Chapter V

Strategies for sustained supply of skilled Manpower in the field of IT

1. Introduction:

The tremendous growth of the IT industry is propelled by easy availability of highly competent English-knowing professional with rare computing knowledge at a relatively low cost due to massive unemployment in the country. These distinctive advantages have led to the Indian IT industry becoming an important supplier of software professional large number of fortune 500 companies all over the world. All these, even while creating employment opportunities have the task of managing and retaining them very complex and highly challenging. A software professional is a knowledge worker. The new economy critically hinges on knowledge workers who perform complex and highly skilled jobs. Developing HR strategies for knowledge workers has been a major challenge before the profession and practice of the management. Attracting developing, retaining and managing talent will be the most important issue before the organizations of all kinds and descriptions in the new millennium. Managers have to create an organizational ambience where in talent knowledge and human potential can flourish fruitfully in a wholesome way.
1. The relevant concept: - Manpower:

The term manpower was popular during the Second World War, then apparently assed out of widespread usage and reappeared about 1960. The term has many different meaning today and has once again become quite popular. According to one group of author it is taken as equivalent to the term labor. When labor is understood to be a factor of production in the basic sense manpower can also be understood go mean generically personnel or employees? Actually these usage of the term are virtually identical the difference are less in substance then in point of view one being that of the labor economist and the other that of the personnel student or practitioners.

Taken another view manpower can be thought of as the total knowledge skill creative abilities talents and aptitudes and benefits of an individual involved. It is the sum total of inherent abilities, acquired knowledge and skills represented by the talents and aptitude of the employed germs hoped at in still another manner, manpower can mean the total quantitative and qualification of human assets or people in a society. In this sense we are literally interpreting the word to mean the power of man, both in term of the size of the population and the talents and educational levels on that population. Population can be said to determine the quality and education combined with experience the quantity of manpower.
2. The NASSCOM- Mckinse report on India’s industry

According to a NASSCOM-Mckinse report annual revenue projections for India’s IT industry in 2008 are US and 87 billion and market opening are emerging across four broad sectors. IT enabled services and e-business thus creating a number of opportunities for Indian company. Companies of these segments have a domestic market component as well.

Other key findings of this report are

1. Software and services will contribute over 75% of the overall GDP growth of India
2. IT export will account for 35% of the total exports from India.
3. Potential for 2.2 million jobs in IT by 2008
4. IT industry will attract foreign direct investment
5. Market capitalization of IT shares will be around US $225 billion.

Strategy:

Strategy as an operating concept is increasing being used in the present-day corporate world. It envisages thinking ahead to survive and grow in a highly competitive environment. It also facilities organizational growth by way of exploring and exploiting opportunities. Strategy can be conceptualized as the plan of action of the organization to reach it’s goals and objective. One of the basic objectives of any
organization is growth. Growth and prosperity are closely associated with the strategic planning of the organization. The contributions of human resource efforts in achieving organization objective have recently acquired emphasis. An attempt is made here to explore the linkage between corporate strategic management and human resources management and understandings of the nexus and the issues involved.

3. Retention Strategies

The new age economy with it’s attendant prototype shifts in relation to the human capital in terms of it’s acquisition utilization, development and retention has placed a heavy demand on today’s HR professional today HR is expected to comprehend, conceptualize innovate implement and sustain relevant strategies and contribute effectively towards giving the corporation it’s winning edge with a vigorously changing and volatile demand supply education, especially against erratic artribution trends and cutthroat competition no longer restricted to local or regional boundaries a need for strategizing and putting in place a robust mechanism for attracting and retention top talent become vital for new age work force constitutes mostly of knowledge works who are techno-savvy aware of market realities are materially focused and have higher prosperity to switch jobs. They prefer to experiment and explore new opportunities are high risk takers
with higher aspirations and prospects and generally have a totally different mindsets about job carriers.

Why employees leaves and employer gives a set of reasons departing employees they are:

**Table No. 5.1**

**Departing of IT Employee’s in the Selected Industries**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Reasons for departing of employees</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Job content</td>
<td>62%</td>
</tr>
<tr>
<td>2</td>
<td>Level of responsibility</td>
<td>62%</td>
</tr>
<tr>
<td>3</td>
<td>Company culture</td>
<td>60%</td>
</tr>
<tr>
<td>4</td>
<td>Caliber of colleagues</td>
<td>70%</td>
</tr>
<tr>
<td>5</td>
<td>High Salary</td>
<td>90%</td>
</tr>
<tr>
<td>6</td>
<td>Low growth potential</td>
<td>60%</td>
</tr>
<tr>
<td>7</td>
<td>Lack of autonomy</td>
<td>60%</td>
</tr>
<tr>
<td>8</td>
<td>Lack of challenges</td>
<td>85%</td>
</tr>
<tr>
<td>9</td>
<td>Not enough money</td>
<td>80%</td>
</tr>
<tr>
<td>10</td>
<td>Work environment issues</td>
<td>75%</td>
</tr>
</tbody>
</table>

*Source: Field Survey, (2007-2008)*

A retention policy should contain solutions aimed not only at neutralizing the reasons for an employees exit, but also at reducing the cost of employee turnover.¹
The lowest levels of turnover are found in civil servants, fire fighters, polices and other public sector staff groups who are relatively highly skilled and well paid.

4. Re training an employee's strategy:

Almost all of the business units have started realizing the essence of human capital in their organization. On an average, companies invest more than one third of their revenues in their employees by means of recruitment and selection, training and development and career planning etc. Now a day the employees are regarded as the most valuable asset rather proposed asset in the organization. The employees who is proposed asset and when it is the time to invest his/her efforts to achieve the goals and objective of the company, resigns the job and this creates troubles. Retaining talented employees in today’s competitive and global environment is becoming more and more difficult. In general no business unit can avoid this. But certainly provisions can be made for the purpose of increasing and improving the life of the employee-organization relationship. The strategy or a relationship-model may vary from organization to organization based on the organization culture, it’s work-environment, the strategic role of face the globalization, pathway to achieve the goals and objective for effective and healthy competition with the competitions will be one key to maximize the profits, human
capital of one organization is the most valuable asset which improves the workability, mobility and of the organization.

**Stage1:- Employees Evaluation:-**

This is the first stage where a team of evaluators should construct a questionnaire and evaluate the target group based on their attitude, behavior, goals, desire etc. The extrinsic as well as evaluation needs to be carried out. The response can be analyzed and a target group of employees can be identified for the purpose of rectification. The analysis of the activity has to be documented.

**Stage2:- Employee Transformation Treatment**

The input to this phase is the evaluation report for the target group. It is in this stage the actual transformation of the employees approach towards work culture and ethics is taken care of. This is intended to be achieved only by adopting and inducting certain holistic practices.

In this stage there is a need to monitor the change. The change is change in behavior attitude and adoption of the new practices introduced and its measurements with regards to the observations at the earlier stage.

**Stage 3:- Employee Re-Assessment**

Employee re-assessment and feedback is the vital stage in this model. The input in this phase is evaluation report (stage1) as an earlier
assessment of the target group employee. A change can be studied and noted by the team of evaluators. This will also help the evaluators to find out areas of concern for the organization.²

5. Documentation.

Some organization that have started probing the problems in depth have been looking for various factors like employee satisfactions surveys or seeking factors/reasons attribution through exit interview, the compensation package cutting edge technology etc.

6. Manpower Planning:-

True affluence should be measured by the quality of human beings living in a nation and working in organization of all kinds. But such an ideal state is mostly only imaginary. Human resource is as limited as any other resource consistent efforts are, therefore required systematically assess arrange and utilize it. Human resources or manpower has been recognized as being central in personal administration over four decades back Chester Bernard observed.

My own belief is strong that the capacity development and state of mind of employees as individual must be the focal point of all policy and practice relating to personnel. I suppose that the primary purpose in the minds of those who developed personnel policies and who manage business and organization is generally not to develop individuals but to facilitate the working together group of people towards definite ends. In
my view this purposes sedentary in point of order but equally important to that of developing the individual and the two together constitute the entire legitimate purpose of management so far as the personnel is concerned.

Despite the central important of manpower in any administrative organization and the scarcity of talent in many fields of specialization, manpower planning still a neglected area of personnel administration. It was during the Second World War and period following it that a number of countries faced labor problems and a need was felt to developed manpower planning at the national level such an exercise had the twin objectives.

To asses and analyze the countrywide labor force so as to formulate appropriate policies and enable to workers to adopt themselves to the various jobs arising out of the technological advance and the war time necessity.

In some countries, manpower planning becomes a permanent feature, either independent or a part of national economic planning whereas in many other countries it is undertaken only occasionally or indirectly. In the developing countries like India where there is abundance of manpower, manpower planning only assumes a more important role as the pace of economic development must be at a considerable faster rate than the countries which are already
economically well developed. Therefore, government must be mindful of both its own inescapable needs for personnel of all stripes and its impact on the total labor market leading manpower economists have directed special attention to public employment in these strong terms “clearly, the nation cannot afford either mediocrity or severe shortage in the public service. Government must have access to substantial proportions of its talented highly educated and trained, and creative men and women”.

7. Human Resource:

The term manpower has also been equated with human capital and ‘human resources’. Human resource can be also be equated with labor or simply people. Similarity it has been viewed as the citizen of the country beginning with the childhood and going right through life. In a business organization, human resources are treated as one of basic resources or inputs which are to be utilized to the maximum possible extent in order to achieve individual and organizational goals. An organization’s performance and resulting productivity is taken as directly proportional to the quality of its human resources.

8. Planning:

Planning means preparation for some specific action. It means determining of what is to be done and how it is to be done. “A plan is a programme of action for achieving definite objectives or goals”.

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Planning is a process of choosing and to make things happen that might not otherwise happen. Simon Smithburg and Thompson define it as “the activity that concerns itself with proposals for the future with evaluations of alternative proposals and with methods by which these proposals may be achieved”.

A succinct definition of the term has been given by Peter Drucker, according to him “Planning is the continuous process of making present knowledge of their futurity organizing systematically the efforts needed to carry out these decisions and measuring the result of these decisions against the expectation through organized, systematic feedback”. When the planning is taken it is termed as development planning manpower planning is most of the countries is generally undertaken as a part of national development planning.4

9. Manpower Policy:

Form the total social point of view manpower policy is concerned with the development and use of human labor as an economic resource and as a source of individual and family income. Because national manpower policy overlap national employment and educational policies a clear definition is difficult. Therefore, we can probably more usefully define national manpower policy in terms of its goals and the tools with which it pursues these goals recognizing that these same goals are
pursued simultaneously with other policy tools. The goals of manpower policy may be identified as follows:

1. First employment opportunities for all persons who wants them in jobs which balance free occupational choice and adequate income with the relative, preference if members of society for alternative goods and services.

2. The provision of education and training capable of fully developing each individuals productive potential.

3. The matching of men and jobs in the economy with a minimum of lost income and production.

4. In brief, manpower policy may be regarded as a kind of three legged national stool with one leg each for jobs creation manpower education and training and the matching of men and jobs. But from the standpoint of the firm, the concept of manpower policy must be altered if it is to be meaningfully understood. The basic difference in the industrial organization is that they do not deliberately create jobs but to hire the persons to fulfill their business requirements. In industries organizations, jobs are designed and not created so as to achieve their objective of profitability in the most efficient and economical manner.
10. Manpower Planning at Company Level:

Manpower planning may be viewed from the public and private standpoints from the standpoints of public personnel administration it applies to the process of manpower planning for public services and at the level of economy from the standpoint of private administration it is essentially take up at the level of an industrial undertaking.

Different authors have defined manpower planning viewing it all the national level, large industrial level or at a single organizational level. Manpower planning at an enterprise level is defined in a way that rather consistent with it’s definition as applied to the economy but simply it is the process by which a firm insures that it has the right places at the right number of people and the right kind of peoples in the right places at right time doing things for which they are economically most useful. It is therefore a two phased process by which we anticipate the future through manpower projections and then developed and implement manpower action plans and programs to accommodate the implications of the projection. According to Coleman, “It is the process of determining manpower requirement and the means for meeting these requirements in order to carry out the integrated plan of organization.

The process of manpower planning for single organization is naturally, different from that for country or for total public service. However the basic or logical steps are almost similar and the difference
is due to the level and the scope of manpower planning. At the enterprise or company level the nature of manpower planning also depends upon the size and activities of the concern. It is within an organization that manpower planning ensures the right place and time doing the right things for which they are suited for the achievement of goals of the organization. Thus it is concerned with qualitative and quantitative measurement of manpower within an organization to meet its goals.

The manpower planning in all the companies consist of any of the following functions:

Table No. 5.2

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Elements of manpower planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Determination of objectives</td>
</tr>
<tr>
<td>2</td>
<td>Estimating future requirement (forecasting)</td>
</tr>
<tr>
<td>3</td>
<td>Analyzing current manpower supply</td>
</tr>
<tr>
<td>4</td>
<td>Planning for recruitments and training</td>
</tr>
<tr>
<td>5</td>
<td>Allocations of human resource and feedback</td>
</tr>
</tbody>
</table>


11. Recruitment:

Society depends for its progress and well being on the effective functioning of government whatever its type democratic or otherwise will in the last analysis be as good as what its personnel make of it. A
theoretically perfect administrative structure and unexceptional methods of work may be devised but they will be of little or no avail if those task who man the administration are either unequal in their task or are apathetic towards it. However, and interesting feature of administration in the modern times is that it has grown very complex. It has acquired new dimensions as a result of the enlargement of scope functions and responsibilities of administration in developing societies. In fact today we are all caught in the vortex of revolution of different kind we witness knowledge explosion and also technological, social economic and political revolution. For instance launching of AGNI on May 22, 1989 by the Indian Scientists is testimony to the above notion.

“An enlightened administration dealing constantly with the new situations all the time needs equally committed and motivated dynamic and inventive administrative service personnel to handle the technological advances on the other side. Thus recruiting the people of merit and competence for the civil service has become a fundamental imperative to the more specific, it is a process which is of vital importance to the administration that it determines the tone and caliber of public services. In fact on its rests the usefulness and relevance of the machinery of government to the society
12. Selection Process:

The object of manpower selection is to ascertain clearly the type of persons required and to secure appropriate candidates for filling that position. To be more specific, the purpose is to make sure that they physically, mentally temperamentally fitted to the jobs they are expected to do. It is also expected to ensure that new employees developed into desirable employees and that there are a minimum number of square pegs in round holes. Before we initiate the recruitment process it is of utmost importance for an organization to plan and develop recruitment policies and procedures in accordance with the personnel policies and procures and organizational goals. In fact, adequate planning has a vital significance for a sound recruitment policy.

The major steps in any selection process are following:

Table No. 5.3

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Major steps in selection process</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Initial contact</td>
</tr>
<tr>
<td>2</td>
<td>Preliminary Interview</td>
</tr>
<tr>
<td>3</td>
<td>Application bank</td>
</tr>
<tr>
<td>4</td>
<td>Psychological tests</td>
</tr>
<tr>
<td>5</td>
<td>Interviewing</td>
</tr>
<tr>
<td>6</td>
<td>Checking references</td>
</tr>
<tr>
<td>7</td>
<td>Approval by the supervisor</td>
</tr>
<tr>
<td>8</td>
<td>Selection decision</td>
</tr>
<tr>
<td>9</td>
<td>Physical examination</td>
</tr>
<tr>
<td>10</td>
<td>Job offer</td>
</tr>
<tr>
<td>11</td>
<td>Contract of employment</td>
</tr>
<tr>
<td>12</td>
<td>Evaluation</td>
</tr>
</tbody>
</table>

(Source: Gurpreet Randhawa, Human Resource Management, Atlantic, New Delhi, P.82.)
The hurdles in selection process are as follows.

**Table No. 5.4**

**Hurdles to effective selection**

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Hurdles to effective selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pressure to hire- From friends, politicians, family, peers, etc.</td>
</tr>
<tr>
<td>2</td>
<td>Fairness- Not to discriminate on religion, caste, gender or race.</td>
</tr>
<tr>
<td>3</td>
<td>Perception- Ability to understand others differ with individual.</td>
</tr>
<tr>
<td>4</td>
<td>Reliability- It refers to degree of consistency.</td>
</tr>
<tr>
<td>5</td>
<td>Validity- It relates to selection test.</td>
</tr>
</tbody>
</table>

(Source: Gurpreet Randhawa, Human Resource Management, Atlantic, New Delhi, P.88.)

13. **Methods to be adopted in Recruitment:**

The very character of recruit’s who are brought and character of recruits who are brought inform time to time. Many methods have been devised and tried out in fact a sound methods of recruitment is one which one can be adopted to local conditions, resourcefulness and ingenuity is constantly brought not play and at the same time contacts with educational institutions are assiduously cultivated and further more that helps in improving the status and prestige of public service in immeasurable items. Thus having decided the questions of recruiting authority we are faced with the question of finding methods of
recruitment. According to Luis Meyers an eminent authority on personnel administration, “Methods of Selection basically two in number” to him, “Selection from within the service embracing reassignment and promotion. The be more specific one is promotion the latter is one in which appointment to the higher posts in the public service is made only from within the services itself either through a system of promotion or through restricted competitive examination”.

It may be pointed here that the two methods are mutually exclusive and all the countries meet the turnover requirements by adopting both the methods. In fact the method of selection goes to the very nature of personnel system. In a democratic type of personnel system generally a system of recruitment from without is followed. However, in a bureaucratic aristocratic type preference is given to the system of recruitment from within. The general philosophy or democratic system of personnel is provided equal opportunity to all whereas bureaucratic and aristocratic types of system are based on the professional of public service. How let us proceed further to examine the relative merits and demerits of the two systems.

The methods of recruitment and techniques fallowed in every method are given in fallowing table.
## Table No 5.5
### Recruitment Methods and Techniques

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Method of recruitment</th>
<th>Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Direct methods</td>
<td>Educational and Professional institutes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conventions and seminars</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fairs or desired centers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recruiting at factory gate</td>
</tr>
<tr>
<td>2</td>
<td>Indirect methods</td>
<td>Advertising in newspaper</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advertising in trade journals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advertising in technical magazines and brochures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advertising in radio and TV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advertising in Internet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advertising in Professional journals</td>
</tr>
<tr>
<td>3</td>
<td>Third party methods</td>
<td>Public/state employment agencies</td>
</tr>
<tr>
<td></td>
<td>party methods</td>
<td>Private employment agencies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Placement cell of professional colleges and campuses where complete biodata and other particulars are available</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Employment referrals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trade unions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Casual labour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unsolicited applications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data banks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recruiting agencies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leasing</td>
</tr>
</tbody>
</table>

(Source: Gurpreet Randhawa, Human Resource Management, Atlantic, New Delhi, 2007, p75-76.)
14. Recruitment system in India:

In our preceding discussion a reference was made that in modern times, the basic problem of an organization is to recruitable, competent and meritorious youngsters. In private sectors, the major thrust of recruitment policy is to achieve organization goods. However, in public service, the recruitment system is related with the concept of public services, social justice, rule of law and bureaucratic process and procedures. Thus recruitment in a government employment is a complicated task public services are designed in such a way as to meet the constitutional aims and objective on the one hand and provide service to the society for its proper rapid development on the other.

India has adopted a parliamentary democracy. The All India Service central services and states services have come to stay in our administration system because constitution gives provide to the public services by confining them a constitutional status. Public services thus bear a heavy responsibility of legitimizing democracy and of developing socio-economic system for stabilizing the political system. If this pride of constitutional status is to remain in fact then the system of recruitment will have to be formed in such a way that best latent is attracted at the same time the civil servants are responsible to hold the society to prosper with development plans and programs.
### Table No. 5.6

**Recruitment System at a glance in selected industrial area**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Recruitment Sources</th>
<th>Shendra Industrial Area (%)</th>
<th>Waluj Industrial Area(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>(A) Internal Recruitment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Job Posting</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>2</td>
<td>Inside moonlighting</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td><strong>(B) External Recruitment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Media Advertising</td>
<td>31%</td>
<td>30%</td>
</tr>
<tr>
<td>4</td>
<td>E-Recruiting</td>
<td>05%</td>
<td>05%</td>
</tr>
<tr>
<td>5</td>
<td>Employment Agencies</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>6</td>
<td>Special events recruiting</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td>7</td>
<td>Summer Interships</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>8</td>
<td>College Recruiting</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

(Source: Field Survey (2007-2008))

The table No 5.6 highlights on the overall recruitment system adopted and used in the selected industrial area. Mostly companies used two basic recruitment systems i.e. Internal recruitment process and External recruitment process in Shendra and Waluj industrial area. Job posting and inside moonlighting is used in Shendra industrial area as 5% and 4% respectively, which is few high used in Waluj industrial area i.e. 6% and 5% respectively. In external sources direct advertisement is mostly used by the Shendra and Waluj industrial area i.e. 31% and 30% respectively college and campus interview is also a easy and non
expensive method of external recruitment process, which is used 15% mostly by the Waluj and Shendra industrial area companies. Special event recruitment is also adopted by some companies whereas employment consulting agencies are preferred more by both of the industrial area that is 25% respectively. E-recruiting is also introduced by the companies for recruitment of the employees, which is used 5% as a source of recruitment process.

15. Training:

After the selection and induction of employees the next function of personnel management is to provide them proper training. Training function, in fact is to corner stone of sound management. The complexities of modern industrialization and technological changes have very much increased the need of training. It fosters employee self and development versatility.

Organization of Training Programs

A well organized training programme must be organized in the following stages:
Table No. 5.7

The Selected study area is adopting following training criteria for their employee’s in the organization.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Stages of training programme</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assessing training needs in the enterprise</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>Concepts of training</td>
<td>2%</td>
</tr>
<tr>
<td>3</td>
<td>Selection of Training Method</td>
<td>5%</td>
</tr>
<tr>
<td>4</td>
<td>Preparation of Training</td>
<td>8%</td>
</tr>
<tr>
<td>5</td>
<td>Conducting the Training</td>
<td>45%</td>
</tr>
<tr>
<td>6</td>
<td>Examination of the trainee’s job</td>
<td>10%</td>
</tr>
<tr>
<td>7</td>
<td>Follow up</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

(Source: Field Survey(2007-2008))

16. Human Resource Development:

The introduction of modern technology necessitates modification in the method of producing goods and service with the help of new and improved tools of machinery new techniques of utilizing machines and equipment, new materials alteration in the production design and soon. Since the structure, the organization and the concept of work are affected by become difficult for the tools and techniques unless their relationship with the work in understood and known properly.

Till now, it was believed that automation or use of sophisticated machines and other equipment will reduce the number of workers. But in fact the result in own country appear otherwise new jobs associated with the computer like system analysis, programming stress the need for
improved knowledge and skills on the part of the person working on them. “Studies of the organization and design of computer system may well tell is how to develop further as human beings and to put the human mind to more effective use”.

Hence, technological changes results in decline to less skilled occupations and growth of more skilled occupations as well as less physical effort of persons due to better concentration and knowledge of work in many jobs and occupations. But in some new jobs and occupations serious shortage of qualified persons with improved knowledge and skills has become a menacing problem. As such it gives rise to imbalance in jobs and occupation in the establishment. A great care is therefore, needed to compact these imbalance otherwise the fruits of technological advancement can hardly be enjoyed by the society.

It is true that technological changes causes and will continue to cause displacement of unskilled and less qualified persons on the one hand and generates employment opportunities for more qualified and skilled persons on the other “In the process of economic development technological advancement has not caused mass unemployment instead, total employment has steadily increased in European countries. We should therefore not eel uncomfortable by the impact of technology. Instead we should try to develop ourselves by acquiring better knowledge and skills to meet the requirements of new jobs and
occupations generated by modern technology to overcome the growing problems of displacement and resentments.

Technology brings along with it a new style life it is not possible to build up an infrastructure of technology on the plinth of traditional skills, attitudes, norms and values. The character, of technological changes today raises simultaneously more serious problems of adjustment in a large number of areas of man’s existence than it has in the past. As high level of aspiration rational interest, a dynamic personality and an open society are therefore, quite imperative for technological revolution in the developing countries like India.6

17. Training and Development:

Training being most vital tool of HRD naturally forms the major part of the present HRD activities. Effective managers recognize training as an on-going, continuous process, not a one short activity. New problems, new procedure and equipment new knowledge new jobs are constantly creating the need for employee instruction.

The efficiency of any organization depends directly on how well its members trained. Newly hired employees usually need some training before they take up their work older employees require training to keep alter to demands of their jobs to prepare for transfer and promotions. The essentials purpose of manpower training is to develop skills, habits, attitude and knowledge which contributes to the growth of the individual
as well as the organization training also motivates employees to work harder. Employee who understand their jobs are likely to have higher morale. They are able to see a closer relationship between their efforts and performance. Ability can be improved by proper training provided the trainees selected have the necessary qualification. However training which makes for ability will not alone ensure total contribution much depends on institution the kind of training aimed at establishing the relationship and milieu which will activate inherent desire for accomplishment. This desire will remain dormant or will fail to become fully active if the approach to training is one which does not consider total contribution as a major objective self training and self motivation can be the greatest rewards of a training approach.

According to Peter Drucker, development is always self development. Nothing could be more absurd then for the enterprise to assume responsibility for the development of a man. The responsibility rests with the individual his abilities his efforts no business enterprise is competent let alone abilities to substitute its efforts for the self development efforts of individual. To do this would not only be unwarranted paternalism it would be foolish pretension.

18. Non-supervisory Training:

The most important non-supervisory training programs are:
On the job training, Vestibule training, Craft training on the job training is usually adopted where jobs are too varied to permit the establishment of group instruction. It is also used where machinery is to be provided for trainees is too costly. The general setup is to assign a new employee to older and experienced employees so that the new employee learns the skills of the jobs gradually by observation as well as occasional handling of the job.

19. Retraining:

The industrial workers are facing so many problems, because of changes brought by technology. Automation has introduced new problems. The dock workers, LIC employees banking employee, to name a few are in group of fear of losing their jobs. This is at once a challenge and responsibility to the management. In U.S.A. management has been able to meet these problems through retraining programs. In this type the employee retrained on the pay roll and is retrained to do another job.

(i) Special purpose course:

Various special purpose courses are offered by companies to meet special and usual needs of certain employees.

(ii) Supervisory and Executive Training:

The supervisory training needs are multiple and can be determined by several ways involving employees, supervisor top
management and training department and outside consultant. Employee attitude survey help in identifying areas of supervisors themselves may be requested to indicate the areas where they need training. Frequently, supervisory courses consist of job methods training and job relations training help them in handling human relations problem in their departments.

20. Need of Human Resource:

To fulfill the requirement of the changing environment the industrial sector of the country as a whole needs to be geared up to change for ensuring a bright future and to meet their requirement of the changing industrial structure, human resources, unlike machines and other techniques of production also need to be refreshed, rejuvenated or developed from time to time. The other reasons which weigh in favor of human resource development are:

1. Human resource development is a crucial factor in determining the growth and prosperity of business enterprises.

2. Industrial development on modern lines has created a problem of inadequately trained personnel at all levels of activities in business undertaking.

3. It promises to fulfill the career aspirations of the working force and to meet the future requirement of the working force in the light of organizational goals.
4. To ensure control of labor costs by avoiding both storage and surplus of manpower in the establishment.

The essence of human resource development is to bring out the best in man. To bring out the best in man means the better performance of the working force at all levels in the jobs they hold. Better performance or higher productivity depends upon the levels of knowledge. Skill capacities and positive work attitude and values of all people in the establishment. Human resource development as such may be defined as a process of raising productive potentialities of manpower resources.

The task of human resource development in India is a complex net. There is acute shortage as well as excess supply of manpower in many categories which possess a net set of priorities to the manpower planners and managers in the country. Uneven development of the various sectors of the economy from the point of view of absorbing the available supply and to maintain a balance between the demands and supply of manpower resource is yet another special coming is that the manpower development is mainly concentrated on high level manpower requirements which have resulted in lowering.

21. Training Policy:

Training policy should be formulated by line personnel with the assistance and advice of staff. The policy should usually indicate
objectives. The line managers can formulate training policy by taking into account basic objective specifying which of these can be achieved into concrete term specifically while formulating policy, attempts should be made to ascertain the possibilities to be accomplished through training. A wide variety of methods are available to determine training objectives and needs. Some of the principle ones include:

1. Job analysis
2. Psychological test
3. Morale saves
4. Group therapy

22. Type and Techniques of Training and Development:

Broadly the following types of training and development programs are used and adopted by the selected industries for their employee’s.

Table No. 5.8
Training and Development

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Training and Development:</th>
<th>Percentage (%)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Initial or preliminary Training</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>Non-supervisory Training</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>Retraining</td>
<td>35%</td>
</tr>
<tr>
<td>4</td>
<td>Special purpose courses</td>
<td>10%</td>
</tr>
<tr>
<td>5</td>
<td>Supervisory Training</td>
<td>10%</td>
</tr>
<tr>
<td>6</td>
<td>Management Development</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

(Source: Field Survey (2007-2008)
The Table No. 5.8 highlights on the type and techniques of training and development programmes are mostly used and adopted by the selected industrial units. Overall 10% of the initial preliminary training and non supervisory training programme are adopted and used by the employers to train their employees, 35% of the companies preferred refinery process as well as 25% of the industrial units adopted management development programmes for the development of managerial skill’s for their employees. 10% of the employee’s adopted special purpose courses and supervisory training for their employee’s.

1) Initial or Preliminary Training:

Initial or Preliminary Training is designed to meet the needs of new employee of an organization who have had no individual experience. The training is given through a company training institute or public vocational school. The learner may be given training for a period of several weeks of quality. At the same time the neglect of middle level and lower level personnel has led to the emergence of artificial and uneconomic structure a case in point is that we have more trained executives than workers such a situations leads to all kinds of distortions lop-sided development and under utilization of available resource. Instead detailed statistics in respect of working force of different categories in industrial sectors is not available due to weak data base. The estimation of manpower requirement both qualitative and
quantitative is therefore a crucial phase of human resource development from the point of view of drawing up appropriate human resource development programme to meet the existing manpower requirement and to avoid redundancies in future.

Although the country has now become the tenth industrially developed country in the world, but it is a sad commentary that this development has made little change in the fate of masses which continue to be living below poverty line facing unemployment today, “the number of unemployment in India is about 26 millions which comes above 12 percent of total labor force. This ratio is 5.2 percent in the U.S., 3.3 percent in the U.K. and 1.3 percent in Japan.” The number of job seekers on the live register of employment exchange which gives an idea about urban unemployment rose from 0.33 million in 1950 to 14.4 millions in 1980. The situation in rural areas is worse. There is precisely no workable estimate of rural and semi rural joblessness taking into account the incidence of seasonal and disguised unemployment recorded at different employment exchange all over the country taken together. The planning commissions’ estimate of population below poverty line in 1977-78 was 48 percent for rural area and 41 percent for urban area the average for the country being, 46 percent according to the world development report 1981 India with per capital GNP of and 190 is the 15th poorest country of the world.
However, the emphasis on human resource development in India is of recent origin. As a matter of fact, the stress on human resource development has been properly laid in the 7\textsuperscript{th} plan (1985-90) realizing the importance of human factor in the national economy, the government of India has also created a separate Ministry for human resource development under the control of a Cabinet Minister, Policies and Programs in education, health and welfare etc. are also being restructured for the purpose.

Developing nations need a wide variety of human skills to bring about economic and social development. It is assumed to be the leadership role of educational institution to anticipate national manpower needs and meet these demands through tailored educational offering. This leadership role however not fulfilled in developing nation. Whereas in developed countries education is treated as an end in itself. “The developing countries are producing a large number of graduates with the general education, but without the specialized knowledge in some filed of technology the nations requires. The educational offering should therefore, be concentrated to developed knowledge and skills and attitudes and values among the people to bring about changes in a meaningful manner for instance an electrician should be provided theoretical knowledge with safety procedures as well as practical
training. Along with it, effort should also be made to eliminate work thinking in this about the job of an electrician.  

The basic questions related to human resource development are: - How to make people more efficient? How to improve their performance? How to utilize their talents? How to keep them satisfied? How to train them for a change? How to motivate them to work in a changed atmosphere?. The answer of all these questions lies in an effective human resource development programme. So such an effective programme should include:

1. Proper human resource development strategy
2. Adequate manpower development procedures
3. A specialized motivational plan

23. The Reasons for Increase in Indian IT Manpower Requirement

1. Growth of the Indian IT services sector:

   The growth of the Indian software and services exports over the 2002-05 period, in accordance with industry projections, is creating a major need for manpower. As the industry expands rapidly, it needs more specialized manpower to fuel its growth run.

2. Growth of the Indian ITES-BPO sector:

   Unprecedented growth in the high potential ITES-BPO market is also escalating the need for English-speaking professionals with relevant domain knowledge. The sector, bogged down by a paucity of a strong
middle-level management layer, is also witnessing a rise in the requirement for such personnel.

3. A resurgent US economy:

   A rapidly recovering US economy and in particular the IT sector, is expected to once again, create IT jobs. A paucity of skilled professionals in the US is already causing organizations to opt for outsourcing or hiring Indian talent. As this demand-supply gap widens, Indian IT manpower will draw even more interest.

4. A fast growing Indian domestic market:

   The Indian domestic IT market has recorded the highest growth ever during 2004. Computerization by the country’s corporate, PSU and Government sectors is creating a major requirement for skilled, industry-ready manpower. Hiring by the IT services and ITES-BPO segments was on a major upswing during 2004, the tide is only expected to rise over the coming years.

**24. Facts about the Indian IT workforce**

The overall median age of the software professionals is about 27.5 years 81 percent of all software professionals have a graduate degree or above, 13 percent are M.Tech, MBA, CA, ICWAs ,67 percent are B.Tech, BE or MCAs ,20 percent are diploma-holders or graduates. In-demand software professionals are software analysts, domain specialists, information security experts, integration specialists, database
administrators, network specialists and communication engineers, software programmers, designing and architecture experts and data warehousing and semiconductor design specialists. Emerging growth segments that require relevantly skilled professionals include Product Data Management, Content Management, Enterprise Application Integration, Data Warehousing, Contingency Planning and Disaster Recovery, e-Supply Chain Management (eSCM), Wireless Applications, Straight through Processing (STP), Knowledge Management, Business Intelligence, Sales Force Automation (SFA), e-Learning, ePharma, Bioinformatics and Nanotechnology.

25. The Indian ICT Sector: Facing Manpower Challenges

The Indian IT software and services market is expected to grow to US$ 50 billion by 2009. However, NASSOM estimates suggest that the supply of skilled IT manpower may fall short of requirements by 2009. According to recent NASSCOM estimates; the Indian IT industry will contribute 7 percent of the country’s GDP by 2009, providing direct employment to more than 2.2 million people and indirect employment to nearly twice that number.
The Indian IT software and services market is expected to grow to US$ 50 billion by 2009. However, NASSOM estimates suggest that the supply of skilled IT manpower may fall short of requirements by 2009.

26. Career in Information Technology

The phenomenal growth of computers in all fields has opened jobs at different levels, including software. Indian software engineers
have made a mark and it is for this reason that the software industry has been registering a growth of 40% a year. Software professionals are in great demand abroad too and many Indians are employed in the world's biggest software companies. Relevantly skilled manpower, considered as one of India’s primary edge in the global IT markets, has remained one of the key concerns and challenges for the country’s IT sector. While India currently boasts one of the world’s largest, most qualified pools of scientific and engineering manpower, growing global demand for appropriately skilled, industry-oriented professionals and a gradually enlarging demand-supply gap, are expected to test to the limits, India’s IT manpower development capabilities. The country is at an important juncture in its history, having completed the transition from an agrarian economy to a fully-fledged, first-world economy, operating at the leading edge of contemporary technology. A key element in taking the country forward and maintaining its growth momentum will be the provision of a highly skilled and competent global workforce. One of the careers which has gained importance in the last few years is the Master of Computer Applications (MCA). All over India there is a craze to get into them, the demand being fuelled by the phenomenal growth of the software industry. Infact, in these times of an economic slowdown, software is one sector which has gone against trends, registering a good growth rate. The IT software and services industry in India grossed
annual revenue of Rs. 24,350 crore (US.7 billion) during 1999-2000, according to the annual industry survey by the National Association of Software and Service Companies (NASSCOM), the apex body of IT services industry in India. NASSCOM predicts an exponential growth in the software industry at an annual rate of about 60 per cent over the next decade. And software export is growing at a growth rate of 57 per cent p.a., with future projections pegged at a growth rate of 60 per cent. The boom is not restricted to the software development sector, but the IT enabled service sector (like Medical Transcription) is also going to be Rs. 81,000 crore by the year 2008 from the current Rs. 2,400 crore. All this means, there will be a huge demand for qualified IT professionals over the next decade and beyond. Moreover, the IT industry is actually global with job possibilities in USA, Southeast Asia, Japan, Germany and other countries. Having apt IT and management skills, in fact, is assuming an ever-greater importance, in the current day environment, where the IT sector is emerging as a major driver of the Indian economy.

Software has been targeted as a growth sector in India. Besides the industry's own potential for exports, software also plays the crucial role in information technology (IT), use of which is fast becoming the key for competitiveness in any industry. Hence, for the growth of IT
industry as well as the other industries, a rapid growth of software industry, both in terms of size and quality is absolutely essential.

Though the software industry has been growing very rapidly, with many multinationals coming in India, the industry has already hit a road block in its path to glory. And that road block is the acute shortage of manpower.

The myth of abundant manpower almost all major IT players in the world have set up subsidiaries or collaborations in India. The major attraction was an "abundance of technically qualified and cheap software manpower". This may have been the case before the start of the growth phase, but now there is, in fact, an acute shortage of qualified and trained manpower. This is getting reflected in the spiraling salaries (one of the highest average starting salary today), and more importantly, a frequent job-hopping culture. An average software person stays for a year or two in a company before hopping on to the next. Given the fact that a large software project may last many months, this type of loss has strong adverse effects on software quality and productivity of the software organization as a whole. Software being very manpower intensive, loss of a person represents loss of knowledge, often critical, about the projects the person may be working on, and about the general processes of software development. In addition, with the loss of a person, all the investment in training is also lost.
According to a report by an IIM Ahmadabad faculty, approximately 5000 people are needed every year to meet the growth targets of the software industry. However, the total production from education and training institutions is only about a third of this. Undoubtedly, the most acute problem facing the software industry today is the shortage of its most crucial resource-trained manpower. The numbers of demand and supply do not tell the complete story regarding the manpower shortage. A report done by Tata Consulting Services (TCS), the largest software house Current Industry Approach So what do software companies do that want people with a good background in areas like databases, software engineering, object oriented technology, operating systems, etc. Two approaches are being followed by companies that are seriously engaged in the business of software development. The first is to hire the few available people who have the necessary skills at exorbitant salaries. This is the approach taken by most multinationals that have started operations in India. The second approach is to have in-house induction training programs that will bring up the skills of the available manpower to a minimally acceptable level.

Today, a large organization which wants to recruit people in large numbers actually has no other option but to have in-house training facilities and extensive training programs. These training programs can be quite expensive. In a recent workshop on in-house training held at IIT
Madras, it was estimated that a 2-3 month induction training program cost around Rs 50,000 per trainee. In addition, these training programs need to use the experienced manpower for training, which is in short supply and which can be used much more profitably in more "productive" activities like projects and R&D. Perhaps the biggest limitation of in-house training programs is that they cannot provide high quality education, as the qualified faculty is for Computer Science is even more scarce, and software organizations usually do not have such qualified training staff.

There are two related problems of manpower shortage - one is the low volume, and the other is the low quality coming out from some places. One of the important factors common for both of these is lack of sufficient resources.

One of the reasons for poor quality training imparted at many universities or engineering colleges is institutions are lack of equipment, labs, and materials for faculty up gradation. Many places are so poor in terms of resources that they have nothing but a few PCs to run many programs. And, of course, there is no support for faculty to buy books, subscribe to journals, or attend conferences - all absolutely essential for avoiding technical obsolescence in this fast changing field.

Enhancing the quality of education at these institutions will require about Rs 1-2 lakhs per 4 or 5 student every 4-5 years for
purchase of equipment (life of an equipment is at best 4-5 years), and about Rs 10-20K for each faculty every year for their enhancement. In other words, in a department with 15 faculties and a total of 200 students, support of the order of Rs 10-15lakhs per year is needed. Similarly, increasing the output of a recognized engineering college or an IIT will require an infusion of funds. For example, to increase the number of computer science graduates from a place like IIT or a good engineering college by about 100 people per year, will require hostel accommodation for 400, and new laboratories and computing equipment. Even if the institution absorbs the cost of additional faculty and staff needed to support this, the funds needed for this expansion will be to the tune of Rs 2 to 3 crore for the building of hostels and labs, and about Rs 20-30 lakhs per year for equipment.

Overall, for increasing the output by about 500 engineers per year will require a capital expense of about Rs 10-15 crore and recurring expense of about Rs 1-2 crore per year. And raising the quality of 50 universities/engineering colleges will require a recurring expense of about Rs 5 to 7 crore per year. These amounts are quite small, if one compares with the size of the software industry in India - current turnover estimated to be over Rs1000 crore! role of Industry. Given that no recognized engineering college will be allowed to raise the tuition fees to anywhere near the actual education cost, there are only two ways
to get the required support - either the government supports it, or the industry picks it up.

As higher education is getting a step motherly treatment in these days of single pointed focus on growth rates and reserves, there is little chance that the government will provide the necessary resources. As the lobby power of academicians is limited, the only way the government will possibly provide this support is if the business lobby exerts its considerable influence. This, unfortunately, will not happen as the business groups use their lobbying to push for tax cuts, duty cuts, etc., which gives them more immediate returns.

So, the only real alternative is for the industry to provide the support needed for manpower development. And with the recent tax deductions, industry support automatically implies a partial government support. It should also be clear that the industry needs to support this not for any altruistic goals but for its own benefit. After all, it is the industry that will consume the output of this investment. Hence, an organization like NASSCOM, MAIT, or CII should really take this matter up in all earnestness.

Viewing it in another manner, the industry actually will have to foot this bill anyway. Either directly by supporting educational institutions, as has been suggested in this article. Or indirectly by having a more expensive and volatile manpower and more expensive training needs.
The choice of the path for this inevitable investment rests squarely with the industry.

India's software industry may soon face an acute shortage of workforce crisis if government and the industry do not take immediate steps to stop the continuous outflow of skilled professionals to foreign countries. With software professionals hitting the trail westwards, the situation is all the more difficult. What's more, Germany's offer to absorb Indian IT professionals offers a new destination for them after United States, Singapore and UK. Though there are no statistics available about the number of IT professionals taking up jobs abroad or migrating, their number is considerable. Says S Jaykrishnan, Secretary, to the Ministry of Information and Technology, "No data is maintained by the government in respect of IT professionals who have migrated from India". Andhra Pradesh, which has an annual turn-out of 40,000 software professionals, one of the highest in the country, accounts for about 23 per cent of software professionals in the US. In West Bengal, the rate of such professionals going abroad from the state is about 50 per cent with about 10 per cent getting employed there. Dewang Mehta, President of the National Association of Software and Service Companies (NASSCOM) says, roughly out of the 85,000 good quality software programmes in the country, 20 per cent of them directly go abroad on their own, while another 20 per cent are sent by Indian
companies. Nevertheless, there is no exodus of IT professionals from India, thinks Krishnan. Various measures have been taken from time to time for creating better employment opportunities in the country. Mehta says that "while there is no immediate shortage of skilled knowledge workers for the IT software and dotcom industry in India for at least the next two or three years, the domestic job market can become very tight if immediate steps are not taken." "There are about one lakh professionals working in the country on various projects including exports. Large numbers of multinational companies operating in the area of IT have set up their software development and R&D facilities in India resulting in retaining of IT professions", says Jaykrishnan. According to NASSCOM's survey, there are 3, 40,000 software professionals employed in the country as on March 31, 2000 in the Indian software and services industry. "There were about 1,60,000 professionals employed in 1996-97 and thus an additional 1,80,000 software professionals have joined the industry in the last three years", says Mehta noting that steps are required to further improve quality of software professionals. PTI report from Calcutta says that in West Bengal, the strength of the creamy layer of such professionals appointed in big companies like Tata Consultancy Services (TCS), CTS and Price Waterhouse Coopers is about 4000. Over 10,000 others are trained in various institutes like NIIT, APTECH, Arena and Globsyn, West Bengal.
Electronics. Atul Nishar, Chairman, APTECH Limited and Hexaware Infosystem Limited, says that government estimates indicate that the Indian computer industry will face a shortfall of 1.8 million professionals by 2008. The Indian software industry has consistently recorded impressive growth rates and handsome earnings of net foreign exchange regardless of the slowing down of the economy or political instability in the recent past or other hardships, Nishar notes but cautions that "the domestic market must grow at a much more rapid pace than in the past" to sustain the growth. Krishnan says one of the key issues in achieving and sustaining this level of growth in IT industry is the availability of high quality IT professionals in adequate numbers. "Operation Knowledge is planned as a major initiative by the Government to strengthen all aspects of IT education in India, in formal as well as informal sectors", he says noting it will address IT education issues at all levels -- in schools, colleges, polytechnics/IITs, engineering and research institutions. "As a first step, however, this proposal aims at launching a major programme for strengthening IT education at engineering and equivalent level. This level is a direct feeder of manpower to industry and will make an immediate impact by enhancing value chain and productivity in the industry", says Jaykrishnan. Many states have drawn up comprehensive IT plans and have come out with IT policies which will help in creating a conducive environment for high
growth of high-tech industries. The industry is also experiencing an interesting trend reflecting reverse brain drain with several senior software professionals, who had left the country now returning to set up their own companies here. "While it was just two per cent of them coming back in 1991, it is now 8 to 10 per cent", says Mehta. In Hyderabad, about 100 companies have been set up by those software professionals who have returned here after making a mark in the US, Secretary of the Hyderabad Software Exporters Association (HYSEA) A Malikarjun Rao says. Also the entry of multinational IT companies with lucrative pay packages to engineers has affected the retention capacity of domestic companies, says Rao noting that "we are at a disadvantage here as MNC's are offering hefty salaries and allowances which we can hardly afford". But with the Indian IT industry approaching nine US billion dollars, with software accounting for 60 per cent of the total IT industry, a boom in the industry is resulting in upgradation of IT infrastructure in the country, particularly communication infrastructure, bandwidth both international and domestic, says Jaykrishnan. Also, the National Task Force has set a target of 50 million dollars for software exports and 10 billion dollars for hardware exports from the country by the year 2008, he says. The Institute of Computer Professionals of India is being set up along the lines of the Institute of Chartered Accountants, which will create 25,000 software professionals in the next three years,
says Mehta. Conceding that there is an urgent need to improve the quality of IT education, the secretary says regular upgradation of IT infrastructure, availability of faculty and sustaining quality of education are issues that need to be tackled. And with most of the institutes, particularly in the government sector, not able to find investments required to keep pace with fast changes in technology, a mechanism should be evolved so that we have a regular system of upgrading at least one-fourth of this infrastructure on an annual basis, says Jaykrishnan. Mehta further suggests that we should have an IIT (Indian Institute of Technology) in every state as also upgradation of regional engineering colleges.⁸

The Information Technology sector may be doing wonders in terms of employment generation in India but industry experts are more worried about bridging the estimated shortfall of over two lakh personnel by 2008.

According to a recent survey carried out by National Association of Software and Services Companies (NASSCOM), the demand for software professionals is expected to be approximately 11 lakh people by 2008.

However, the supply of software professionals, based on current trends, is projected to be only 885,000, creating a potential shortfall of 235,000 people.
"While the Indian talent pool is extremely large with 76 per cent of all the software professionals possessing a graduate degree, there are still some gaps in their training, which would be the main contributor to the projected shortfall, "says NASSCOM president Kiran Karnik. Pointing out that 167,000 engineering students and 154 lakh graduates pass out of India's educational institutions annually and are available for the Indian software and services industry, he says this talent pool lacks the preparedness for the industry. "One of the primary reasons for the shortfall is the training gap that still exists in the education that is imparted to the software professionals," he says. But Karnik is quick to point out that the shortfall is based on the current trends and with increased initiatives from the government and private sectors, the lacunae can be addressed.

"It is true," admits Cyber media director Pradeep Gupta. "A number of past surveys since the 80s have talked about shortfall of manpower. Yet the industry continues to grow,” he says.

"This happens through people from other fields moving into this field from other domains and this would continue if proper steps are taken," he adds.

Gupta says the immigration of IT professionals outside the country also plays a major role in creating this shortfall but quickly adds that it is "minimal." "Yes, immigration does make a difference. But I
would suspect that more than 10 per cent of the fresh output goes abroad and 90 per cent remains available," he says, adding there is no reason why the gap cannot be bridged. As a first step towards bridging this gap, training institutions can introduce 1-2 software related courses across disciplines and impart necessary practical training to enhance their preparedness to work in the IT industry. Calling for concrete action to plug gaps in education and a greater cooperation between private and public sectors to offer intensive training on specific skills required by the sector, Karnik says this was particularly important in IT Enabled Services (ITES), which is the biggest job providing sector in the country at present. NASSCOM president points out that the skilled profile required by the IT sector industry is different from that of ITES industry professionals, which required linguistic skills and the appropriate domain and functional expertise. "The government can play an important role in this regard by ensuring that their is an adequate number of English speaking graduates in the country," he says, adding it can also help in providing essential training in the domain and functional areas, particularly by supporting the private sector's role in globalizing the curriculum across some key disciplines. Focusing on the education scenario, Karnik says it was essential to step up the industry-academia interaction by giving considerable weightage to company projects in course curriculum. "This will not only provide the necessary
on the job experience to the students but would also help in a big way in bridging the gap between the knowledge available and the expertise required," he stated. There are a few basic issues which need to be addressed at the earliest and if they are executed correctly, they will go a long way in addressing the projected manpower shortfall, he said.9

However, now we can discuss the Recommendations of the Working Group on IT Human Resource Development constituted by the government of India:

The National Task Force on IT and Software Development, constituted by the Prime Minister’s office, have envisioned India emerged as an IT Superpower in the world by 2008. The Task Force has already submitted two reports to the government catering to the policy level initiatives required to be taken for developing Software and Hardware industry in the country. The first report of the Task Force, called IT Action Plan, Part – I, dealing with Software sector, has already been accepted by the government. Numbers of initiatives recommended in this report have already been implemented by the concerned ministries/departments. Task Force has set a target of US $50 billion for software export from India by 2008. Adding hardware exports and domestic sector requirements in hardware and software, the total size of IT industry is estimated to reach a level of US$ 100 billion by 2008. That will need a Compounded Annual Growth Rate (CAGR) of about
40%, a figure which has been regularly exceeded by the Indian IT industry for several years. One of the key issues in achieving the targeted level of around US $100 billion for the IT sector in next 10 years is the availability of quality manpower in IT as well as IT-enabled sectors in adequate numbers. Currently, the productivity in IT industry is much less compared to international standards.

Role of IT Companies in IT HRD

IT companies will be encouraged to play a significant role in IT education. Following steps will be taken in this regard:

IT HRD, including IT Education and Training, in formal as well as non-formal sector, will be treated as a Service industry. For this purpose, in the IT Action Plan (Part – I) approved by the cabinet and notified in the Gazette of India, Extraordinary, No. 160, Part –I, Section – I, dated July 25, 1998, wherever ‘IT Services" are mentioned, they shall be redefined to include IT manpower development including IT Education and Training. As the IT HRD companies have presently the greatest propensity for becoming Indian multinational companies around the world, the provisions of the IT Action Plan Policy Nos. 19, 21, 23 to 25, 27 to 42, 45 to 53, 55 to 57, 58 to 80, 88, 96, 98 and 99 fully apply to IT HRD companies, public institutions, autonomous institutions and private societies, with the following additional qualifications:
a. ‘IT Service/service’ and ‘IT enabled service/enabled service’ will ipso facto include IT HRD/IT Education/IT Training services.

b. ‘IT Software’ will ipso facto include IT Training materials in Program/Program Text/ Self-tutoring/ interactive-tutoring/ computer-aided-teaching/ computer-aided learning, software and associated databases.

c. Computer networks will ipso facto include networks as carriers for distance learning networks and satellite based/ optical fiber cable based delivery mechanism for Education-to-Home (ETH) services/ Education-to-Community Centers (ETCC)/ data broadcast systems and services delivering educational contents and educational products.

d. STPs and Private STPs will ipso facto include Technology parks combining any subset of services at (a), (b) and (c) above.

e. IT Software and IT service exporters and joint ventures/ purchase of companies abroad will ipso facto cover IT HRD/ Education/ Training Services export and/or NRI companies primarily registered in India or with India as the primary operational base or having headquarters in India.

Banks and Financial Institutions (FIs) will be allowed to float special bonds, to be called Vidya Dhan (Education Bonds), to raise capital for investment in IT Education and Training sector. The
investment in Vidya Dhan will be treated at par with Infrastructure Bonds.

Banks and FIs will make this fund available to IT HRD companies and institutions on low interest rates.

Young entrepreneurs, including NRIs, will be offered special financial packages, including venture capital, to set up IT education facilities by Banks and FIs.

IT HRD companies will engage themselves in industry oriented as well as basic research in specific areas relevant to achieving the growth targets set for the industry.

A Vidya Kalyan scheme should be introduced to marry the infrastructure that the state can provide with the working capital (both physical and human) that private enterprise can offer to optimize available national resources for IT education. Under this scheme, academic institutions in the country offering IT education in the formal sector, such as universities, colleges, polytechnics and it is etc. will be given full autonomy to tie up with IT industry to jointly offer education and training programs. For this purpose, they may float an IT Education and training company under section 25, or as a Society, wherein the contribution of the academic institution in terms of infrastructure, such as building and faculty and other resources, will be treated as its equity to this company. National Council for IT Education (NCITE), as
envisaged in IT Action Plan (Part – I) will prepare guidelines to facilitate this.

State-aided institutions should be given adequate autonomy to attract and utilize community funds, and fees should be linked to per capita income so that they get automatically upgraded every year.

All Companies, in IT as well as other sectors, will be encouraged to set aside 6% of their value added revenue (sum of salaries, perquisites and net profit) to support IT HRD sector in offering IT as well as IT-enabled education through investment in infrastructure establishment/up gradation in educational/training institutes, providing endowment, catering to the recurring expenditure of the institute such as on salaries/honorarium to faculty, scholarships to students, providing part-time instructors, etc. These companies will have full freedom to allocate such funds to any institution of their choice and to be utilized specifically in the manner desired by them.

Government in collaboration with IT HRD companies will aim to achieve 100% IT literacy at senior secondary level (10 + 2) in 5 years and at secondary level in 10 years.

All institutes offering engineering education, including Polytechnics and it is will ensure that within 3 years all engineering students in the country will graduate with IT knowledge to be able to
serve in IT enabled Services sector besides serving in IT industry directly.

**HRD Entrepreneurship**

IT HRD sector will aim to achieve an export target of US $5 billion by 2005. Towards this objective, government will provide extensive support to leading Indian companies in this sector to help them emerge as large Multinational Companies (MNC's).

Templates of ‘Turnkey Structures’ will be prepared jointly by the government, IT industry and the IT HRD companies to evolve structure for facilitating emergence of Indian MNC’s in IT HRD. A tripartite committee will be set up by the government to develop such templates.

Institutes of national importance such as IITs, IISc and IIITs will be allowed to collaborate with IT HRD companies in their efforts in emerging as Indian MNC's in this sector.

With a view to bring stability in the sector with respect to minimize the rate of attrition of trained manpower from companies due to shortage of skilled manpower in the industry and be able to plan a massive growth in domestic as well as global market, IT HRD companies will be allowed to offer special financial incentives to its employees such as Employee Stock Option (ESOP) and Sweat Equity as per recommendations 58 and 59 in the IT Action Plan (Part-II).
Special IT HRD Entrepreneurship Training Programs will be organized by the IT HRD sector in collaboration with IIMs and other leading management institutes for entrepreneurs and financial institutions.

**Academic Policy**

IT HRD policy should be so designed that it is effectively affordable even by the poor and should cover all parts of the country including rural areas.

Special programs should be instituted to support/encourage higher end of IT education.

IT HRD companies/institutions may seek affiliation to one of the Universities, Central, State, foreign university, or any other such institutional structure, existing or which may be created from time to time, for award of degrees. In case of affiliation to a foreign university, it will be ensured that the foreign university is recognized by the Association of Indian Universities (AIU) and the degree for which the affiliation is being sought is recognized by the university in its own country.

Capitation fee colleges should be permitted to admit only the number that can find employment. In government institutions, state support should be limited in the same manner to the number that can find employment.
All private educational institutions, irrespective of who runs them, should have the same autonomy that is currently enjoyed by minority institutions and have that autonomy even when they are aided by the state.

Apart from training in software and hardware skills, increasing attention should be paid to education in basic principles of computer science.

The reward package for IT professionals (particularly teachers) should be upgraded so that there will be little need nor temptation to migrate.

The Institute of Computer Professionals of India (ICPI), as envisaged in the IT Action Plan (Part–I) and to be nucleated by NASSCOM with initial financial support from the industry and the government, will function as a voluntary association, with various accreditation institutions as its members.

The IT HRD companies/institutions will be expected to widely disseminate information on academic performance of their students as well as their placement in the industry. These institutions will maintain a register, freely available to public, of their alumni and the kind of employment secured by them as an indicator of the value of the education imparted by them. A system of credit rating agencies is expected to evolve in the country for evaluating IT HRD institutes.
Selected R&D laboratories in the country will be given accreditation for IT HRD programs, particularly at the post graduate level.

A special program should be organized to develop instructional material employing IT as a tool in all courses and at all levels from elementary education upwards.

Nationwide aptitude tests, on the pattern of GATE, will be conducted by NCITE and other similar organizations, at different levels to evolve a process of all India ranking of students with aptitude for IT education. The percentile score in these tests will be used as short listing criterion for admission to various IT HRD programs in the country. Preferably, the percentile score in the institution in which the candidate has studied should also be used as an additional short-listing criterion. That way, the handicap, students have in backward areas, will be mitigated. As these aptitude tests will not be rejection tests (the way entrance examination tests presently are), it is permissible to make questions public in these tests through a large question bank.

Standardization tests like GATE should be organized in a transparent manner with questions disclosed in advance. The tests may be conducted twice in a year and the candidates should be free to take them as many times as they desire. In order to ensure that the candidates are fully cognizant of all the basic information needed for desired
program of further education, they should be expected to answer all questions correctly and the ranking will depend on how fast they do so. A variety of such standardization tests should be organized to meet every level of education.

The current system of external examination should be abolished – at least for IT courses. Instead continuous evaluation that will test the multiple dimensions of intelligence needed by IT professionals should be allowed to be organized by each institution on its own.

NCITE and ICPI will establish and promote national IT Competency Examinations (ITCEs) to certify competency level of the students in various areas and at various levels. Regulatory systems should be evolved to monitor the quality of courses provided by private (and state-run) institutions and devised in such a manner that they will not curb in any way individual initiative.

NCITE should frame guidelines in such a manner so as to provide full administrative, financial and academic autonomy to state-run and state-aided institutions, in the manner enjoyed by IITs and IISc, to devise their own courses and modify them as frequently as progress in the field demands.

Students will have freedom to accumulate grades in various subjects from different IT HRD companies/institutes and then appear for completing IT Competency Examinations.
Professional bodies such as CSI, IETE and India Chapters of ACM and IEEE, etc will be invited by NCITE and ICPI to play an active role in collaboration with the industry in the process of evolving professional ethics and standards in IT HRD.

Employers’ organizations like NASSCOM, MAIT, CII, FICCI, ASSOCHAM and the like may be invited to set standards for evaluating the output of HRD institutions.

**National Infrastructure for IT HRD**

A high-speed national network backbone, referred to as Vidya Vahini, will be established within next 2 years by government and the industry as a joint venture.

All investments in Vidya Vahini will be treated at par with investment in infrastructure sector and will thus be eligible for all the financial schemes as applicable to infrastructure sector.

Private sector will be encouraged to invest in the arteries of Vidya Vahini at local and regional levels. Such investments will also be treated as made in Vidya Vahini and will entitle the company to avail all the relevant financial packages.

IT HRD companies will be allowed to use satellite and cable TV based networking, including Data Broadcast and Direct To Home (DTH) services over C band, Extended C band, Ku band, Ka band and other emerging satellite systems, for broadcasting educational and
training programs and services over these networks without any licensing.

The companies specializing in producing contents for Vidya Vahini, such as network based educational programs and services will be treated as educational companies at par with IT HRD companies.

All imports for establishment of infrastructure, including hardware and software tools and preparation of educational programs and services, for IT HRD will be covered under R&D projects.

Companies registered under Section 25 for IT HRD will be automatically entitled for imports under R&D projects on self-declaration basis without requiring a separate certification by a government agency.

**Financial Schemes**

IT HRD companies covered under Small Scale sector will be allowed to have investment from companies in large sector without any ceiling.

All investments, including equity investment, by individuals/companies in IT HRD companies/institutions will be eligible as deductible expenses to the extent of 133%.

Investments made by companies on IT education and training of their employees will also be eligible as deductible expenses to the extent of 133%.
All royalty payments received on account of IT education and training services in STPI and S-BIT scheme of IT Action Plan (Part – I) will be covered under Section 10A of Income Tax act.

100% depreciation in a year will be allowed to any company, IT or otherwise, to donate computer systems including software to the recognized IT HRD institutions. The value of systems so donated will be allowed as deductible expenses to the extent of 133%.

Budgetary provision will be made to enable government organizations to donate computer systems including the software after two years of procurement to the recognized IT HRD institutes.

Students opting for IT HRD programs will be provided loans by banks and financial institutions at low interest rates by treating this as a "priority area" for lending. Poorer sections of the society will be provided attractive financial packages for IT education by Banks, FIs and IT HRD companies. However, such loans should normally be made available only in those institutions where there is a reasonable certainty of future employment.

Endowment schemes offered by IT companies in academic institutes will provide flexibility to offer higher amounts to faculty under the scheme compared to normal salary structure.
Role of Women in IT Sector

Telecommuting will be allowed to professionally qualified women in IT to facilitate their continued association with their workplace in case they are not in a position to attend to the job in office on a regular basis due to family constraints. Such women will be offered special loans/financial grants by the companies to set up infrastructure at their homes to be able to telecommute.

Virtual institutes will evolve special HRD programs to help educated women to enter the field of IT-enabled services.

Banks and FIs will offer special financial packages on a proactive basis to support enterprising and professionally qualified women to set up home based IT services in various areas of IT-led economic activities.

In overall IT industries are using and adopting different selection hurdles and accepting the challenges before human resources. In selection process E-recruiting is also taking place in today’s national and multinational companies. But this study finds that to avoid the employee grievances most of the industries prefer to hire private security and employee services. Direct advertisement is also playing important role than internal promotion and placement.
REFERENCE


4. **Dave Urich** (1997), *The human resource champions. The nest Agenda for adding value and delivering results*, HBS Boston, Mass


6. **P. Cynton and Uday Pareek** (1997), retraining for development vista publication, New Delhi.


8. **PTI .New Delhi**, (July 2, 2000), *IT industry may face shortage of manpower*, Indian Express Newspapers (Bombay) Ltd.

9. **www.indiatimes.com**