: ILO

According to the NSSO survey (2004–05), only 6% of the total workforce (459 million) is in the organized sector. The World Economic Forum indicates that only 25% of the total Indian professionals are considered employable by the organized sector. The unorganized sector is not supported by any structured skill development and training system of acquiring or upgrading skills. The skill formation
takes place through informal channels such as family occupations, on-the-job training under master craftsmen with no linkages to formal education training and certification.

**National policy on skill development**

In order to provide adequate training to the youth and develop necessary skills, the government of India took steps to improve the skill training scenario in the country. In 2009, the government formulated the national skill development policy that laid the framework for skill development, ensuring that individuals get improved access to skills and knowledge.

**9.8: Projected Growth and Sector Demand**

India is expected to grow at a rate of 8%, on an average, in the next 10 years. More than 700 million Indians are estimated to be of working age by 2022. Out of these, more than 500 million require some kind of vocational or skill development training. In Twelfth Five Year Plan, the country has set a tough challenge in the field of vocational education and training in its approach paper in the Twelfth Five Year Plan. It is estimated that 50–70 million jobs will be created in India over the next five years and about 75%–90% of these additional employment avenues will require some vocational training.

**Table-9.3: Projected employment during Twelfth Five Year Plan - Sector wise**

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP Growth Rate</th>
<th>Projected Employment (in million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Agriculture</td>
</tr>
<tr>
<td>2011-12</td>
<td>9%</td>
<td>229.2</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>225.4</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>221.5</td>
</tr>
<tr>
<td>2016-17</td>
<td>9%</td>
<td>240.2</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>232</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>224</td>
</tr>
</tbody>
</table>

*Source: National Skill Development Corporation*
9.9: Capacity Development in India

In India, about 12 million people join the workforce each year comprising highly skilled, skilled, semi-skilled and un-skilled workforce. The last category constitutes the majority of the population entering the workforce. However, the current skill capacity of the country is about four million. It is therefore required to enhance skilling and technical education capacity to about 15 million (considering that even sections of the existing workforce would have to be trained).

The capacity of just over four million a year needs to be upgraded substantially in order to meet the targeted skill requirements till 2022. There exist a significant mismatch between the massive populace of unemployed youth and existing vacancies, which leads to low employability quotient of people. It is therefore a critical next step to focus on the needs of both learners and the labor market in order to make the requisite kinds of skills available by forging partnerships between public administrators, suppliers of educational services, industry and civil society.

India has the second-highest population in the working age group (15–59 years) in the world. The skill set of this population group plays a critical role in the growth of the country. It is imperative that adequate skill training is provided to this age group to make them productive. India is facing a skill deficit on account of the large demand-supply gap, which results in a large pool of potential learners.

Government focus on skill development Skill development is one of the priority agendas of the government for the Twelfth Five Year Plan. The government plans to set up sector skill councils to prepare standards required for training programs. The industries are also proactively taking steps to partner with the government and reduce the skill gap.

Private partnership support

The private sector, in association with the government, will work to identify and quantify skill deficiencies in their respective sectors and constitute a sector plan to address these deficiencies. The National Skill Development Corporation or National Skill Development Trust is entrusted with the job to identify areas where support and implementation will be required from the government.
NSDC has identified 21 high-growth sectors (including the unorganized sector) to provide expanded employment. It has 10 high-growth sectors on the manufacturing side and an equal number on the services side. Of these, manufacturing, textile, construction, automotive, retail and health care are the key focus sectors. Currently, 59 corporate houses/private players/private education institutes are associated with NSDC for imparting vocational education and training in India. With the help of private players, NSDC aims to reach its desired target (150 million skilled persons) by year 2022.

9.10: Conclusion

Knowledge is an important engine of growth. As revealed by the development history of most economies, knowledge contents in human resources and production will hold the key to the future, sustainable development of Indian economy.

In recognition of the importance of knowledge, Indian administration has stepped up its effort in promoting HRD in recent years. Correspondingly, the labour force has witnessed a consistent enhancement in education and skills.

The Government’s expenditure on education has risen in recent years and represented a comparatively high proportion to total public expenses, yet its ratio to GDP is relatively low. In the observation period, the number of graduates of post-secondary education has increased and as a result, the educational attainment of the labour force has generally improved with a higher proportion of workers, especially the younger ones, attaining secondary and tertiary educational levels. But it is far from desired level. The private sector should actively participate in this process in order to supplement the efforts and resources of the government so as to facilitate a faster and balanced development of human resources.

By 2050 India’s working age population will amount to a staggering 900 million. The potential for India’s economic growth via its human capital is stupendous and exceeds that of the major competing nations. The opportunity of “demographic dividend” may be lost if the upcoming working population does not have access to quality education. Both the government sector and the private sector have realized the critical role education plays in building skilled manpower and in turn boosting
economic growth. Sustained action is required to ensure provision of quality secondary education, achieve full adult education and considerably expand opportunities for vocational education.

HRD represents a key lever for accelerating economic growth and development in all economies including India. Literacy, education and skill development together help to raise the level of human resource development. Hence, the responsibilities of the government arising from the set strategy are significant. However, the strategy is not solely related to the responsibilities of government. It is a call to all stakeholders and agents that have a role to play in HRD: workers, employers, the non-governmental sector, educators, learners, parents, individuals, the community and international partners. This calls for increased bilateral and multi-lateral cooperation in order to fully exploit the potentials of human resource development. Enhancing the capability of human resources is urgently required since The wealth and prosperity of a nation depend on the effective utilization of its human and material resources through knowledge intensive industrialization. The use of human material for knowledge based economic development demands its education in science and training in technical skills.
Chapter IX: Knowledge Expansion and Human Recourse Development in India

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