A STUDY
ON
VALUE ADDITION TO HUMAN CAPITAL OF INDIA COMPATIBLE TO LIBERALISATION WITH SPECIAL FOCUS ON IT EDUCATION

Group for Economic & Social Studies

October - 2005

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Preface

India has witnessed rapid growth in Information Technology (IT) software and services. A number of eminent multi-national corporations have set up outlets in several cities of India. They have also recruited a large number of IT professionals and engineers to run and manage their operations. At present, the IT sector is a very popular educational choice with the new generation. It was in this context that GESS was awarded a Study titled **'Value Addition to the Human Capital of India – Compatible to Liberalisation - With special focus on IT education'**.

GESS has compiled information about courses being taught in Information Technology by various institutions in India. More than 200 academic bodies comprising Universities, Deemed Universities, Institutes and Colleges imparting IT education in India provided data concerning their courses, curriculum, fee structure, admission procedure, faculty status and their opinions on the current status of IT. This information and its analysis will also be available on a *website* for the benefit of students, parents and other interested parties.

The Study has analysed the current status of IT education in Universities and Institutions in India. It has recommended improvement in curriculum, faculty development, close interaction between institutions imparting IT education and IT industry and other significant suggestions. GESS has also suggested a road map for IT education for maintaining India's image as a centre of high quality IT education.

The present study incorporates a number of suggestions which may be considered by the Government(s) and this Study is the outcome of the efforts put in by GESS with input from Academic Institutions, UGC, AIU, AICTE, Ministry of HRD, MIT, NASSCOM, senior officers from DST and IT industry and others. Any suggestions on the content of this Report would be welcome.

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October 2005

Acknowledgements

Executive Summary

1. A Study on *'Value Addition to Human Capital of India - Compatible to Liberalisation with special focus on IT education'* was undertaken by the Group for Economic and Social Studies (GESS), New Delhi in the sponsored mode from NSTMIS Division of the Department of Science & Technology, Government of India.

2. The study was undertaken through the structured questionnaire targeted at the Educational Institutions. Data was collected through desk research, questionnaires, opinion surveys and individual interviews.

3. Information Technology has revolutionised the world in a short span of a couple of decades.

4. IT and IT related services contribute over 7.5 % of the overall GDP growth of India. IT exports are expected to account for 35% of the total exports from India. There is potential for over 4 million jobs in IT and ITES by 2008, according to NASSCOM. The National Plan for e-governance has also given IT a big boost.

5. A number of global Fortune 500 corporations have made India their preferred location for IT operations and have set up business outlets in Bangalore, Hyderabad, Chennai, Mumbai, Pune, Gugaon, Noida and Delhi.

6. India's cost advantage makes it an attractive outsourcing destination and a source of IT manpower. In turn, factors such as multicultural exposure, global mobility and conducive work environment attract the young generation to IT education. To attract the 'best talent', companies offer highly competitive salary packages which no academic institute or any other industry offers.

7. Most of India's student population is keen to pursue IT education which has surpassed other streams of education in popularity.

8. IT manpower development is not only crucial for sustaining the growth of the Indian economy, it is also important for maintaining the country's edge in the global market.

9. A rapidly growing sector which generates employment on a large scale needs strategic manpower planning and world-class education. It also needs a Nodal

Agency for maintaining IT standards and planning IT manpower requirements on a sustainable basis.

10. The challenges for IT education in the wake of globalisation of Indian economy have been dealt with in this Study. Issues such as research in IT sector and faculty development related issues also form part of the Study.

11. A road map for IT education has been suggested for maintaining India's image and identity as a destination for high quality IT education. The suggestions include creation of a large pool of skilled manpower including students from rural sector.

12. The report also highlights the importance of knowledge sharing among leading industry experts, industry associations, analysts and regulatory authorities. The need for alignment of course curriculum with industry requirements has been analysed and suggestions offered in the Study.

13. The role of MHRD, MIT, UGC, AICTE, AIU, and NASSCOM has assumed a great degree of importance in strengthening an impressive global brand image of Indian IT. Active support of these agencies will also help in strengthening existing learning centres in the post-liberalised environment.

14. Monitoring the quality of IT education, developing industry oriented curriculum, faculty development and improvement of infrastructure have all been emphasised in this report.

Recommendations

1. Stress on quality of education

The quality of IT education must be upgraded according to the changes in industry and the requirements of users. This upgradation may include using new technology. Weightage should be given to practical work and the course design should incorporate more practical work. Online teaching methodology should be promoted using tools like teleconferencing, web etc. The system of gradation and ranking should be strengthened to maintain the quality of IT education.

2. Focus on R&D

In order for India to remain a centre of knowledge having the largest pool of IT professionals on the world scene; research and inventions in IT education should be accorded priority.

3. Collaboration between corporate sector and academic institutes

i) Curricula Development

Interface between the IT industry and academia should be encouraged for the development of IT professionals. Industry needs in terms of manpower, skill sets and quality of professionals in various disciplines and at different levels can also be identified through collaborative efforts. This will help realise the synergy between the two and strengthen Indian professional education through improvements in curricula, faculty, infrastructure and pedagogy. This interface can be initiated through organisation of specific seminars, programmes and focused research. Measured initiatives are also needed to bring about a paradigm shift from generalized courses to specialized and inter-disciplinary subjects.

ii) Faculty Development

IT faculty should be trained with the help of the IT industry. Technocrats and personnel from IT Industry should interface with the faculty members of Universities, Deemed Universities, IT Institutes and Colleges. This would help in bridging the gap in teaching and will be an effective device in promoting regular interaction between academic institutions and the industry.

iii) IT Related Research

IT Industry should take greater part in the promotion of IT-related research. The industry can be advised by the Government to provide scholarships and sponsor students to undertake research.

4. Faculty Development

The ongoing quality improvement programme for serving teachers should not only continue but should be more vigorously promoted. The number of teachers deputed for studies and research should be fairly large. The student-teacher ratio should be ensured in proportion to the prescribed ratio.

5. Faculty Remuneration

There is a need to revisit the faculty remuneration which is not attractive. It should be comparable with Industry salary. This will help attract the best talent in the industry to the teaching profession.

6. Sharing of talent between institutes

There should be a system where national resources created at different points either by national institutes or by companies should be made available to the other engineering institutes in the region, for use by students of IT.

7. Ph.D Programme

There is a general shortage of students for doctoral programmes. Teachers should also be encouraged to undertake research leading to Ph.D. This can be done by providing incentives such as scholarships, sabbaticals and other financial support.

8. Frequent Course Revision

IT courses need to be taught differently from conventional courses due to their high technical contents, fierce competition and fast changing nature. The course curriculum should be revised regularly.

9. Ranking of Institutions

There should be a mechanism to rank institutions. This will provide more clarity on the value of the degrees for students.

10. Manpower Forecast Mechanism-- Data Bank

Establishment of a Manpower Information System for the IT sector is crucial for forecasting sufficiently in advance, the required number of IT graduates, post graduates & professionals so as to have a balanced growth of IT education. This requires a strong data bank to be built right at the education institutions and shared with the industry to understand the demand and forecast the future manpower requirement.

11. IT Council

An autonomous body may be constituted exclusively to oversee the various facets of IT education in India. The Study team recommends establishing an 'IT Council' on the lines of the Medical Council of India.

12. IT Infrastructure

There is a need to improve IT infrastructure for better networking and connectivity between academic institutes which are not fully equipped with IT teaching tools and facilities.

13. Penetration of IT education at school level

IT education should aim to "catch them young" - right from the school age.

14. Stress on English and foreign languages

Fluency in English and other foreign languages should be targeted at the school level as it has become a necessity due to globalisation and interdependence of countries.

15. Software technology parks

More software technology parks should be established in cities across the country.

16. India's Brand Image : Role of Indian Missions Abroad

Indian Missions abroad can help reinforce global perceptions about the high standards of India's IT education through education counsellors and an information network on IT education in India by organising IT education fairs, seminars and workshops in the context of globalisation of Indian economy.

17. Integration of IT in rural sector

Efforts should be made to cover the rural segment of population in the shortest possible time. To bring the rural sector into the mainstream IT revolution, the entry level for IT education should be made affordable for this sector.

18. Continuous updation of website

The objective of making an IT website, a comprehensive central repository can be achieved only by periodic updation of the proposed website with the help of providers of IT education across the country. This needs consideration of DST, MIT MHRD and other concerned authorities. The team recommends providing links to this site (www.iteducation.in) on the website of Department of Information Technology http://www.mit.gov.in

19. Continuity of Study Project

A Study Project covering IT education and industry in the entire country may not be comprehensive due to fast changes and entry of new institutes. The objective of the Study was limited to IT education at degree and post graduate level. A further Study can contribute to building the balanced approach required in the wake of entry of foreign institutions after the opening of the Indian economy.

Chapter - I

Background to the Study

1.1   IT Education in the post liberalisation period

India has joined the global IT bandwagon and shared subsequent opportunities in a modest way.   India is recognized for its competence in the area of Information Technology.   Work is being outsourced to India by developed countries.   New IT metros have developed.   Indian Institutes of Technology, Indian Institutes of Science, Indian Institutes of Information Technology, National Institutes of Technology and Central Universities have adopted IT education in a big way.   Out of approximately 1400 engineering colleges, about 50% offer IT Courses with different nomenclature. In addition, graded facilities for imparting training to more than 1 lakh qualified engineers and certificate courses on a variety of IT related subjects are also available for as many as 2-3 lakh students in institutes in the private and Government sectors.

The IT industry's contribution to India's GDP increased from approximately 1.4% in 1998-99 to 3.5% in 2003-04.   The industry registered a growth of 34% in 2003-04 according to NASSCOM.   The IT industry includes hardware, peripherals, networking, training, and domestic and export markets for IT services and software and IT Enabled Services such as BPO services.

For a comprehensive Study, there is a need to understand the present scenario of IT education so that it can be strengthened to make it compatible to the present as well as projected global requirements.

- Information on IT education is presently not available at one place.

- India being a signatory to WTO is obliged to open its doors for sharing and exchanging equity in education sector.   The process of cross cultural cultivation as well as sharing of research has already started.

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- Foreign Universities are attracting Indian students to their respective countries - USA, UK, Australia and Canada being the common ones.

- Students are either moving to foreign countries or taking education as per the syllabi of foreign Universities within the country in unregulated setups. This requires a new strategic focus on value added training of human capital so that it can be converted into an asset and the intellectual capital of India secures a position of global leadership.

- Government of India has still to come out with a bill on regulation of entry of foreign Universities. AICTE is monitoring the entry of foreign Universities and Institutes.

1.2 Objectives of the Study

- To identify and suggest ways to bridge the information gap relating to:

  - IT education standards in Indian and foreign institutions (USA & UK)

  - Courses and areas of specialization available in various institutions

  - Acceptance of Indian degrees/diplomas in domestic and global IT industry

  - Eligibility norms for admission

  - Duration of courses

  - Mutual Recognition Agreements for outsourcing India's talents

- To identify authorities responsible for monitoring quality of IT education and institutions.

- To suggest a roadmap for building India's brand image as a world-class country for IT education and create opportunities for a pool of IT professionals to meet the growing global challenges and domestic needs.

- To create a centralised Web-Based Information databank of IT skills to be maintained and updated regularly.

1.3 Methodology

The Study used survey methodology by collecting data through two separate questionnaires – one for Universities, academic institutions and colleges and the

other for private sector IT industry. Information was also collected from the internet and through personal meetings with IT experts.

i.   Problem Definition

To evaluate the current status of IT education in India and propose a road map and develop a comprehensive website.

ii.   Identification of Target Population

A few IT courses were selected considering their acceptance in the global market and recognition by Indian bodies like AICTE and UGC. The following full time IT courses were identified by the Project team:

- MCA
- M. Tech
- B. Tech
- MIT
- MCM

The Study was undertaken with the help of structured questionnaires targeted at the educational institutions duly recognized by AICTE, AIU and UGC.

A separate questionnaire was sent to select IT Industry.

1700 questionnaires were mailed to engineering institutions across the country. This list was based on the AICTE and UGC approved list of IT and engineering institutions.

The below pie chart shows the distribution of the IT institutions across different regions of the country as per the regions named by AICTE.

IT Institution distribution across different regions
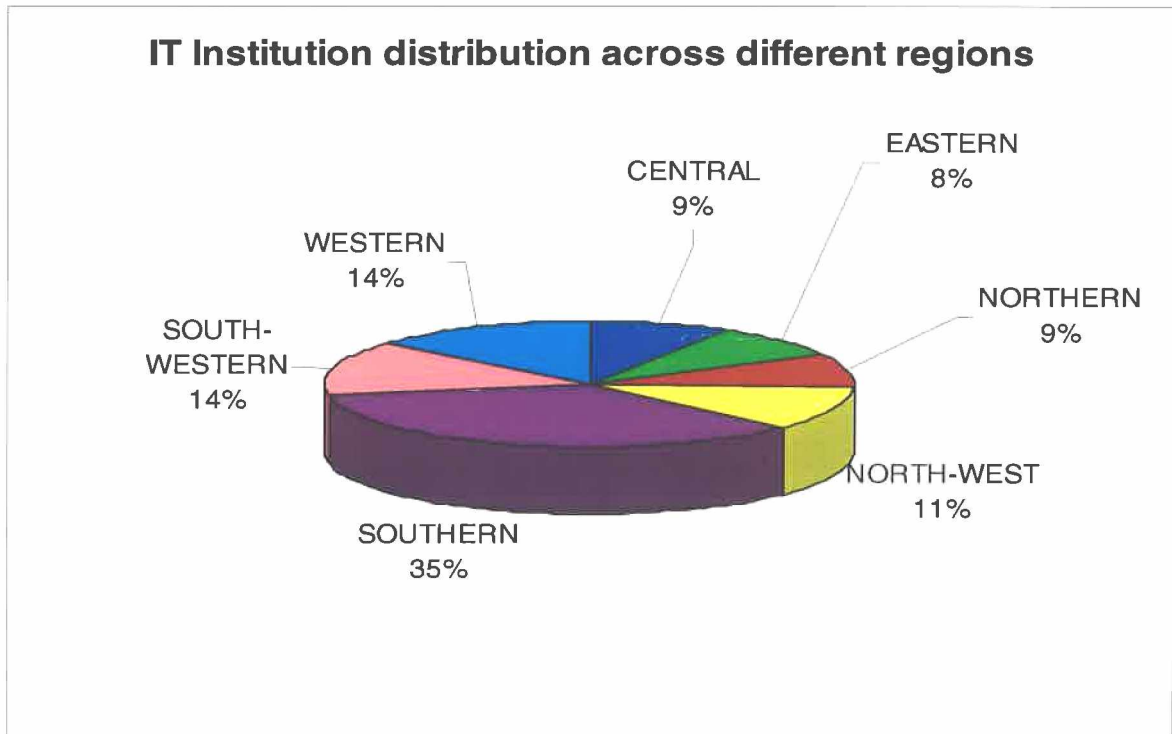
The following constituted the target population:

- IT Institutions and colleges teaching full time courses

- Accreditation bodies like UGC, AIU, and AICTE.

- NASSCOM

- Select IT companies

- Government bodies like HRD Ministry, IT ministry etc

The following areas were out of the scope of the present Study:

- Bachelor degree courses (like BCA and BIT) with the exception of B. Tech

- IT institutions imparting certificate/diploma courses as specified below.

o Short Courses: Certificate courses of different durations in programming languages, web designing, CCNA, UNIX, LINUX, embedded technologies, animation, word processing, networking, and encryption. etc.

o Basic courses taught on line or in classrooms by different schools.

o Diploma Courses: Diploma in Computer Engineering, BCA, BSc. Computer Sciences etc. of intermediary standard, being taught in a number of polytechnics, Universities and computer centres.

o Specialised courses: IBM, Microsoft, Cisco, Sun etc. have started specialized courses. These courses are industry oriented and mainly cater to specific high-end technologies.

- Course structure was not studied and compared.

- Government IT Institutes e.g. ER&DCI/ C-DAC/ ET&T/ CEDTI/ NIC

- Private IT Training Institutions (e.g. NIIT/ Aptech/ STG/ CMC/ Tata Infotech/ Asset/ SQL Star/ Oracle Education/ IBM Education),

- Foreign Universities

- Global Bodies - UNESCO, UNDP, UNIDO, Ford Foundation, British Council, ADB, World Bank

- Education Cells in Indian and Foreign Missions

iii. Method of Data Collection

As mentioned above the Study was undertaken with the help of structured questionnaires targeted at educational institutions. Data was collected through:

- **Desk Research:** Primary data and information on IT Industry was collected from research papers, articles, magazines and periodicals and by browsing the internet.

- **Administration of questionnaires:** The questionnaire prepared for academic institutes, Universities, Deemed Universities was mailed to approximately 1700 engineering institutions across the country including those which were set up during 2002-2003. The other questionnaire prepared for industry was mailed to over 50 leading IT companies in the country.

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- *Opinion Surveys:* Opinion surveys were conducted with IT educationists and representatives of accreditation agencies.

- *Individual Interviews:* Unstructured interviews were conducted with representatives of government bodies, Universities, institutions, consultants, analysts and IT industry representatives in India.

iv. **Sources of the Data:**

- Publications of Central & State Governments/ Planning Commission/ Ministry of Science & Technology/ UGC/ AIU/ NASSCOM/ Universities/ Deemed IT Universities/ AICTE / IIT.

- Research Documents

- Questionnaire Responses

v. **Reference Period of the Data:**

The available data for the post-liberalisation period (i.e. 1991 onwards) has been covered.

vi. **Method of processing and analyzing data:**

The responses to the questionnaire were compiled, analyzed and reports prepared and discussed with experts and members of the LPAC. This report contains the outcome of the research including recommendations and follow-up action for the use of the DST.

The questionnaire covered the following areas:

- General Information
- Course related information
- Admission Criteria
- Faculty information
- Student related information
- Popular Perception on the current IT status of India

vii. Duration of the Project:

The Project was executed over a period of 18 months including 3 months extension.

DST recommendations

DST had recommended through a recommendatory letter separately to AICTE, MHRD, MIT, UGC, AIU and NASSCOM , prominent IT Companies and IT Institutes, Colleges, Universities, Deemed Universities identified by GESS for the Study through out the country to provide the current status of IT education as per questionnaire sent to them along with the letter . However very few replies were received.

1.4   Local Project Advisory Committee

A Local Project Advisory Committee (LPAC) was set up to advise and guide GESS from time to time during the execution of the Study.

1.5   Limitations of the Study

- The Study was based mainly on survey methodology i.e. data collection through questionnaires. A major handicap was the lack of adequate response from Universities, Institutions and the Industry.
- The focus of the Study was limited to educational institutes only.
- A number of questionnaires were returned due to change of addresses of institutes.
- Some questionnaires were received incomplete and unsigned.
- Most of the institutes have not responded even after 2/3 follow-ups and personal visits by representatives of GESS. The common reason noticed was non availability of Head of the Department or Head of the Institutions.
- Most Institutes imparting IT education came into being 4-5 years back. They were not equipped to provide the required feedback. Out of over 200 questionnaires received from respondents only 187 have been analysed, the rest being incomplete or having no useful information.
- The subject matter being of recent origin, it is difficult to identify clear trends and obtain opinions from academic institutions and industry.

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- A Study of such dimensions covering Universities, Deemed Universities, Institutions and Colleges spread throughout the country needs more time and resources to cover every aspect of IT education including course curriculum, faculty development and student related issues.

- Responses from the IT industry were not forthcoming. Only 7 questionnaires out of more than 50 questionnaires sent to leading IT companies were received duly completed.

- The website (*www.iteducation.in*) created could not be comprehensive due to lack of data and information from all Institutes, Colleges and Universities imparting IT education. Utmost care has been taken in feeding the data provided by the respondents. The information is not complete since more and more institutes are being set up every year to impart IT education. Besides the existing institutions and Universities keep on introducing new IT courses. Details like telephone numbers, fee structures, and admission procedures also keep on changing. The accuracy and correctness of information depends entirely on the feedback of the respondents.

Chapter - II

IT Education Standards in India

2.1 *Higher Education in Information Technology*

<u>Graduate Level IT courses</u> – A number of engineering institutes are imparting Graduate/degree courses on Information Technology. IT is yet to be covered by the University education system of the country, whereas this is a very highly sought after course in the foreign Universities.

The present Study covers the Bachelor of Technology (B.Tech) courses in Computer Science and Engineering and Information Technology taught at University level. The AICTE has adopted a model curriculum for B.Tech and BE programme which is followed throughout the country. The details of the IT courses are given in the *Annexure IV*. The details of the IT courses can be seen from AICTE website (www.**aicte**.ernet.in).

<u>Post-graduate level courses and research studies in IT</u>

Indian Institutes of Technology, Indian Institutes of Science, some of the National Institutes of Technology and some central Universities conduct post graduate courses in computer science and engineering. Postgraduate level and research courses cannot be started in all the Universities due to constraints in terms of qualified faculty and required infrastructure.

Sample size

The response received from institutions was not very overwhelming. However, 200 odd responses were received from different parts of the country. This list underwent moderation resulting in a sample size of 187 responses (*Annexure I*).

This is around 15% of the total academic institutes covered. The questionnaire was mailed to approximately 1700 engineering institutions across the country. Out of this 1700, approximately 500 questionnaires were duplicate as they were sent separately for MCA and B.Tech. Some questionnaires returned due to several reasons including newly set up institutes which have not yet started classes.

Responses were received from Institutes teaching mainly the following three courses:

- MCA
- M. Tech
- B. Tech

We did not receive any data on MIT and MCM as requested in the questionnaire.

Distribution of Responses Received across different Regions

Central 3%
Eastern 3%
North West 20%
Western 17%
Northern 6%
Southern 25%
South West 26%
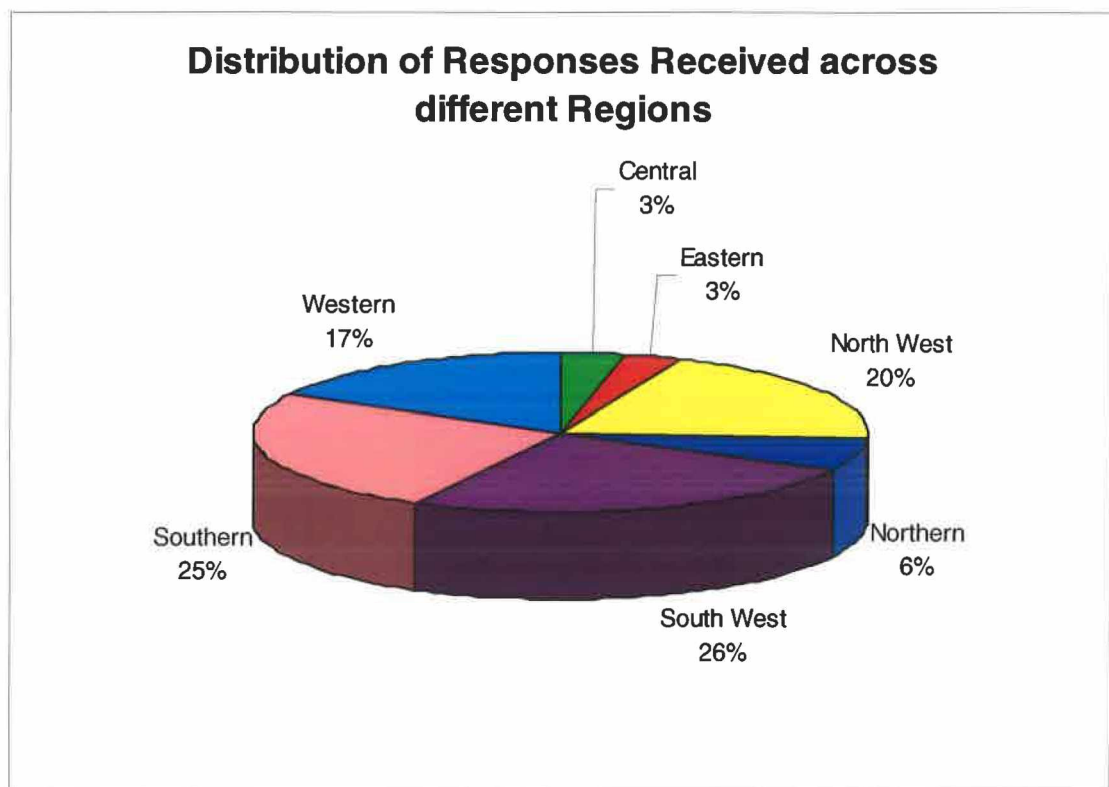
Distribution of the MCA, B. Tech and M. Tech courses in the respondent institutions:

IT Courses taught in the respondent Institutions

Number of Institutions vs Course:
- B.Tech, 126
- MCA, 97
- M.Tech, 36
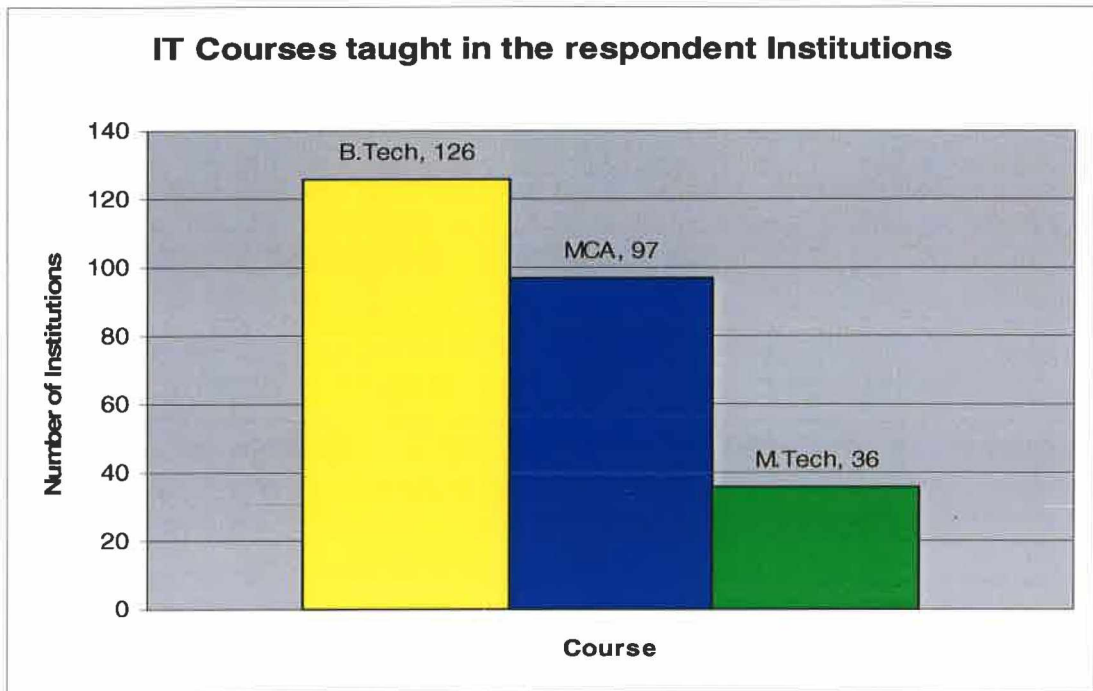
Trend: The Study of these courses in the 187 institutions shows that the graduate level course is the most popular choice which is closely followed by MCA. There is a big gap between MCA and M.Tech.

MCA is a popular post graduate IT course. There are institutions teaching MCA only. MCA is also widely accepted in the IT job market.

To facilitate the trend analysis of the graduate and post graduate courses at a national level (except MCA) in different institutions, the courses were clubbed as B.Tech and M.Tech.

The composition of the Bachelor Degree course in the 126 institutions is as below:

Degree	Degree Complete Name	Total
B.Tech	B.E CSE	16
	B.E CSE&ISE	9
	B.E CSE&IT	8
	B.E CSE&IT	1
	B.E CSE, B.Tech IT	1
	B.E IT	8
	B.Tech	5
	B.Tech 1)ECE 2)CSE	3
	B.Tech 1)IT 2)CSE	3
	B.Tech CSE	19
	B.Tech CSE&IR	1
	B.Tech CSE&ISE	1
	B.Tech CSE&IT	43
	B.Tech IT	7
	B.Tech IT	1
B.Tech Total		126

The composition of the Masters Course in IT and Computer Science in the sample of 36 institutions is as below:

Degree	Degree Complete Name	Total
M.Tech	M.E	3
	M.E (CSE/IT)	1
	M.E CSE	3
	M.E CSE, SOFT.SYS	1
	M.Tech	7
	M.Tech (Information Systems)	1
	M.Tech CAD/CAM	1
	M.Tech CIM	1
	M.Tech CSE	13
	M.Tech CSE(CAD/CAM)	1
	M.Tech CSE,VLSI,IT	1
	M.Tech CSE/(CAD/CAM)	1
	M.Tech IT	1
	ME INTERNET TECH	1
M.Tech Total		36

2.2   *Admission Criteria*

The admission criteria for the three courses vary widely.

A summary of the criteria:

i)   <u>Central Level</u>

IITs, IISC, BHU hold a joint entrance exam for admission to B.E. and B.Tech Courses. All India Engineering Entrance Examination (**AIEEE**) is conducted by CBSE for Deemed Universities, NITs and some of the State Governments. Some central Universities like AMU, Jamia Millia Islahmia, etc. hold their own examination. Some Universities do not conduct any entrance exam but go by percentage of marks

ii)   <u>State Level</u>

Most of the states have their own procedure of admission. State-wise entrance examinations are conducted. Some Universities and institutes like Delhi College of Engineering and NSIT, Delhi conduct independent entrance exams. In states where technical Universities have not been setup, the entrance examination is conducted by the state technical board of education.

iii)   The entrance examination is monitored either by a central agency or by a state agency. However, minority institutes have been given freedom for admission under management quota (up to 50%). Since all these institutions are self-financing, there is a 15% slot for foreign students as well as NRI students. The government institutes, aided institutions and Universities also follow reservation policy in the admission criteria.

iv)   The problems relating to admissions include multiplicity of agencies conducting the examination thereby forcing a student to follow different routes and consuming a lot of time and money; as also a high level of difficulty in exams and competition resulting in proliferation of coaching centres.

The eligibility criteria for admission to MCA courses in the respondent institutions are as follows:

Eligibility Criteria for Admission to MCA

Number of Institutions

- Graduation in Science: 4
- Graduation with Marks: 5
- Graduation in Science & Marks: 9
- Graduation with Maths at 10+2: 10
- Any Graduation with Pass Marks: 27
- Entrance Test: 42

Eligibility Criteria
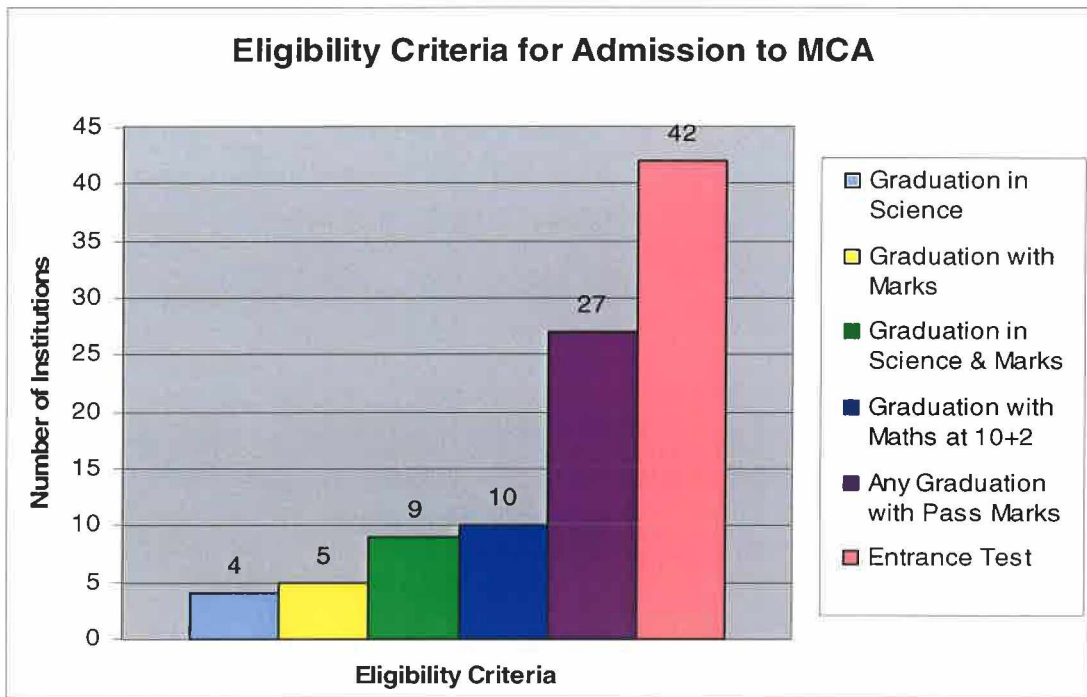
Trend: Admissions are done on different criteria. 43.29 % of the admissions happen through entrance tests.

The eligibility criteria for admission to M.Tech level courses:

Eligibility Criteria for admission to M.Tech

Number of Institutions

- Engg Graduate with Marks, 2
- Engg Graduate, 10
- Entrance Test, 17
- NA, 7

Eligibility Criteria
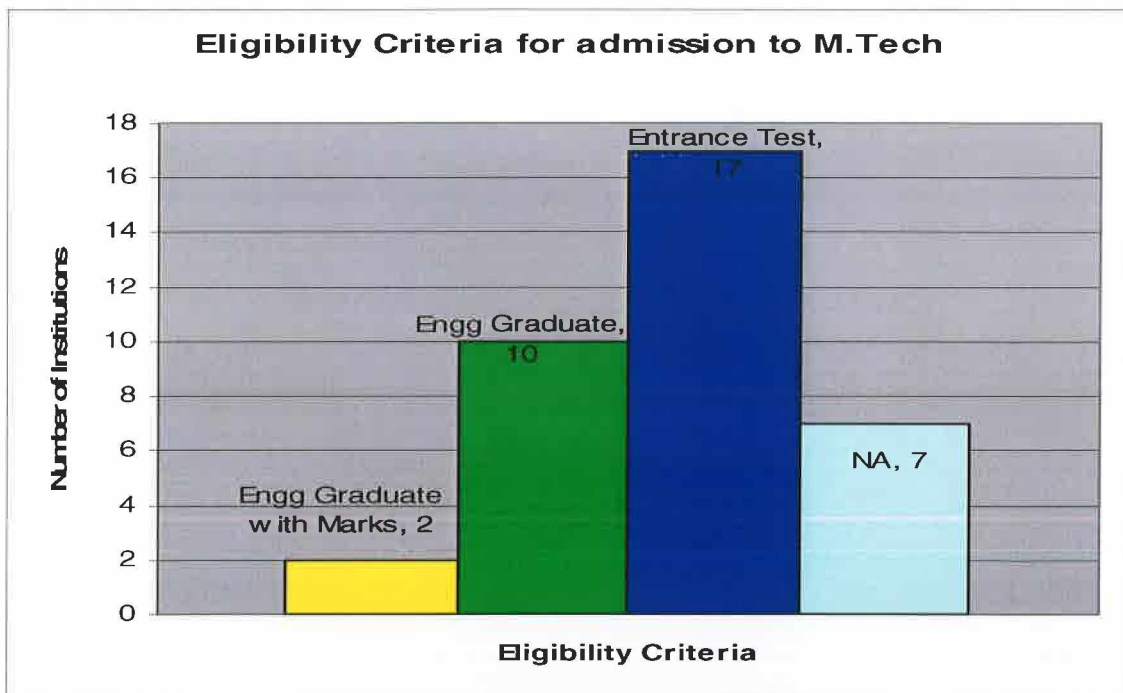
Trend: Admissions are mostly done on first come first served basis. 47.22 % of the admissions take place through entrance tests.

The eligibility criteria for admission to B.Tech level courses:

Eligibility Criteria for Admission to B.Tech

(Bar chart showing "Number of Institutions" on the y-axis (0 to 60) and "Eligibility Criteria" on the x-axis)

- PCM in 10+2 with Qualifying marks, 13
- PCM in 10+2, 29
- Entrance Test, 52
- NA, 32
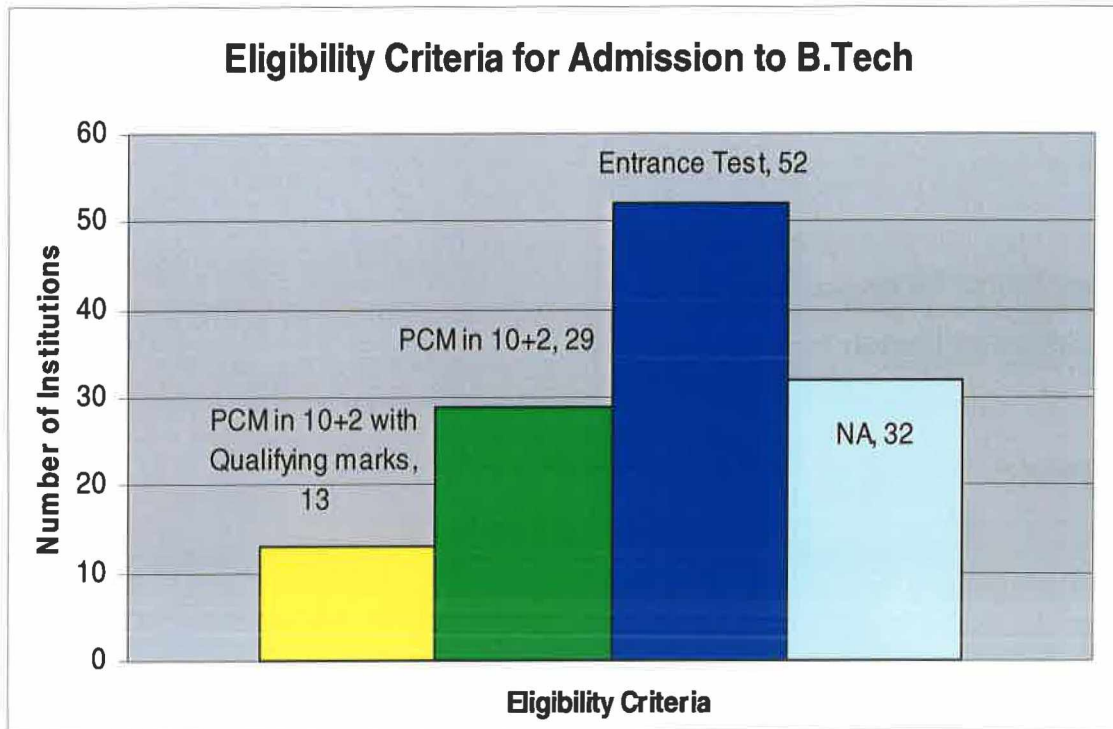
Trend: Admissions are mostly done on first come first basis. Only 41.22 % of the admissions are undertaken through entrance test.

2.3   *Course Related Information*

The following course related information was studied:
- Course Structure
- Year of introduction of course
- Last revision of Course
- Fee structure
- Duration
- Number of Seats

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Course Structure

Some institutes also sent their prospectus along with filled in questionnaire. A random comparison with the model course curriculum as prescribed by the AICTE shows that the course content specified by the institutes is good.

However the concern regarding the teaching of the prescribed contents remains.

The introduction of the MCA, B. Tech and M. Tech courses is depicted in the data and graphs on the following pages.

Year of introduction of courses

The introduction of the MCA course in the respondent institutions:

Year of Introduction of MCA course in 97 Institutions
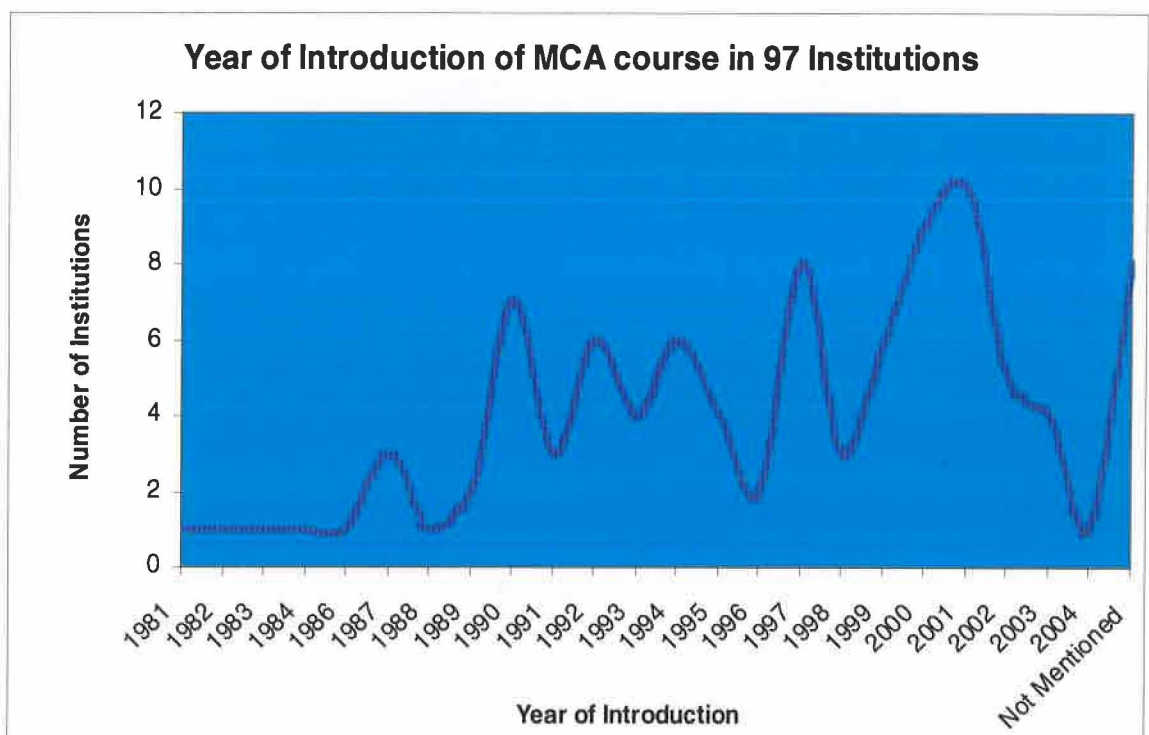
Trend: The Study shows an all time peak around 2001. It also shows a reduction in the number of MCA courses introduced after 2001.

Introduction of M.Tech in the respondent institutions:

Year of Introduction of M. Tech Course in the 36 institutions
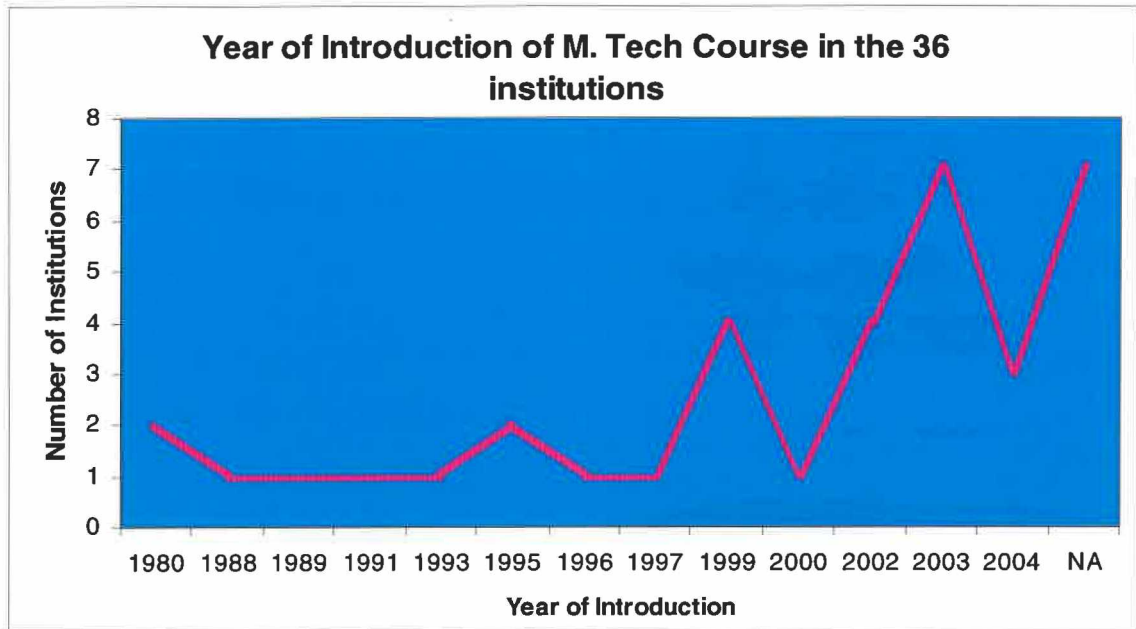
The evolution of the B.Tech course in 126 institutions can be seen from the following:

Year of Introduction of B.Tech Course in 126 Institutions
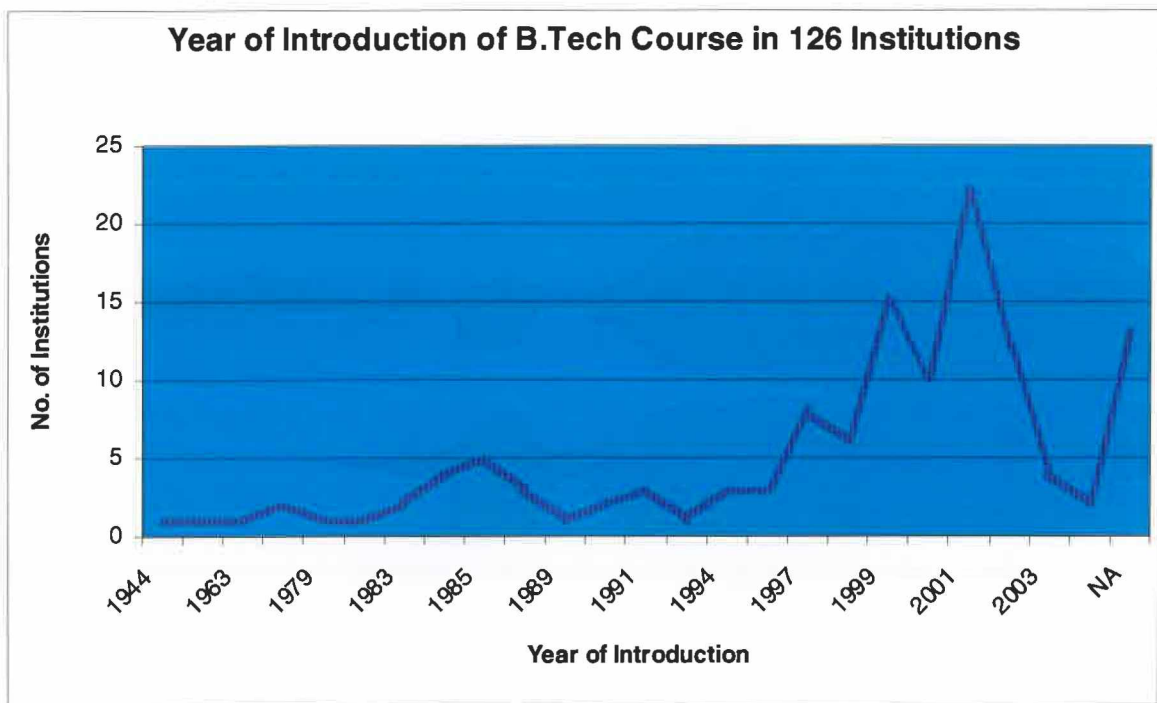
Course revision

The latest revision of the MCA Course:

Trend of MCA Course Revision
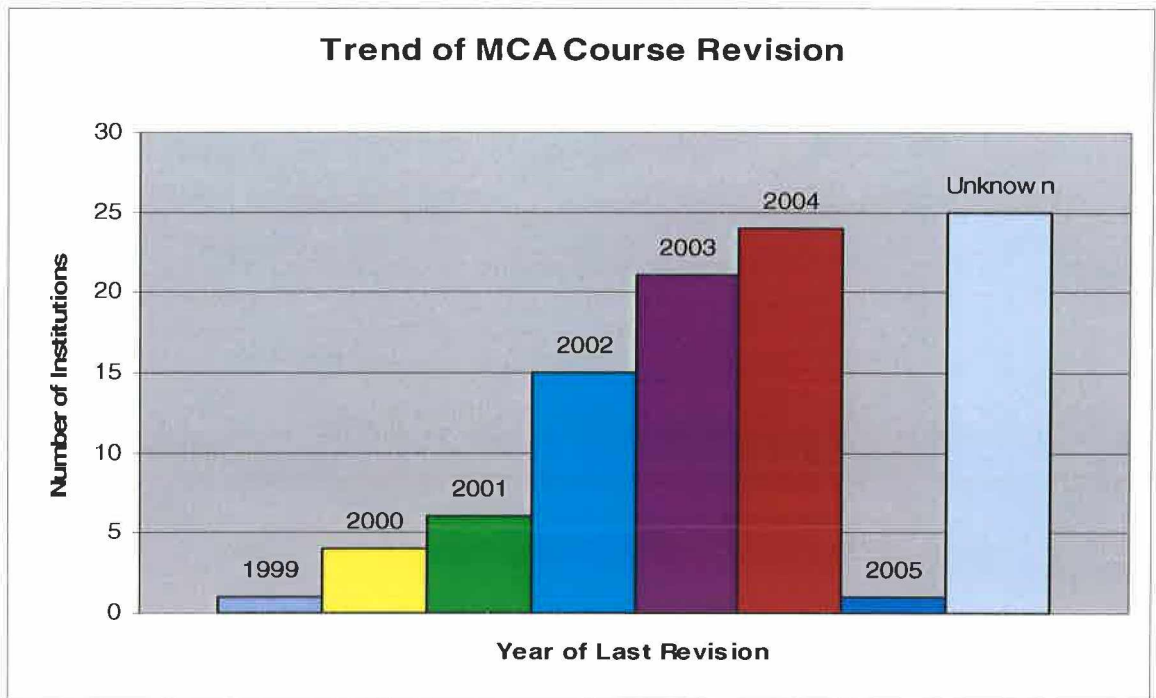
Trend: The Study shows institutions are revising their MCA courses. Out of 97 institutions, 24 revised their course in 2004.

The latest revision of M.Tech Courses:

Trend of Revision of M.Tech Course
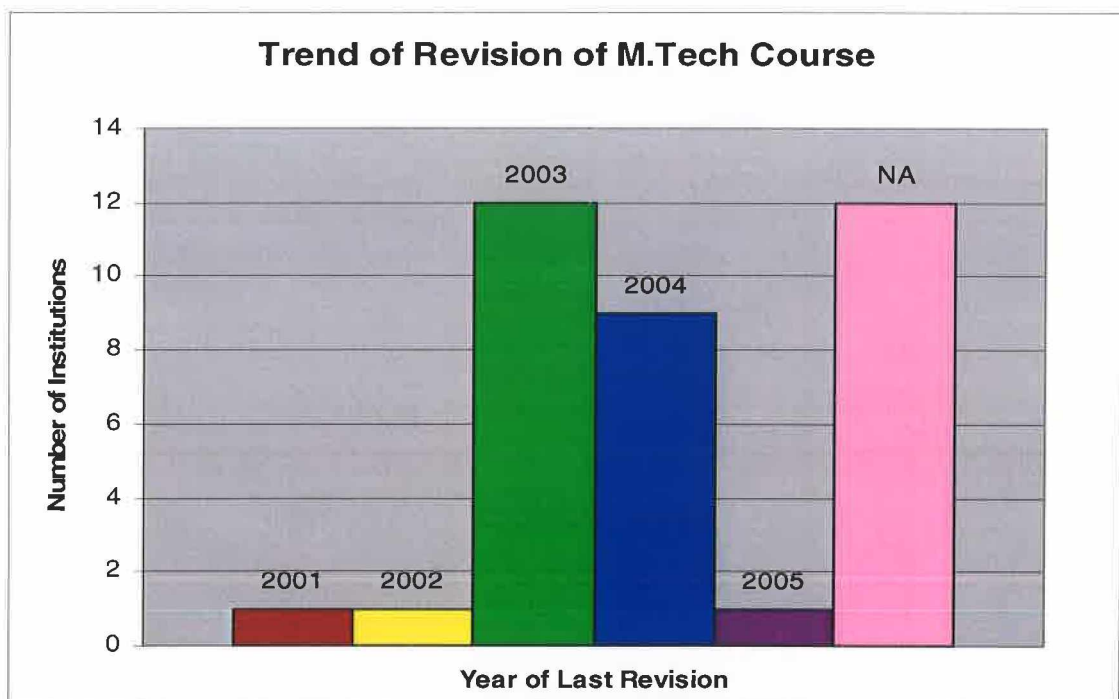
Trend: The Study shows institutions are revising their M.Tech courses. Out of 36 institutions, 21 revised the course in 2003 & 2004.

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The latest revision of B.Tech Course:

Trend of Revision of B.Tech Courses

Chart showing Number of Institutions (y-axis, 0 to 60) versus Year of Last Revision (x-axis) with bars labelled 1999, 2000, 2001, 2002, 2003, 2004, 2005, and NA.
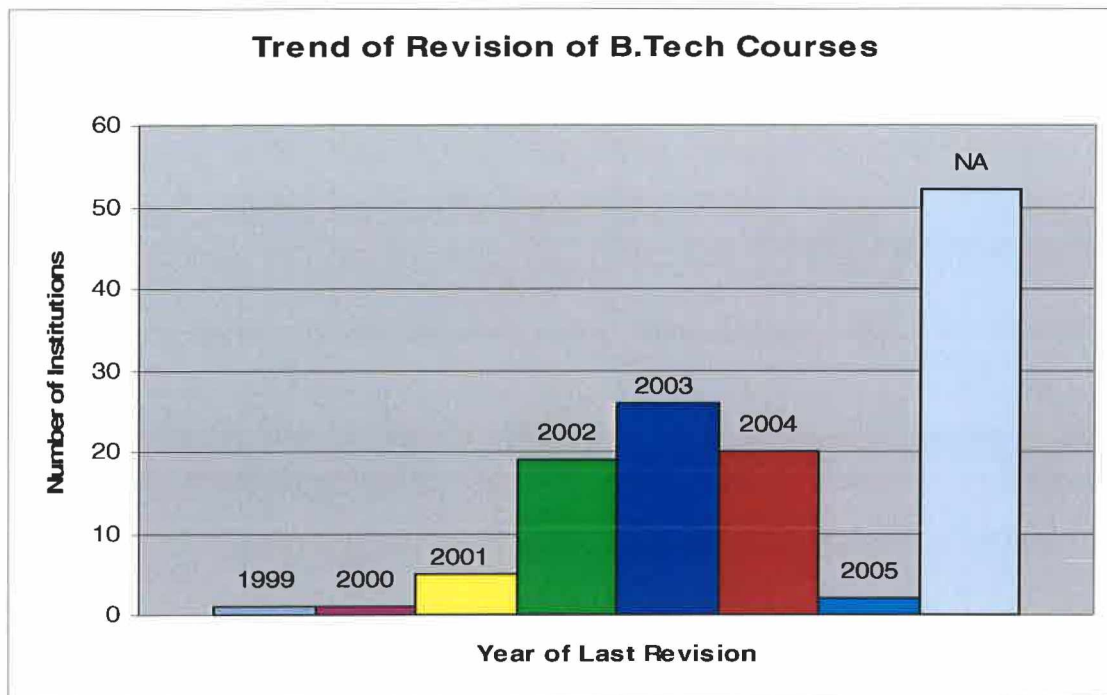
Trend: The Study shows a positive trend. Institutions are revising their B.Tech courses.

Fee Structure

a) Fee structure varies widely in the country. In case of B.E., B Tech & MCA it varies from state to state and from institution to institution.

b) There are Government run educational institutions where the fee charged is quite low since they are meant to provide social service. Government aided and self financing educational institutions, however, work on a different concept. Central institutes, state institutes and government aided institutes charge nominal fees, whereas private institutes charge high fees. The variation between the fees of institutions is quite high. The facilities offered by institutions also differ to a great degree. A lot needs to be done to standardize the fee structure and to arrive at a rational fee regime wherein the interests of the institutions as well as their customers are protected.

c) The fee being charged by private institutions has been a point of serious concern and has attracted the attention of the Apex court and directions have been given to Ministry of HRD for enacting a bill on fee structure. As an ad-hoc measure, the apex court has suggested state level fee committees under the chairmanship of retired judges to arrive at a reasonable fee for these courses.

Duration and No. of Seats

The number of seats of the courses is the same as that prescribed for the standard full time course by AICTE and the course duration is the University approved time period.

2.4   *Faculty Status*

As per AICTE norms and norms being followed in the technical education system all over the world, faculty -student ratio should be between 1:15 and 1:20. Further, the faculty composition should be in the ratio of 1:2:4 i.e. 1 professor: 2 Assistant Professors: 4 Lecturers. Presently, the bulk of the institutions in government as well as private sector are finding it difficult to maintain these norms i.e. neither is the faculty-student ratio maintained nor is the faculty composition maintained. In view of this, AICTE has recently relaxed the requirement of maintaining these ratios in the Information Technology, electronics and biotechnology subjects.

Another difficulty is that we have very few institutes, imparting IT education at postgraduate and research level. Personnel trained at the BE and B.Tech level are being absorbed directly by the industry at handsome salaries. The charm of doing post graduation and joining academics is lacking in the field of IT.

In fact, there is no dearth of IT professionals in the country. These resources need to be tapped, channelized and shared among IT institutions. Some efforts are being made by government agencies in initiating nation-wide class rooms using the concept of internet based interactive class rooms which permits sharing of teaching resources between institutions.

The following faculty related information was sought from the respondents to the survey:

- Ratio of number of students to number of faculty members
- Ratio of number of core faculty members to the total number of faculty members
- Ratio of number of visiting faculty members to the number of core faculty members

<u>Faculty with Ph.D Qualification:</u>

Institutions teaching MCA course with at least one faculty member holding a Ph.D qualification:

Institutions teaching MCA courses with atleast one PhD holder in faculty

No Ph.D in Faculty
37%
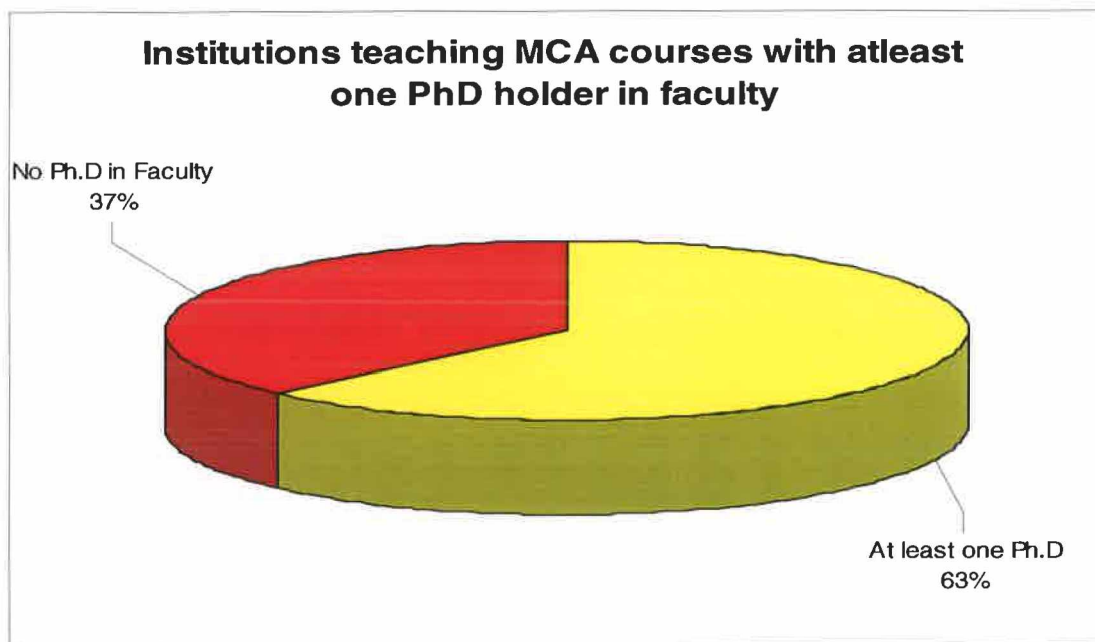
At least one Ph.D
63%

Institutions teaching M.Tech course with atleast one faculty member with Ph.D Qualification:

Institutions teaching M.Tech courses with atleast one Ph.D holder in faculty

No Ph.D in Faculty 25%

At least one Ph. D 75%
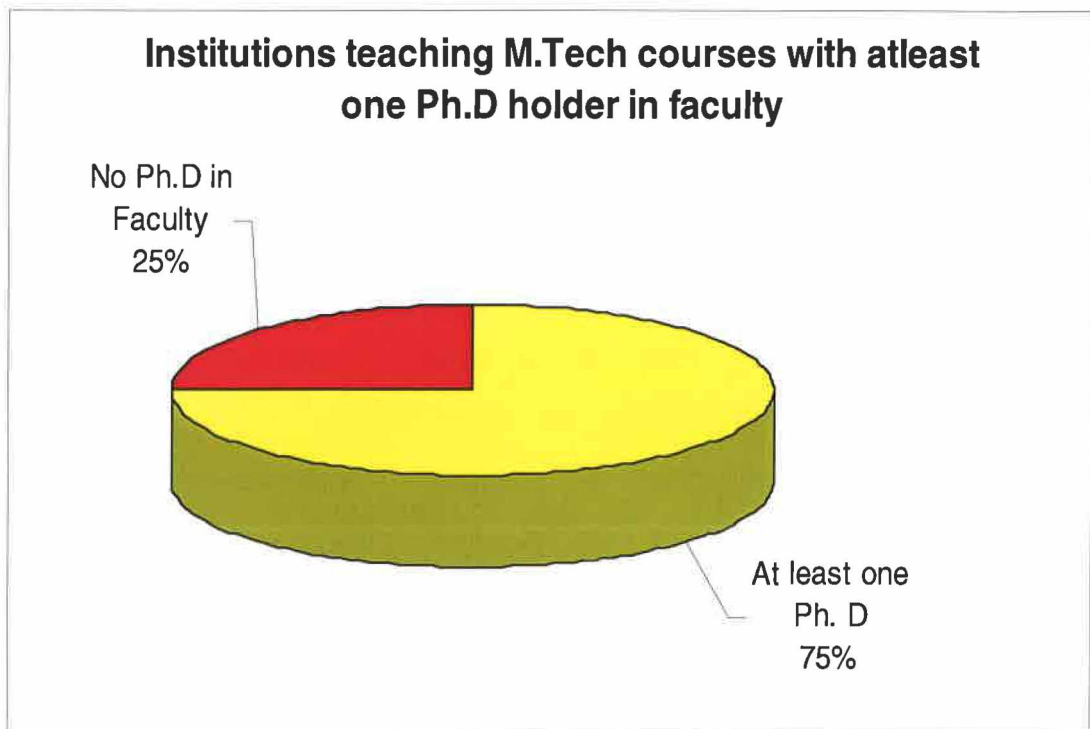
Institutions teaching B.Tech course with at least one Faculty with PhD Qualification:

Institutions teaching B.Tech courses with atleast one Ph.D holder in Faculty

No Ph.D in faculty 48%

At least one Ph. D 52%
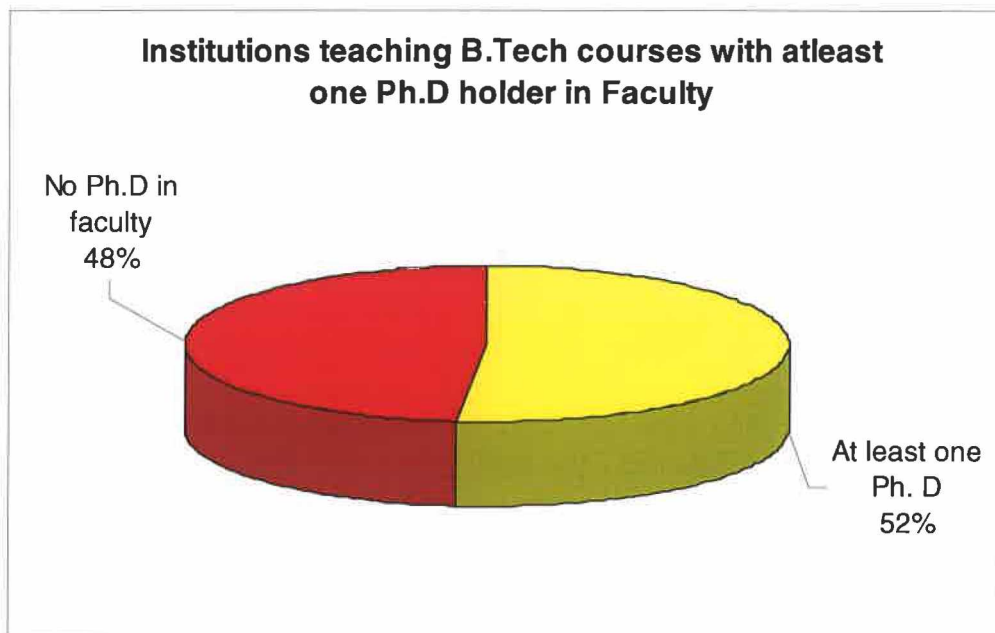
2.5   *Students Related Information*

IT courses commence from graduation level. Quite a few institutions conduct professional courses at engineering levels viz. B.Tech (IT)/B.Tech (CSE)/B.E. etc. followed by post-graduate courses.

Indian Degrees from recognized national/international institutions are globally accepted.

Some of the major issues relating to students of IT education are highlighted below:

- **No ranking or gradation of Institutes**: There are no details on the comparative levels of different institutes (in terms of gradation). Therefore, students find it difficult to finalise the institute where they can get the best training. Institutes are approved by AICTE subject to meeting of requirements at a minimum level.

- Some institutes have developed over a period of time but others are yet to develop their infrastructure.

- Degrees/diplomas and awards from institutions of dubious reputation at the national as well as international level are not given recognition. A number of students are educated by such institutions selling their own degrees/diplomas which need to be regulated if quality is any criterion to be adhered to. It would be of immense help to students if regulatory agencies pay attention to such institutes.

- Of late, more and more institutions are entering into understandings with foreign institutions for award of degree/diploma or for imparting higher education to candidate. The cost of such education is quite high at present and moreover, there is limited availability of such courses.

- The quality of foreign institutions needs monitoring as information about such institutions and their courses is only disseminated through the medium of internet which means they are totally unregulated.

- **Variation in infrastructure**: Infrastructure also varies widely. On one side, there are IITs and IISC which are equipped with the latest computer centres ,on the other hand there are self financing engineering colleges where availability of even computers and networks is at a minimum level. This variation in the practical aspects of training is a matter of concern for the students.

- Computer centres and other infrastructure required for training need periodic upgrading. National institutes are quite abreast in these areas, whereas, most of the self financing institutes are not in a position to upgrade and update periodically their computer centres, laboratories and other infrastructure needed for training in IT Sector.

- **Quality of library**: There is variation in the library set up. National institutes have access to the top journals and latest library books whereas self-financing institutes stock the minimum number of books needed for AICTE approval. Books and Study material is costly and beyond the reach of common student.

- **Lack of uniform criteria for admission to it courses**: Secondary level education with a scientific background should be the qualifying criterion for admission to IT courses. IT requires an in-depth knowledge of mathematics, physics and chemistry. Therefore, students with such qualifications should be encouraged. However, others who have a bent towards IT and are ready to acquire such knowledge should not be left out. The course curriculum must be designed accordingly.

- **Lack of parity between duration of courses in India and abroad**: The duration of courses is fairly constant in India viz. 3 years for graduation, 2 years for post graduation etc. However, compared to any foreign institutions/Universities, they seem to be fairly outstretched. The duration can easily be compressed to a reasonable period.

2.6   *Popular Perception of Current IT Status in India*

The IT institutes were asked about their opinions on different areas& different topics. The responses make interesting reading :

India's top competitors according to the academic institutes:

India's IT competitors
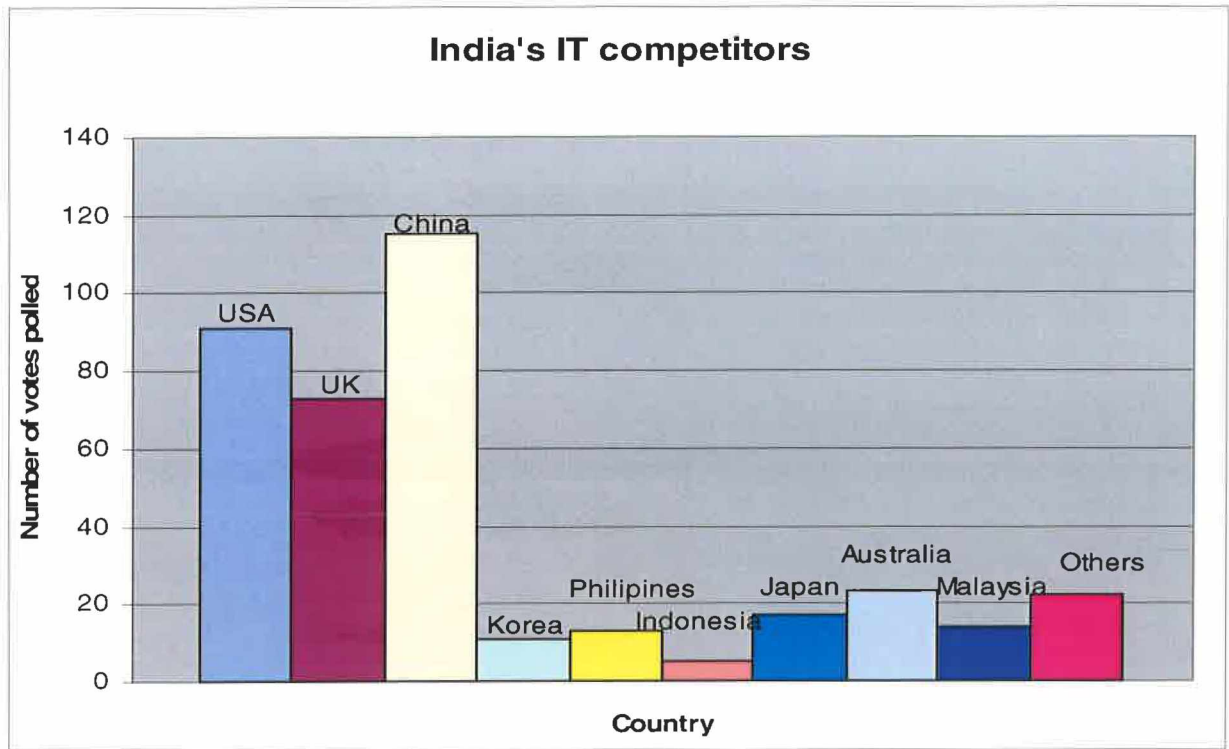
Trend: Of the countries named above, China ranks number 1 as competitor to India in the field of Information Technology. China is followed by the US, UK and Australia in that order. Other countries make up the 5th position.

Composition of others among competitors to Indian IT:

Composition of Others

Current IT Status of India:
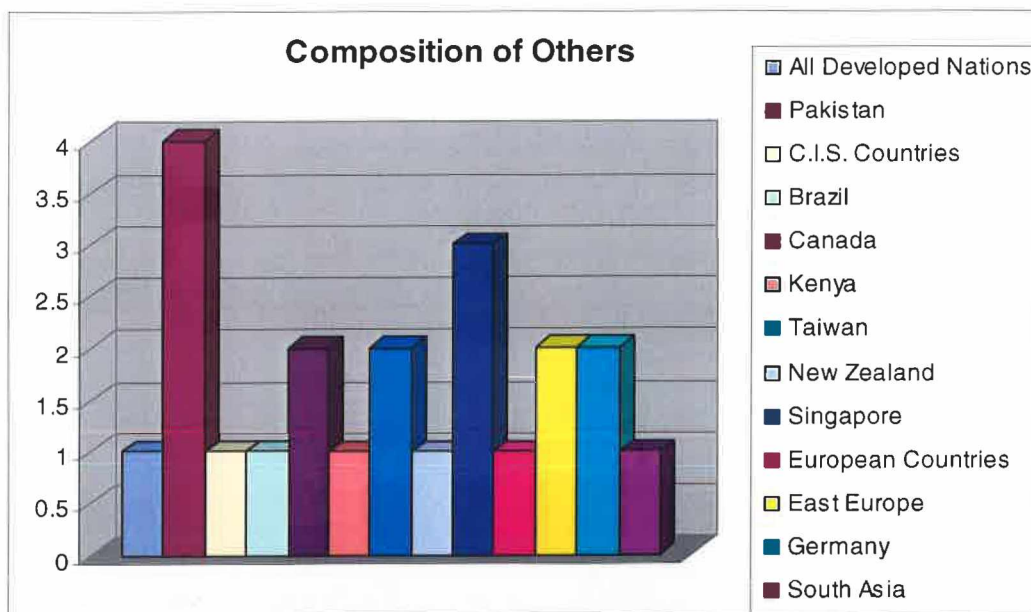
Current Status of IT in India
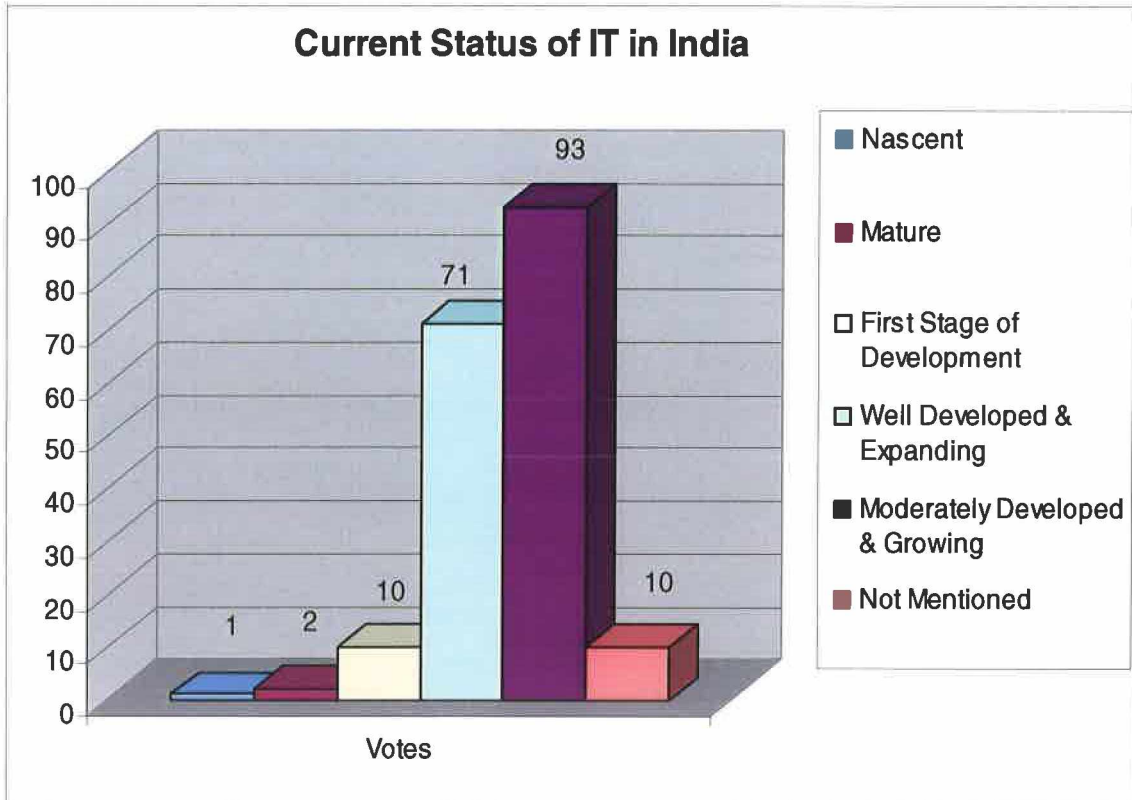
Trend: 49.47% of the respondents believe that the status of Information Technology in India is "Moderately Developed & Growing" followed by 37.7 % who say it is "Well Developed & expanding". The opinion shows a real time status of India in different fields of Information Technology.

Can India become an IT super power?

Can India Become an IT Superpower?

□ Not Mentioned
13%

■ Yes
59%

■ No
28%
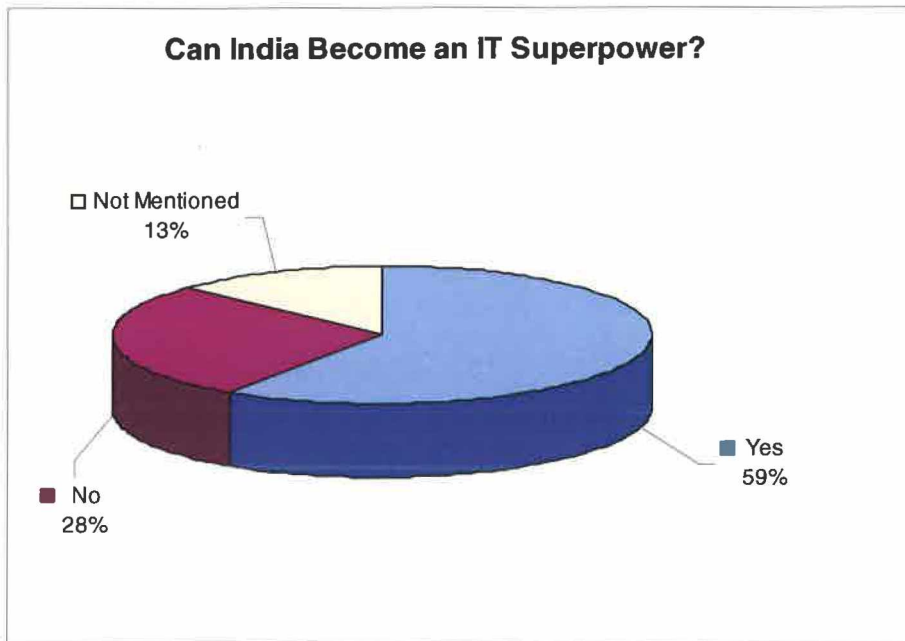
Trend: This is a very popular perception but the real challenge lies in maintaining India's present status in the global market as China and other countries are closing the gap very rapidly.

Factors acting as an impediment to the growth of IT education in India
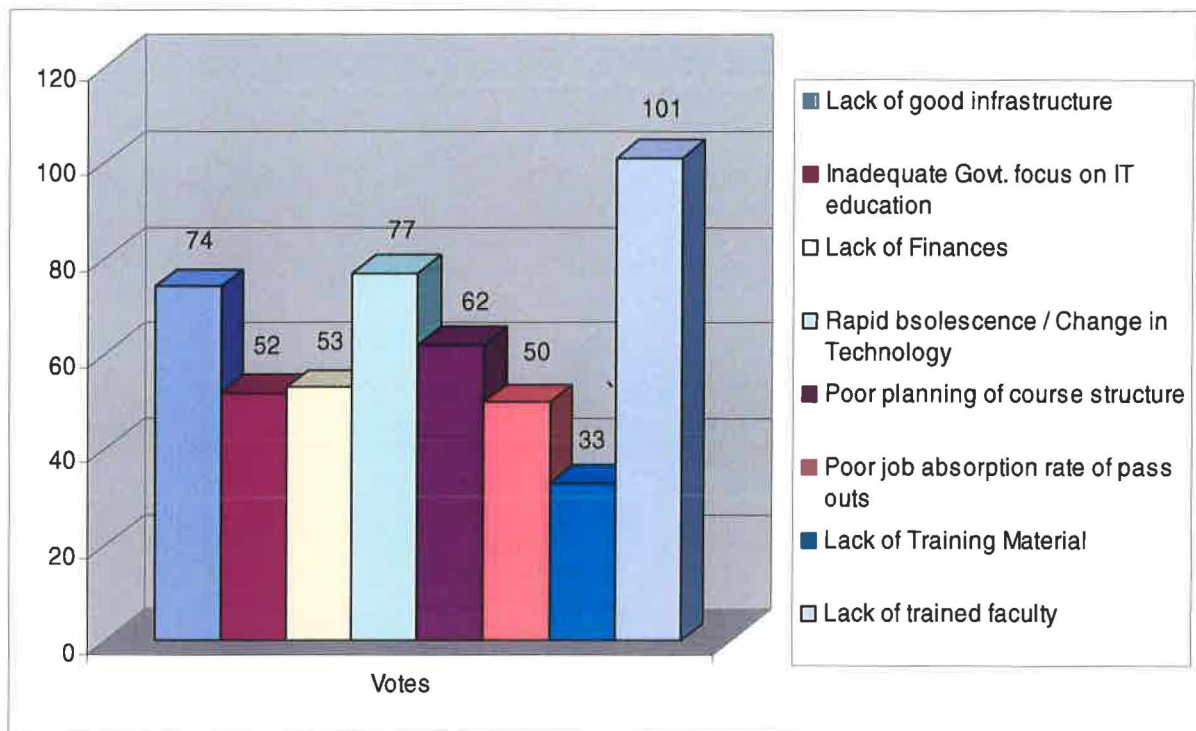
Trend: The opinion poll shows the most important issue is the "Lack of trained faculty" followed by "Rapid change in Technology" followed in turn by "Lack of Good Infrastructure". Poor planning of course structure is still an issue in spite of AICTE's model course structure. The problem lies in the revision of the course as per market and industry requirements. Government focus is no more a major issue. Availability of training material is the least of the problems as the internet provides ready access to knowledge repositories.

2.7 Quality of IT Faculty

We are currently facing an acute shortage of IT faculty. Another important factor is quality. When faculty is not even available, one can imagine the dearth of quality faculty.

o The faculty is not sufficiently updated in terms of skill sets.

o Faculty members holding doctorates in Information Technology related subjects are very few

o The teaching profession in IT does not attract quality people since it is unable to match up to the remuneration offered by the industry

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o   Faculty in some IT institutions is comprised of teachers who are less qualified than those whom they are meant to train (B. Tech/MCA faculty members teaching M. Tech students)

Keeping this in view MHRD constituted a Task Force to Study the problem of faculty development in August 2000. . As per the findings of this Task Force, the target was first to meet the shortage of IT faculty and second to upgrade and enhance the quality of IT faculty.

Every college and academic institution in the country must concentrate on development of their own faculty. Teachers have to be encouraged, assisted and motivated to acquire additional qualifications. If bachelor degree holders are employed they have to be encouraged to do masters degree within 5 years and also to secure a Ph.D Degree within 7-8 years. Deputation of teachers to other institutions for acquiring higher qualification can give them additional exposure.

Since faculty development requires heavy investment, separate financial package may be created exclusively for this purpose. With this fund they can create pools and centres in different states where enhancement of quality of faculty can be accelerated, so that, we can match with the world level quality in IT faculty. The faculty of collaborating Universities/Institutions should exchange visits semester wise and teach prescribed common courses.

2.8   *Institutes Limited to Select Centres*

It is a well known fact that there is an imbalance of technical education and technical institutes in the country. Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh and Kerala have been able to create these facilities quite in advance whereas Northern India was slow to catch this phenomenon. Eastern India is yet to make inroads into IT education. More than 50% of IT institutes are located in Karnataka, Maharashtra, Tamil Nadu, Andhra Pradesh and Kerala whereas Bihar, UP Orissa, North Eastern States and West Bengal are yet to create necessary infrastructure for IT education matching up to the Southern states. In North India, except for the Delhi NCR, other areas are struggling hard to come up with required infrastructure. Punjab, Himachal Pradesh, J&K and Rajasthan have yet to catch up in terms of IT education.

This problem can be better tackled by a Nodal Agency if we have governance on IT education at the national level for monitoring the imbalance which has crept in this vital area.

2.9 *Response from Industry*

Response from the industry was not on expected lines. Only 7 questionnaires out of 56 questionnaires sent to leading IT companies were received as indicated in *Annexures II & III* respectively.

Chapter - III

Issues and Challenges for IT Education

3.1 *Changing Scenario*

So far, Indian IT industry has capitalized on the outsourcing from the US. We have been providing high quality services at competitive prices. The success of Indian IT companies has been instrumental in providing an environment to constantly develop new skills. IT companies possess world class technologies and adopt business practices obtained globally.

A pool of talented IT professionals has to be created in tune with the fast changing world demand for IT professionals. China, Philippines, Vietnam, Australia and USA pose major challenges for India. The emergence of East European countries in the IT sector increases the competition for India.

India's English language is also eroding as non-English speaking countries, like China, Philippines, Pakistan and Indonesia have also emphasized the need for English language Study in the IT Sector. India therefore cannot afford to be complacent about its English language advantage.

It is not possible to stop permanently, the opening of education for foreign Universities as India is committed to integrate its economy with the global economy. India is a signatory to the WTO. Once it commits to General Agreement on Trade and Services (GATS), foreign Universities cannot be denied entry. Admission procedures and fee structures will also undergo a sea change once this happens even on a regulated basis students will prefer to acquire a foreign degree by studying and remaining within the country at a lower cost without hassle. It is, therefore, essential for the existing Universities and institutions imparting IT education to broad base their IT curriculum and upgrade it to address the requirement of highly skilled manpower in domestic and foreign business corporations and other establishments.

3.2 Shortage of Quality Manpower

Recent statements of NASSCOM and the opinion expressed by Mr. Deepak Nayyar, former Vice Chancellor of University of Delhi can be cited to illustrate the on going challenges for technical man power in IT field. In the current year, NASSCOM, has indicated shortage of 9,000 IT professionals. Next year it may cross 30,000. By 2007-08, it may exceed 80,000. In 2010, it is expected to cross 1 lakh. To train this much technical manpower, one requires at least 200 engineering institutes with matching faculty and infrastructure. 4.5 lakh engineers pass out of 1200 institutes as indicated in IST hand book 2003-04 and 56,000 students out of more than 500 MCA institutes. The IT industry has found it difficult to source quality manpower. Our survey with the IT industry has shown that industry has to train people hired by them before inducting them on their Projects.

At present MCA and BE students undertake industrial training in the final semester. After six months, this training is again evaluated by the industry before their absorption. The absorption rate is 10 to 20%. Therefore, the quality of education is one among the challenges requiring serious concern of the authorities.

3.3 Global Competition

The way we access and assimilate information and new methods of packaging information have given birth to a revolution more complex and powerful than the evolution of the printed word in Europe in the 15th century. The IT revolution is about real time access and sharing of digital information consisting of visual images and virtual worlds made using core information technologies like digital networks, information data banks and computer graphics to meet the challenges of information age. Organisations are redefining the main objectives, strategies, critical success factors and restructuring the traditional pyramid type organisation structures into flatter organisation structures.

Revolution in Information Technology has expanded the frontiers of organisational activities. Satellite communication has paved the way for globalised economy. Countries are now interdependent in terms of technology, capital, purchases and sales. Global companies buy from the cheapest markets and sell where they can

get maximum price. They carry on production in a country where cost of production is the minimum. This also holds good for IT companies.

3.4 WTO and its implications on Education in India

The question being asked is whether India is ready to face the challenge from foreign players in the Indian education system. The opinion seems to be divided. On the one hand, if India opens markets particularly in higher education, it will reinforce the inequalities that already exist. If education sector is completely made borderless, the dominant providers will have unrestricted access. Institutions which cannot compete will find it difficult to survive. The other opinion is that it will not pose any threat to bigger, well established institutes and would only generate healthy competition giving students an opportunity to choose from and avail the best. Institutions will be able to upgrade their own curriculum, their teaching methodologies and their practices. India can look forward to great opportunities for offering quality education by leveraging technology, experienced faculty and suitable infrastructure.

3.5 Acceptance of Indian IT Education in Global Market

India has made a mark in the IT sector. The Indian IT Industry accepts the degrees awarded by Indian Universities, IITs, RECs and other reputed organizations. There are of course degrees of acceptance of students. Even Indian companies give preference to the pool of talented students passing out from IITs, IITs and particular Indian Universities. Foreign companies have also accepted the degrees awarded by the reputed Indian Universities. However, education standards of all the Universities and Institutes are not the same.

The Association of Indian Universities (AIU) responsible for acceptance of Indian degrees is approached by students for certification of their degrees as and when required. The high demand of IT experts by Indian and overseas companies make it inevitable that serious consideration be given to monitor worldwide acceptance of degrees awarded by Indian educational institutes.

A beginning can be made for acceptance of Indian degrees by all those countries with which India has made bilateral comprehensive agreements encompassing

education. India has already entered into such agreements with over 100 countries from developed and developing world.

3.6 Mutual Recognition/ Accredition of Foreign Universities

The Association of Indian Universities (AIU) is responsible for recognizing degrees awarded by foreign countries. GESS Study team met and discussed with AIU senior officials to find out a comprehensive list of foreign Universities with which India has mutual recognition agreements. However, no comprehensive list could be obtained from the AIU. It was found that AIU is compiling a list of Universities for equivalence. In this respect, a questionnaire circulated by (AIU) to different Universities and Educational Institutes provided to GESS is attached as *Annexure V*.

Washington Accord: (WA) - Equivalence of Degree

According to AICTE, steps are being taken to upgrade the quality of technical education in the country so as to smoothen India's entry into the Washington Accord (WA). WA between the engineering accrediting bodies of 9 countries with 5 professional members recognises equivalence of degrees accredited by those bodies and recommends that graduates of accredited programmes are recognised mutually as having met the academic requirements for entry in to the field of engineering (IT Faculty). WA requires accreditation of all engineering institutes in line with the systems in other countries and equivalence in areas like course curriculum, evaluation of credits and the like. If India becomes a signatory to WA, it would greatly increase the global mobility of Indian engineers. Sooner or later India will have to anyway become a part of WA.

3.7 Monitoring Quality of IT Education

The All India Council of Technical Education is currently responsible for monitoring quality of education including IT Education. Details of norms and procedures adopted by the AICTE for monitoring quality of IT education are available in AICTE website (www.**aicte**.ernet.in).There is no separate agency or authority other than AICTE to monitor the quality of IT education being imparted in the country.

3.8 Need for specialised IT Institutions/Universities on the pattern of IITs

Two special institutions imparting IT education have been set up at Allahabad & Gwalior. The third institute is coming up at Hyderabad and a fourth is planned by West Bengal Government. There needs to be one special IT institution or Deemed IT University in each and every state.

3.9 Research in IT Sector

It is prudent that India laid more thrust on research in technologies related to IT. We cannot depend upon the import of technology for this purpose for all time. We also need to have innovative solutions based on indigenous research for day to day problems in business areas. Thus, research needs to be carried out on problems being faced by our own country.

IT needs continuing research. It is beyond the capacity of most educational institutes to establish original research centres. The private sector, NASSCOM and Chambers of Commerce can play a vital role in this area.

3.10 Overcoming the Challenges in the Area of Operational Excellence

A NASSCOM-QAI survey on the challenges faced by ITES-BPO organisations and the best practices found useful in tackling them are indicated below:

- Attracting and retaining people across all management levels was stated to be a key challenge.
- For senior management, rewards for adherence and training were the most effective practices that impacted responsiveness.
- Reputed companies were using the trial of Six Sigma, COPC and ISO to improve processes.
- Senior and middle management of companies were adopting rigorous root cause analysis to improve quality and accuracy.
- Getting team leaders to train was the most cost effective means for imparting training.
- Increasing middle management leadership competencies and using appropriate hiring profiles helped improve retention.

- Aligning internal measures such as quality monitoring was rated as one of the most effective means of improving end use satisfaction levels.

- Frequent interactions and detailed, unambiguous client contracts and SLAs were rated as the two most effective practices for managing client relationships.

- Developing organisation-wide competencies on verticals and partnerships with clients were rated as the two most effective strategies for increasing business.

Chapter - IV
Road Map

Information Technology is an established and developed sector in India. However, India's IT education needs to be stabilised and its quality needs to be improved. The key areas which need to be addressed are government focus on IT industry, industry standards pertaining to goods and services, governance, infrastructure, integration with other sectors and development of a brand image. The need for continuous monitoring of the key areas of development in this sector is depicted in the 'Development Wheel' below.

A Road Map for revamping IT education is closely linked with these key factors. Hence all the fronts need adequate focus to ensure rapid growth of the Industry:

Development Wheel
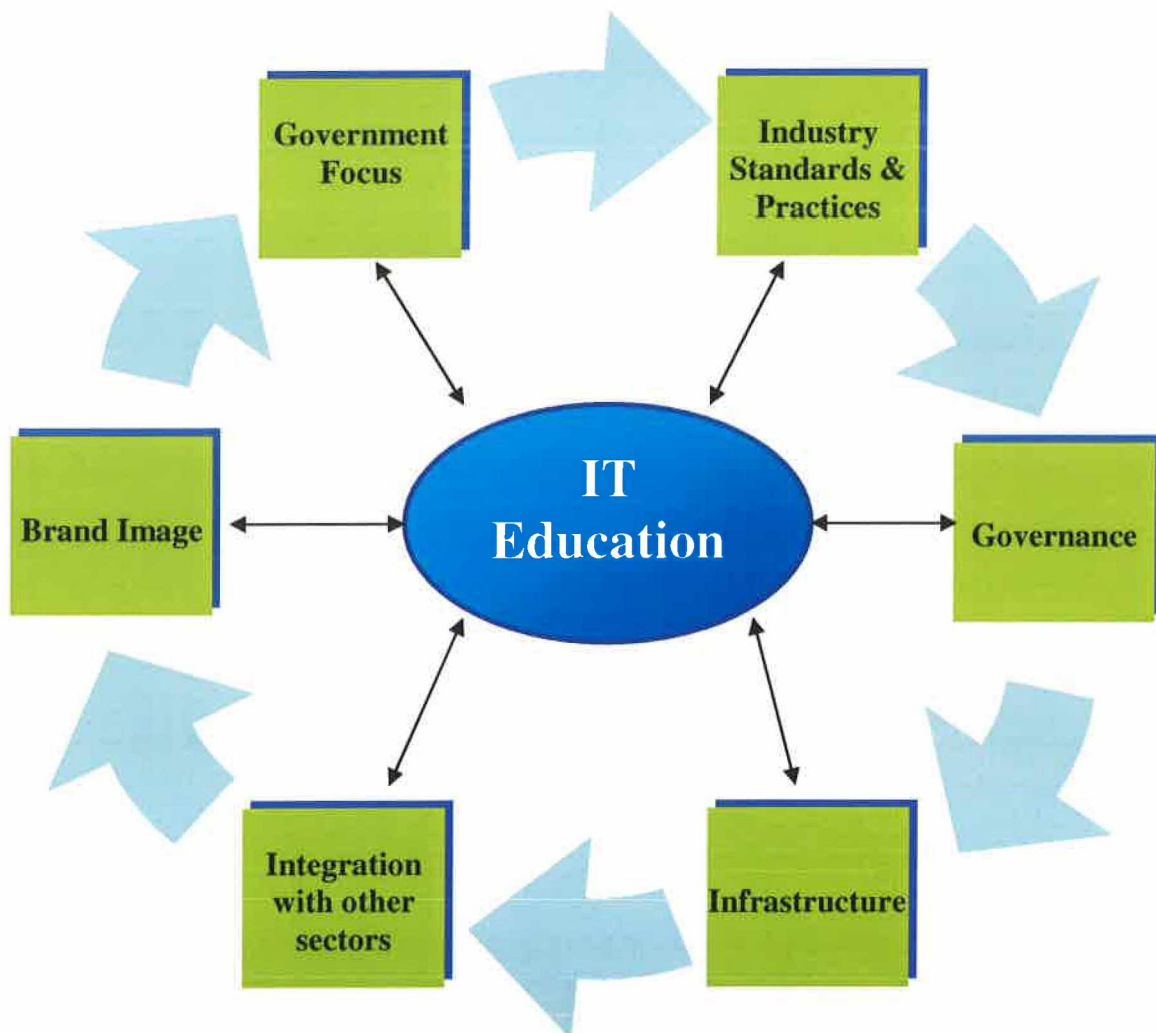
India faces several bottlenecks in its race to success. Infrastructure needs improvement. Power, water, roads, airports need to be improved for IT to climb for higher peaks. In order to achieve this, active support of the Government is a must. Educational institutes and Universities imparting IT education will have to gear up in the changing scenario. Until now, the success of Indian IT has been outside the country. The time has come for it to be replicated in India. India has a huge potential both for Indian industry as also to create a pool of IT professionals.

4.1 Areas Requiring Special Focus

- Course material needs to be upgraded periodically to meet industry standards and requirements.

- Training methodology should be at par with the developed nations

- Training to trainers to be provided by industry experts

- Early faculty induction to attract and build a strong faculty team.

- Adjunct Faculty - Bring back experienced professionals in the main stream.

- Sharing of Faculty - A consortium of colleges to be formed to pool senior level faculty for imparting IT education in advanced areas.

- Research and Development

- Consortium of institutions and industry players

- Exchange of education programs with developed IT nations

4.2 Industry Standards & Practices

- IT industry should provide feedback through ongoing interaction with academic institutes to improve the quality of IT manpower.

- World class software development

- Ensure zero defect delivery

- IT industry should have a regular training programme on co –operative basis as prevalent in USA, UK, & Australia.

4.3 Governance

- Joint efforts by Educational Institutions and industry should be encouraged.

- Data Bank of IT skills and resources - A joint effort by education institutions and industry is needed.

- Education Council - An IT education council is required to monitor the education standards and quality.

4.4 Infrastructure

- High speed internet connectivity should be provided.

- Software Parks in less developed IT zones - To promote IT education in these areas.

4.5 Integration with other sectors

- IT enabled processes should be promoted.

- Every sector and industry should be automated as far as possible and have the capability to share information and data on a single platform.

4.6 Brand Image

- Brand image of India as a centre of knowledge having a pool of highly skilled world class engineers and IT experts should be established.

- India needs to be projected as a solution center and a one stop shop for all IT needs.

4.7 Government Focus

- Government focus at state and national level is required to promote this sector.

- E-Governance - National E-Governance plan (NEGP) should continue its thrust in the state level and identify more and more states and areas which can be computerized.

Chapter – V

Governance of IT Education

5.1 *Backdrop*

Initially MHRD was catering to all the technical education including electronics and IT sector. In the late eighties, it was felt that an independent department may be created to give way to an independent department of electronics. By 1997-98 this department acquired a large size with the entry of computer science into the field. Simultaneously, liberalisation of the economy started in the early nineties. In 1995, a department of IT was evolved within the department of electronics. This structure continued up to 1999. However, in 2000 the need for creating an independent Ministry for IT industry was felt by the Government. All these developments indicate that it is the right time to have an independent IT Council to widen the horizon and strengthen further the field of IT education in the country.

5.2 *Need for an independent body for IT Education*

There is no separate body or authority to exclusively oversee IT education standards as is the case for medical, pharmaceutical and engineering education. Since, IT education is comparatively new and challenging and has vast domestic and overseas potential; consideration may be given to make IT education at par with countries like USA and UK.

There is a strong necessity for a Nodal Agency or governing body to monitor the IT education system in the country in a balanced way to cover all the regions of the country. This body would ensure that institutes maintain standards of infrastructure and its upgradation, faculty development, course and syllabi, teaching techniques and teaching aids and help research centres operational in an effective way.

The Indian IT sector has crossed Rs. 1,00,000 crores in revenue and 1 million in BPO employees as per NASSCOM. NASSCOM estimates industry revenue will touch $ 80 billion by 2010, which translates into an annual growth rate of 35% per annum. India has a considerable lead but it has to gear up, as lots of countries worldwide are emerging and pushing for gainful employment of their manpower.

5.2   Scope of Governance

The proposed body may assist AICTE in identifying scope and ways of improvement in IT education particularly covering the following areas:

- Implement IT education Standards and Policies laid down by Ministry of IT/MHRD/AICTE/UGC etc.
- Assist organisations like NASSCOM to show case IT education standards.
- Network/interface with IT Industry or organisations like NASSCOM.
- Forecast manpower requirement.
- Create and maintain a databank of IT institutions.
- Penetrate IT education at different level.
- Ensure acceptance of Indian Degrees/Diplomas in domestic and global IT industry.
- Accord Mutual Recognition Agreements for outsourcing India's talents.
- Define accountability for the IT institutions.
- Help in creating India's brand image as a global hub for IT education.
- Monitor intake and out-turn capacities of Institutions.
- Ensure Institutional quality.
- Grade/categorise IT Institutes in the country.
- Plan future strategies for IT education.
- Offer prestigious memberships to professionals for their contributions in the Indian IT research.

Chapter - VI

www.iteducation.in

6.1 Overview of the website (http://www.iteducation.in/)

Objective:

- This website will act as a repository of information on IT Education courses approved by AICTE and UGC
- The website will have institutions of India governed by the AICTE and UGC guidelines & regulations
- The graduate and post graduate IT courses are listed.

Viewers of the website

- Prospective students who like to take up IT courses and
- IT companies
- IT Institutions

Available Searches: The search for IT courses can be conducted as follows:

- Geographical Search: Region, State and City.
- Institution Search: University, Deemed University and Institutes/Colleges
- Course Search
- Advanced Search
- Keyword Search

Features available in the website

- Graduate & Post Graduate course details
- Online submission of Questionnaire for future survey
- Help to use the website
- List of Courses Available in IT Education

6.2 Maintenance of Website

- Periodic Update of Course details are required to Include new institutions and faculties of Universities/ Institutions
- Removing redundant information

- Regular Back up of the site data
- Technical upgradation like design, layout and database.
- Monitoring and increasing the server space should be on a continuing basis

6.3 Future Enhancements of the website

The following features may need consideration: -

- Bulletin Board
- Discussion Forum
- Ask me services for students and IT companies queries to the Institutions
- Platform for recruitments
- Platform to display academic capabilities
- Platform to display Projects done by the students

ANNEXURES

I List of Replies from prominent IT education Institutions

SI. No.	Name of Institute\College\University
1	A.I. Jat H.M. College Rohtak, Rohtak
2	A.P.S Rural And College, Bangalore
3	Acharya Insitute of Management And Technology, Bangalore
4	Acharya Motibhai Patel Instt. of Computer Studies, Mehsana
5	Adesh Institute of Engineering & Technology, Faridkot
6	Adhiyamaan College of Engineering, Hosur, Tamil Nadu
7	Administrative Management College, Bangalore
8	Alpba College of Engineering, Bangalore
9	Amal Jyothi College of Engineering, Kottayam
10	Amc Engg. College / Vtu Benglaore
11	Amity Business School, Gurgaon
12	Amity School of Engineering & Technology, New Delhi
13	Amravati University, Amravati
14	Amrita Vishwa Vidyapeetham, Coimbatore
15	Amritsar College of Engg. & Technology, Amritsar
16	Anjuman College of Engg. & Technology, Bhatkal
17	Aqj Centre For Pg Studies, Visakhapatnam
18	Arulmigu Meenakshi Amman College of Engineering, Kanchipuram
19	Assam Engineering College, Guwahati
20	Atria Institute of Technology, Bangalore
21	Atria Institute of Technology, Bangalore
22	Avinashilingam Instt. For Home Science & Higher Education For Women, Coimbatore
23	B N M Institute of Technology, Bangalore
24	B.M.S College of Engineering, Bangalore
25	B.M.S Institute of Technology, Bangalore.
26	Baba Saheb Dr. B.R. Ambedkar College of Agril. Engg. & Tech., Etawah
27	Bangalore Institute of Tech. Banglaore
28	Banglore University, Bangalore
29	Bankatlal Badruka College For Information Technology (Bbcit), Hyderabad
30	Bapuji Institute of Engg. & Technology, Davangere
31	Bhai Maha Singh College of Engineering, Muktsar
32	Bharath Institute of Higher Education & Research, Chennai
33	Bharati Vidyapeeth College of Engineering, Navi Mumbai
34	Bharati Vidyapeeth's Instt. of Managementcollege of Engineering, Sangli
35	Bhutta College of Engg. & Technology, Ludhina
36	Birla Institute of Technology & Science, Pilani
37	Bishop Heber College, Tiruchirapalli
38	C.M.R. Institution of Technology, Bangalore
39	Centre For Development of Advanced Computating Noida
40	Chinmaya Institute of Technology Govindagiri, Chala, Kannur
41	Christ College, Bangalore
42	Christ College, Bangalore
43	Cms College of Science & Commerce, Coimbatore
44	College of Engineering & Management, Kapurthala
45	College of Engineering, Goa
46	College of Engineering, Trivandrum, Kerala
47	College of Technology, G.B. Pant Univ. of Agri. & Technology, Pantnagar

Sl. No.	Name of Institute\College\University
48	Ct Instt. of Engg., Mgt., Technology, Jalandhar
49	D.A.V. Institute of Engineering & Technology, Jalandhar
50	Datta Meghe College of Engineering, Navi Mumbai
51	Dattajirao Kadam Tech. Edu. Soc. Textile & Engineering Institute, Ichalkaranji
52	Dayandanda Sagar College Management And It, Bangalore
53	Deccan College of Engineering, Hyderabad
54	Department of Computer Science & Applications, Dr Hari Singh Gour University, Sagar
55	Department of Computer Science & Tech. Goa University
56	Deptt. of Comp. Sc., Punjabi University of Patiala, Patiala
57	Deptt. of Comp. Sc., University of Madras, Chennai
58	Deptt. of Computer Science& Applications, Kurukshetra University, Kurukshetra
59	Deptt. of Computer Science, Bhavnagar University, Bhavnagar
60	Dom Bosco College, Kannur
61	Don Boso Institute of Technology, Bangalore
62	Don Boso Institute of Technology, Mumbai
63	Dr. Ambedkar Institute of Technology, Bangalore`
64	Dwarkadas J Sanghvi College of Engineering, Mumbai
65	Dy Patil College of Engg. & Technology, Kolhapur
66	East Paint College of Eng., Bangalore
67	Engineering College, Ajmer
68	Engineering College, Kota
69	Faculty of Engg. & Technology, Agra College, Agra
70	Faridabad Insitutute of Technology, Faridabad
71	Fr. Conceicao Rodrigues College of Engineering, Mumbai
72	Gian Jyoti Institute of Mgmt. & Technology, Mohali
73	Global Academy of Technology, Bangalore
74	Gokaraju Ranga Raju Institute of Engineering & Technology, Hyderabad
75	Govt. College of Engineering, Karad
76	Govt. Engineering College, Wayanad
77	Gujarat Vidyapeeth, Ahmedabad
78	Gujranwala Guru Nank Instt. of Mgmt. & Technology, Ludhina⌐
79	Gulbarga University, Gulbarga
80	Guru Jambeshwar University, Hisar
81	Guru Nanak Institute of Management & Technology, Ludhiana
82	H.K.B.K., Banglaore
83	Hindu College of Engineering, Sonipat
84	Hitkarini College of Engineering & Technology, Hitkarini Hills, Bumna Road, Jabalpur
85	Hkbk College of Eng. Bangalore
86	Hyderabad Study Circle
87	I.I.T Bombay
88	Ifet College of Engineering, Villupuram, Tamil Nadu
89	Iit, Kharagpur
90	Iit, Madras (Chennai)
91	Indian Institute of Cost & Mgmt. Studies & Research (Indsearch), Pune
92	Indira Institute of Management, Pune
93	Indo Global College of Architecture, Abhipur
94	Institute of Computer Computer, Electronics & Instrumentation, Indore
95	Institute of Distance Education of Madras, Chennai
96	Institute of Engg. And Technology, Bhaddal
97	Institute of Technology & Science, Ghaziabad
98	Institute of Technology For Women, Mumbai
99	International Institute For Special Education, Lucknow
100	Islamiah Institute of Technology, Bangalore
101	J.S.S Academy of Tech. Education, Bangalore

Sl. No.	Name of Institute\College\University
102	Jamia Hamdard, New Delhi
103	Jan Nayak Ch Devi Lal College of Engineering, Sirsa
104	Janardan Rai Nagar, Udaipur
105	Jawaharlal Nehru Technological University (Ntmis), Hyderabad
106	Jj College of Engineering And Technology, Tiruchirapalli
107	K.K. Wagh College of Engineering, Nashik
108	K.S. Institute of Technology, Bangalore
109	Kakatiya Institute of Technology & Science, Warangal
110	Kamraj College of Engineering & Technology, Virudhunagar
111	Kannur University,Kerala
112	Kbp College of Engineering, Satara
113	Khadir Mohideen College, Thanjavur
114	Kls, Gogte Institute of Technology, Belgaum
115	Kolhapur Institute of Technology's College of Engg., Kolhapur
116	Kongu Engineering College, Erode
117	Kumaraguru College of Technology (Deptt. of Comp. Sc. & Engineering), Coimbatore
118	Ludhiana College of Engg. & Technology, Ludhiana
119	M.P. Christian College of Engg. & Technology, Bhilai
120	M.S. Ramaiah Institute of Technology, Bangalore
121	Maharaja Surajmal Institute of Technology, New Delhi
122	Maharashtra Institute of Technology, Pune
123	Maharshi Dayanand University, Rohtak
124	Mahatma Gandhi College, Edulapalem
125	Mahatma Gandhi Mission's College of Engg. & Technology, Navi Mumbai
126	Mailam Engineering College, Mailam
127	Malnad College of Engineering, Hassan
128	Manipal Institute of Technology, Manipal
129	Manonmaniam Sundaranar University(Deptt. of Comp. Sc. & Engg.), Tirunelveli
130	Marudhar Engineering College, Bikaner
131	Mct's Rajiv Gandhi Institute Technology , Andheri (W), Mumbai
132	Moradabad Institute of Technology, Moradabad
133	Mss's College of Engineering, Jalna
134	Muffakhan Jah College of Eng. And Technology, Hyderabad
135	Mulana Azad National Institute of Technology, Bhopal
136	Naga Arjuna College of Eng. And Technology, Bangalore
137	Nataji Subhash Institute of Technology, Dwarka, New Delhi
138	National Institute of Technology, Calicut
139	National Institute of Technology, Hazratbal, Srinagar
140	National Institute of Technology, Tiruchirapalli
141	P.E.S. It, Bangalore
142	Pc College of Engineering, Goa
143	Prin. Ng Naralkar Institute of Career Development & Research, Pune
144	Psg College of Technology, Coimbatore
145	Pune Vidyarthi Griha's College of Engineering & Technology, Pune
146	Punjab Agricultural University Ludhinana
147	Punjab Institute of Management & Technology, Mandi Gobindgarh
148	Punjab Technical University, Jalandhar
149	R.N.S Insitute of Technology, Bangalore
150	R.V. College of Eng.
151	Raj Kumar Goel Instt. of Technology, Ghaziabad
152	Raja College of Engg. & Technology, Madurai
153	Rayalaseema Institute of Information & Management Science, Tirupati
154	Rimt-Engineering College, Mandi Gobindgarh
155	S.D. College of Engg. & Tech., Muzaffarnagar

Sl. No.	Name of Institute\College\University
156	Sapthagiri College of Engineering, Bangalore
157	Sas Institute of Information Technology, Mohali
158	Satpagiri College of Eng. Bangalore
159	Sbirdi Sai Eng. College, Bangalore
160	School of Continuing And Distance Education Jntu, Masab Tank, Hyderabad
161	Shadan College of Engineering & Technology, Hyderabad
162	Shadan Women's College of Engineering & Technology, Hyderabad
163	Shri Ram Murti College of Engineering & Technology, Bareilly
164	Sir M.V. Information And Technology, Bangalore
165	Sona College of Technology, Salem
166	Sri Ramakrishna Mission Vidyalaa College of Arts & Science, Coimbatore
167	Sri Vankateshwara College of Enginnering, Bangalore
168	Sri Venkateswara College of Engineering, Sriperumbudur
169	Ssm College of Engineering, Komarapalayam
170	St Aloysius College, Mangalore - 575002
171	St. Francis Institute of Technology, Mumbai
172	Swami Vivekanand Institute of Engg. & Technology, Ram Nagar (Banur)
173	Tezpur University
174	The Institution of Electronics & Telecommunication Engineers (Iete), Aligarh Centre
175	The Instiution of Electronics And Telecommuncation, Bangalore
176	The Oxford College of Eng., Bangalore
177	The Oxford College of Eng., Bangalore
178	The Oxford College of Science, Bangalore
179	The Technological Institute of Textile & Sciences, Bhiwani
180	Univ. College of Engg, Ou. Hyderabad
181	University Bdt College of Engineering, Davangere
182	University College of Engineering, Kothagudem
183	University Department of Information Technology, Mumbai
184	University of Burdwan, Burdwan
185	University of Delhi
186	University of Hyderabad
187	University of Post Graduate College, Kakatiya University, Khammam
188	University Virvervaraya College of Enginnering, Banglaore
189	Usha Mittal Institute of Technology
190	Velammal Engineering College, Chennai
191	Vemana Institute of Technology, Bangalore
192	Vemana Institute of Technology, Bangalore
193	Vignan's Engineering College Mgmt. Education & Research Institute, Nalgonda
194	Vimal Jyothi Engineering College, Chemperi
195	Vivekananda School of Pg Studies, Hyderabad
196	Vrs College of Engineering & Technology, Villupuram, Tamil Nadu
197	Vyws College of Engineering, Amravati
198	Watumull Institute of Electronic Engg. & Comp. Technology, Mumbai
199	Watumull Institute of Electronic Engg. Computer Technology & Electronic Instrumentation, Mumbai
200	West Bengal University & Technology, West Bengal
201	Yellamma Pasappa Insitute of Technology, Bangalore

II *List of Replies from IT Companies*

SI.No.	Company Name
1	DOEACC Society, New Delhi
2	HCL Infosytems Ltd. Noida
3	Keane India Ltd.Gurgoan
4	NIIT Ltd.
5	Path Infotech Limited
6	Tally Solutions Private Limited, Bangalore
7	Tata Infotech Limited, Mumbai

III List of select IT industry where Questionnaires sent

Sl No	Company Name & Address
1.	Aztec Software & Tech Service Pvt. Ltd. 23/A, 3rd 'A' Block, Koramangala, Bangalore
2	Baan Info System India Pvt. Ltd. 4th floor, VIPPS Centre Masjid Moth, Greater Kailash, New Delhi 110048
3	Bells Softech Limited, 26th Main, 4th 'T' Block Jayanagar, Bangalore 560041
4	Bharti Telesoft, F-89/6, Okhla Industrial Area Phase-I, New Delhi-110020
5	Birla Technologies (Consultancy & Software Service), Anishree A/65, MIDC, Andheri (E) Mumbai 400093
6	Blue Star Infotech Ltd., Band Box House. 4th Floor, Dr. Annie Besant Road Prabhadevi, Mumbai-400025
7	Cisco System (India) Pvt. Ltd. Divysree Chambers, 'B' Wing, Off Langford Road, New Delhi 560027
8	CMC Limited, CMC house, C-18, Bandra-kurla Complex, Bandra (E) Mumbai-400051
9	CMS Computer Ltd. CMS House Plot No. 91, Street No. 7, MIDC, Marol Andheri (E) Mumbai 400093
10	Cognizant Technology Solutions, 226, Cathedral Road, Chennai 600086
11	Cognosys Software Pvt. Ltd. A-13, Friends Colony (E), New Delhi-110065
12	Convergys india Services Pvt. Ltd. DLF Atria Jacaranda Marg, DLF Phase-2, Gurgaon-122002
13	Dell Computer India Pvt. Ltd. Divyasree Green, Ground Floor, S.No. 12/1, 12/2A, 13/1A Gahallaghatta Village, Varthur Hobli, Bangalore 560071
14	Department of Telecommunications (DoT)
15	DOEACC (Centre for Electronic Design & Technology of India), Electronics Niketan, 6, CGO Complex, Lodhi Road, New Delhi-110003
16	GE Capital India (GECIS), Block 4A, DLF Corporate Park, Qutab Enclave Phase- III Gurgaon 122002
17	Gulf Computer Pvt. Ltd. Unit 30, SDF-I SEEPZ, MIDC Andheri (E) Mumbai 400096
18	HCL Comnet A- 10 & 11,Sector III Gautam Budh Nagar Noida 201301
19	HCL Info system Ltd. E-4, 5&6 Sector-II Noida 201301
20	HCL Perot System, Plot No. 3 Sector 125, Noida 201301
21	HCL Technologies Limited, A-10/11 Sector –III Noida 201301
22	Hewlett Packard India Ltd.
23	Hewlett-Packard india Software Opr. Ltd. Imaging & Printing Group Devp. Ceter, Golf View Campus Wind Tunnel Road
24	Hexaware Technologies Limited, Hexaware Towers, 51/3, G N Chetly Road Chennai 600017
25	i.flex Solutions Limited, 399-A, Subash Road , Vile Parle (E) Mumbai
26	IBM India Ltd. Subrammanya Arcade, 12 Bannerghatta Main Road Banglaore 560029
27	Infosys Technologies Ltd, Plot No. 44 & 97A 3rd Cross P O Electronics City, Hosur Road, Bangalore 561229
28	Intel Asia Electronics Inc. Exchange Plaza Building, Commercial Wing, 3rd Floor, Bangalore 400051
29	Intel India Development Center (IIDC), 136, Airport Road Bangalore 560017
30	Intel India Development Centre (IIDC), 136 Airport Road Bangalore 560017
31	Intellicon Pvt. Ltd. 48, 10 Zite House, Panchvati Circle Ellisbridge, Ahmedabad
32	Intelligroup Asia Pvt. Limited, Manasarovar Complex, Secretariat Road, Hyderabad 500063
33	Keane India Ltd. E-9-E-12, SDF, NEPZ, Noida 201305
34	KPIT Infosystems Ltd. KPIT House, Tejas Society Kothrud , Pune-411038
35	Larsen & Toubro Infotech Ltd., South Block, Gate No. 2 Saki Vihar Road Powai, Mumbai- 400072
36	Mastek Limited, No. 6, SDF IV, Unit No. 106/107, SEEPZm Andheri (E) Mumbai 400096
37	Microsoft Corporation India Pvt. Ltd. The Great Eastern Center 70, Nehru Place, New Delhi 110019
38	Nelito System Ltd., A-1/248, Shah & Nahar indl. Estate
39	Newgen Software Technologies Ltd. A-6, Satsang Vihar Marg, Qutab Industrial Area, New Delhi 110067
40	NIIT Limited, 8, Balaji Estate Sudarshan Munjal Marg, Kalkaji, New Delhi-110019
41	Nucleus Software Export Ltd. B-12, Sector-59, Noida
42	Oracle India Private Limited, Block 1, DLF Corporate Park, DLF City Phase-III, Mehrauli Gurgaon Road
43	Path Infotech Limited, F-18, LGF Lajpat Nagar-III, New Delhi-110024
44	Patni Computer Systems Ltd., Akruti MIDC Cross Road No. 21, Adheri (E)
45	SAP Labs India Pvt. Ltd. 138, Export Promotion Industrial Park Whitefield, Bangalore-560066
46	Satyam Computer Services Ltd. Mayfar Center, 1-8-303/36, S P Road Secunderabad 500003
47	SQL Star International Limited, SQL House 13, Infocity Madhapur, Hyderabab 500081
48	Sun Microsystems india Pvt. Ltd.

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Sl No	Company Name & Address
49	Sybase India Ltd. 202-203, Makhija Chamber, Turner Road, Bandra (W) Mumbai
50	Tally Solutions Pvt. Ltd., 331-336, Raheja Arcade, Koramangala, Bangalore 560095
51	Tata Consultancy Services, 11, Palace Road, Bangalore 560052
52	Tata infotech Limited, Bombay House, 24, Home Mody Street, Mumbai-400001
53	Vedika software Pvt. Ltd. 11, Circus Market Place 6 Agarwall Chamber, Kolkata 700017
54	Wipro Infotech.Ltd. Doddakannelli, Surajpur Road, Bangalore 560035
55	Xansa India Ltd., C-2 Sector-1, Noida 201301
56	Zensar Technologies Limited, Software Technology Park 440-73, Ganga complex, Sector-29, Noida 201303

IV   *Nomenclature of IT Courses*

BCA	Bachelor of Computer Application
B.Sc.(IT)	Bachelor of Science (Information Technology)
DIT	Diploma in Information Technology
CIT	Certificate of Information Technology
ADIT	Advance Diploma in information Technology
APGDCA	Advance Postgraduate Diploma Computer Application
APGDIT	Advance Postgraduate Diploma Information Technology
PGDIT	Postgraduate Diploma in Information Technology
M.Sc(IT)	Master of Science (Information Tech.)
M.Sc (Comp. Sc)	Master of Science (Computer Science)
PGDSE	Post Graduate Diploma in Software Engineering
MDST	Master of Diploma in Software Technology
ADST	Advance Diploma in Software Technology
CIO	Certificate Internet Operation
COA	Certificate of office Administration
BDPS	Bureau of Data Processing System
ECIL	Electronic Corporation India Ltd.
MCA	Master of Computer Application
PGDIT	Postgraduate Diploma information Technology
BTECH (IT)	Bachelor of Technology (Information & Technology)
BIS	Bachelor of Information and Science
BIT	Bachelor of Information and Technology
MIT	Master of Information and Technology
ADCA	Advance Diploma of Computer Application
PGDIS	PG Diploma information Science
MCM	Master Degree in Computer Management
MIT,EC	Master of Information-E-Commerce
PGDCP	PG Diploma in Compute Programming
DTP	Diploma Course in Computer Application
PGDIS	PG Diploma in Information Science
PGDCA	PG Diploma in Computer Application
MDIT	Master Diploma in Information Technology
HDSE	Honours Diploma in Software Engineering
DCT	Diploma in Computer Technology
GDIT	Graduate Diploma in Information Technology
PGDM	Post Graduate Diploma in Management
PGDMSM	Post Graduate Diploma in Marketing & Sales Management
BBA	Bachelor of Business Administration
MBA(IT)	Master of Business Administration(Information Technology
M.SC(C. SC)	Master of Science (Computer Science)
B.SC(C.SC)	Bachelor of Science (Computer Science)
BE (IT)	Bachelor of Electronics (Information Technology

MCA	Master of Computer Application
M.Tech	Master of Technology
B.Tech	Bachelor of Technology
MIT	Master of Information & Technology
MCM	Master Degree in Computer Management

V   *Mutual recognition/ accredition of foreign Universities*

EQUIVALANCE OF DIPOMA/ DEGREE PROGRAMMES

All India Council for Technical Education (AICTE) has been receiving many proposals seeking equivalence of various academic Degree/Diploma programmes in the field of Technical Education. Proposals accepted to be evaluated for Equivalence are presented before the Standing Committee of experts, which makes their comprehensive assessment. The following documents are required from the individuals /Students/ Organizations/ Institutions for processing the proposals.

1. Nomenclature of the Programme.
2. Duration of the Programme.
3. Course curriculum, Syllabus, credit hours/class contact hours per subject.
4. Entry-level qualification for the programme.
5. Whether the programme is offered in formal/ non-formal mode, part-time or through distance education.
6. University offering the programme is recognised by University Grants Commission.
7. A copy of all the Marks sheet issued by the concerned authority.
8. A copy of the Diploma/Degree Certificate issued by the concerned authority.
9. A Processing Fee of Rs. 5000/- in case of Organizations/ Institutions or Rs. 500/- in case of individual/ Student in the form of Demand Draft favouring Member Secretary, AICTE, New Delhi.

The above documents should be submitted to the Undersigned in One lot only.

APPLICATION FORM FOR EQUIVALENCE CERTIFICATE

1. NAME   ....

2. E-MAIL   ....

3. POSTAL ADDRESS   ....

4. EXAMINATION PASSED   ....

5. NAME OF SCHOOL/   ....
    INSTT/UNIIVERSITY

6. NAME OF THE COUNTRY   ....

7. COURSE TO BE PURSUED   ....

8. DOCUMENTS ENCLOSED   i)..

                                            ii)...

                                            iii)..

                                            iv)..

9. DETAILS OF FEES*   Name of the Bank...

                                        DD No. ....Amount Rs. ....

Date:............................   ....

Place:............................   Signatures

Documents to be Enclosed: (a) Copy of the Degree /Diploma Certificate

                                             (b) Copy of the Academic Transcript

                                             (c) Documentation on the Accreditation Status of the Instt.

                  (Documents at (a) and (b) should be authenticated by Indian Mission)

*US $ 100 or equivalent Indian currency payable through Demand Draft favouring **'Association of Indian Universities, New Delhi'**

NOTE: The candidates intending to join Medical programme are required to have studied the subjects of Physics, Chemistry, Biology and English, and those intending to Join Engineering should have studied Physics, Chemistry, Mathematics and English in Grade 11 and 12

FAQ's of the Evaluation Division

Q.1 How to know about the Accreditation status of foreign universities?

Ans. Names of the accredited foreign Universities are listed in the following Publications:

I. Commonwealth Universities Yearbook - (ACU Publication)

II. International Handbook of Universities and World List of Universities (published by International Association of Universities, Paris, France)

III Accredited Institutions of Post Secondary Education in USA - (An American Council on Education Publication)

These publications can be referred to at:

I. AIU Library (http://www.aiuweb.org)

II. British Council Library. (http://www1.britishcouncil.org)

III. American Center (http://www.americanlibrary.in.library.net)

iv. United States Educational Foundation in India. (http://www.fulbright-india.org)

Q.2 Which are the recognised Indian Universities?

Ans. The names of recognised Indian Universities (AIU Members) are given in AIU publication "Universities Handbook"

Q.3 What are the courses offered by these Universities?

Ans. Details are available In Universities Handbook.

Q.4 What Is the Recognition status of various programmes offered by the universities through Distance Mode?

Ans. Details are available In Universities Handbook/Handbook on Distance Education. For more details contact "Distance Education Council, Indira Gandhi National Open University Campus, Maidan Garhi, New Delhi 110068" (http://www.ignou.ac.in)

Q.5. How to know about the recognition status of the degrees awarded by the foreign universities in the field of Health Sciences?

Ans. The recognition of degrees in the field of health sciences are looked after by the following agencies:

I. Medical Council of India (http://www.mciindia.org)

ii. Dental Council of India (http://www.medistudies.com)

iii. Pharmacy Council of India (http://www.pci.inc.in)

iv. Central Council for Homoeopathy

v. Central Council for Indian Medicines

Q.6 What is the accreditation status of the Teachers Training Programmes?

Ans. Teachers Training Programmes are regulated and monitored by the National Council for Teacher Education, Indira Gandhi Sports Complex, I P Est.(Website http://www.ncte-in.org) and State Departments of Education.

Q.7 What is the eligibility requirement for admission to Medical Engineering programmes at Indian Universities?

Ans. For admission to Medical/Engineering programmes candidates are required to have studied the Subjects of Physics, Chemistry, Biology/Mathematics English in the last two years of High School programme (viz grade 11 and 12) with minimum 50 % marks in PCB/PCM taken together.(For SC/ST and C requirement is 40%')

Project On
Value Addition To Human Capital of India -Compatible To Liberalisation With Special Focus On IT Education

QUESTIONNAIRE-1

A COPY OF YOUR LATEST BROCHURE / INFORMATION BOOKLET WOULD BE OF GREAT HELP TO US PLEASE BE KIND ENOUGH TO ATTACH THE SAME TO THIS

QUESTIONNAIRE

I. GENERAL INFORMATION

1. Name of the Institute/College/University. _____

2. Address & Contact Information:

   Mailing Address _____

   Phone Numbers with STD code _____

   Fax Numbers _____

   Email Address _____

   Website URL _____

3. Name of the Head of Institute/College/University : _____

4. Status of Institute/College/University (Please tick) :

Society	Charitable Trust	Central Govt. Aided	State Govt. Aided	Deemed University	Affiliated College *	Self Financing Body

5. * Please mention the name of the affiliating University _____

6. Year in which Institution was founded _____

7. Current Academic Year _____

   Name & Designation of Respondent _____

   _____
   Signature with Organization Seal

(1)

II COURSE STRUCTURE INFORMATION

8. Please list the IT & IT related courses being offered by your College/University/Institute in the current academic year (Please select & fill in the relevant replies)

		MCA	M.Tech	B.Tech	MIT	MCM	Other (Please name)
8.1.	Degree (Bachelors/ Masters/ Ph.D/ Diploma/ Certificate/Others)-Please name						
8.2.	No. of Seats						
8.3.	Duration (in Years)						
8.4.	Mode (Full Time/ Part Time)						
8.5.	Fees For The Entire Course						
8.6.	Affiliated/Recognized By: UGC/ AICTE/ DOE/ Ministry Of HRD/ Others/ N.A.						
8.7.	Year of Introduction						
8.8.	If Affiliated To Foreign University, Name of University						
8.9.	Country in which Foreign University is located						
8.10.	Frequency of Revision of Course (in years)						
8.11.	Year in which Course was last revised						

III ADMISSION CRITERIA

		MCA	M.Tech	B.Tech	MIT	MCM	Other
8.12.	Eligibility Criteria for Admission *						
8.13.	Closing rank for admission to the course in the last academic year						

* Please attach brochure

IV   FACULTY INFORMATION

		MCA	M.Tech	B.Tech	MIT	MCM	Other
8.14.	Total No. of Faculty Members						
8.15.	No. of Core Faculty Members						
8.16.	No. of Visiting Faculty Members						

8.17.   Qualifications of Core Faculty Members:

Qualification Name	No. of faculty members

V   STUDENTS RELATED INFORMATION

9.   Please give student data pertaining to your College/University/Institute for the last three years in the following table:

	Academic Year 2001-2002					Academic Year 2002-2003					Academic Year 2003-2004				
Course* Name	No. of Seats	No. of Students Enrolled	No. of Pass-Outs	No. of Students Placed	No. of Foreign Students	No. of Seats	No. of Students Enrolled	No. of Pass-Outs	No. of Students Placed	No. of Foreign Students	No. of Seats	No. of Students Enrolled	No. of Pass-Outs	No. of Students Placed	No. of Foreign Students

* Please attach course structure.

10. Among the students who passed out last year indicate where they have joined:

Course Name	No. of Students Placed in the Industry/Other sectors in India	No. of Students Placed in the Industry/Other sectors abroad	No. of students who opted for higher studies in India	No. of students who opted for higher studies abroad

11. Please name some of the institutions in India and abroad where your students have enrolled for further studies

_____

_____

_____

12. Please list the countries from which students have been enrolled under the Foreign Students quota in the IT courses offered by your Institute/University

_____

_____

_____

VI. CURRENT IT STATUS

13. On the scale below, where would you like to place India's IT education and IT Industry?

△   △   △   △   △

NASCENT   FIRST STAGE OF DEVELOPMENT   MODERATELY DEVELOPED & GROWING   WELL-DEVELOPED & EXPANDING   MATURE

14. Among the factors given below, which according to you act as an impediment to the growth of IT education in India? (Please tick)

☐ Lack of Good Infrastructure ☐ Inadequate Government focus on IT education

☐ Lack of Finances ☐ Rapid Obsolescence/Change in Technology

☐ Poor planning of course structure ☐ Poor Job Absorption Rate of Pass Outs

☐ Lack of Training Material ☐ Lack of Trained Faculty

15. Please indicate which countries are India's competitors in IT education? _____

US/UK/China/Philippines/Pakistan/Malaysia/Others (Please name them _____)

16. Is there a threat to India's position as an IT superpower in future? YES/NO

17. We would like to have your suggestions on how the pace of growth of IT education in India can be accelerated...

_____

_____

_____

_____

_____

_____

18. Please specify the Internet Connectivity bandwidth available at your Institute _____

A Study Project of DST, Ministry of Science & Technology, Govt. of India

on

"Value Addition To Human Capital of India -Compatible To Liberalisation With Special Focus On IT Education"

QUESTIONNAIRE-2

For IT Industry

GENERAL INFORMATION

Name of the Company _____

Company's Address: _____

_____

_____

_____

Telephone No(s): _____

Fax No.: _____

Website URL: _____

Contact Person's Name: _____

Designation: _____

_____

Signature with Seal

COMPANY INFORMATION

1.   Your company's nature of business:

- ☐   Software Development & Consulting
- ☐   BPO
- ☐   BPO, Software Development & Consulting
- ☐   Hardware Manufacturing/Sales
- ☐   Hardware Manufacturing/Sales, BPO, Software Development & Consulting

2.   Your Company is

- ☐   An MNC
- ☐   An Indian Public Limited Company
- ☐   An Indian Private Limited Company

3.   Your company's turnover for the Financial Year 2003-2004

Sales Turnover   [_____]

Export Turnover   [_____]

4.   No. of employees in the BPO sector in your company   [_____]

- No. of employees with IT qualification like MCA   [_____]

- No. of employees with IT qualification like B.Tech & M. Tech   [_____]

- No. of non-IT graduate/post-graduate employees   [_____]

- Others   [_____]

5.   No. of employees in the IT sector in your company   [_____]

No. of employees with IT qualification like MCA   [_____]

No. of employees with IT qualification like B.Tech & M. Tech   [_____]

No. of non-IT graduate/post-graduate employees   [_____]

Others   [_____]

6.   In which sectors are your employees currently deployed?

- ☐   Telecom software
- ☐   Embedded Technologies
- ☐   Design software
- ☐   Banking
- ☐   Insurance
- ☐   Decision support software (ERP/SCM/CRM/Data Warehousing/Data Mining etc.)
- ☐   Others (please specify) _____

YOUR OPINION ABOUT INDIAN IT EDUCATION

7. **On the scale below, where would you place India's IT education?**

NASCENT	FIRST STAGE OF	MODERATELY	WELL-DEVELOPED	MATURE
	DEVELOPMENT	DEVELOPED & GROWING	& EXPANDING	

8. **Among the factors given below, which according to you act as an impediment to the growth of IT education in India?**

☐ Lack of Good Infrastructure   ☐ Inadequate Govt. focus on IT education

☐ Lack of Finances   ☐ Rapid Obsolescence/Change in Technology

☐ Poor planning of course structure   ☐ Poor Job Absorption Rate of Pass Outs.

☐ Lack of Training Material   ☐ Lack of Trained Faculty

9. **Is there a threat to India's position as an IT superpower in future?**

Yes/No

10. **Which of the following countries, according to you, are India's competitors in IT education?**

US/UK/China/Philippines/Australia/Germany/Pakistan/Malaysia/Others (Please name them _____)

11. **Do you think the curriculum taught in IT universities/institutes meets market requirements?**

Yes/No

12. **Do you think the IT industry should participate in curriculum development of IT institutes?**

Yes/No

13. **How would you rate the compatibility of the following courses to industry requirements?**

MCA   POOR/AVERAGE/GOOD/EXCELLENT

B. TECH   POOR/AVERAGE/GOOD/EXCELLENT

M. TECH   POOR/AVERAGE/GOOD/EXCELLENT

14. **Do you have any corporate policy to impart summer training/On the Job Training to IT students?**

Yes/No

15. **India's strength in the field of IT is because of:**

☐ IT Education   ☐ IT Software Development

16. **Do you think private IT Training Institutions play an important role in the IT revolution?**

Yes/No

17. **Do you have access to adequate information about Indian IT institutions?**

Yes/No

YOUR OPINION ABOUT INDIAN IT INDUSTRY

18. **On the scale below, where would you place India's IT Industry?**

△   △   △   △   △

NASCENT   FIRST STAGE OF   MODERATELY   WELL-DEVELOPED   MATURE
           DEVELOPMENT   DEVELOPED & GROWING   & EXPANDING

19. **Do you think fresh IT graduates and Postgraduates can be absorbed directly into the IT Industry?**

Yes/No

20. **What was the IT training spend of your company in the last financial year as a percentage of your total turnover?**

_____

21. **What kind of training do you impart to IT qualified professionals?**

☐ Management related training ☐ Certification related training

☐ Skill Enhancement ☐ Others (please give examples)

☐ Soft skills like communication, ☐ Training in functional areas viz.

   leadership etc   banking, insurance, finance, accountancy etc.

22. **Is there a relationship between the attrition rate of employees and their IT qualification?** Yes/No

▪ Attrition rate of IT qualified like MCA (HIGH/LOW/AVERAGE)

▪ Attrition rate of IT Graduates / Post-Graduates like B. Tech, M. Tech (HIGH/LOW/AVERAGE)

▪ Attrition rate of Non-IT Graduate/Post-Graduate (HIGH/LOW/AVERAGE)

23. **Do you get adequate IT professionals in India for R&D activities?**

Yes/No

24. **Do you employ people from other countries besides India?**

Y e s /   N o
If yes. which are these countries?_____

25. **Can the IT Industry play a role in improving the quality of IT education in India?**

Yes/No