AICTE

Confederation of Indian Industry

8 November 2012, AICTE-CII Survey report

Survey of Industry-linked Engineering Institutes

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Foreword

At AICTE, it has been our constant endeavour to improve the quality of technical education, in general, and its practical component, in particular. We also work towards improving interaction between academia and industry. In a country that boasts of the world's third-largest higher education system, with more than 8,200 technical institutes and about 3,500 polytechnics, this is by no means an easy task. There are various ways of tackling this issue. On the policy side, we have recently allowed companies with turnover of more than 100 crore INR to set up technical institutes with double the number of seats allowed to other institutes. We have decided to offer up to 1 crore INR as funding for research parks inside institutes, on the condition that the institutes get a matching grant from industry. We are also actively engaged with CSIR and DRDO laboratories to find opportunities for our faculty to do research, which may also lead to meaningful PhDs. These measures, we believe, will help in better interaction between the two sides and enable students and faculty to be exposed to real-time problems of the industry. The resulting value addition is worth enhancing in times to come.

Another step in this direction is our survey of engineering institutes conducted in association with CII this year. The methodology used in this survey was as good as that used anywhere in the world. PwC was the knowledge partner and was responsible for the survey analysis. The distribution of scores across various colleges, though only indicative and a reflection of only the industry linkages of institutes, shows that majority (63%) of colleges fall in the medium category. This is an encouraging sign and shows that though we may not have achieved our target, we are definitely on the right path.

I would like to take this opportunity to thank all the experts, jury members, CII and the PwC team for the wonderful job done. In years to come, I hope this survey will become more participative, more inclusive of all disciplines and a benchmark that the country would be proud of.

SS Mantha
Chairman
All India Council for Technical Education

Developing industry-academia linkages and their impact on economic development is the subject of discussions in many global forums on higher education. In India, though attempts have been made to improve, deepen and expand the industry-academia engagement, it seems to have been focussed mainly on the placement of students from campuses into the industry.

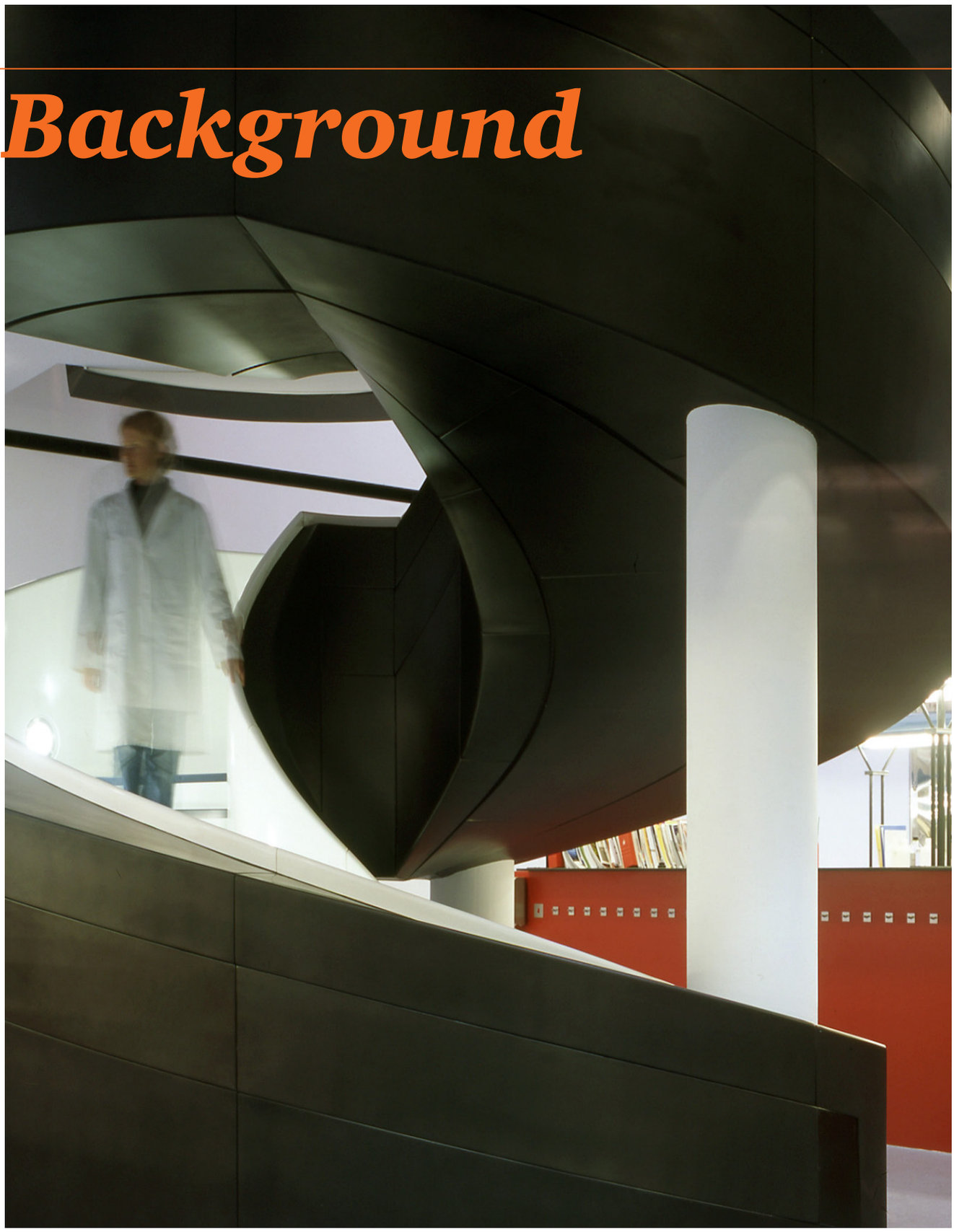
The number of students at the universities is growing by the year. On the other hand, technology is rapidly transforming every domain, be it healthcare, financial services or transportation. In this environment, strong partnerships between academic institutions, especially the technical institutes, and the industry are crucial. These will help educate and prepare students to be future-ready and accelerate innovations in the sciences leading to inventions and discovery of new materials, products and processes, resulting in technology breakthroughs that would build new industries. There are immense possibilities of linkages in several areas including placements, curriculum redesign, teacher re-orientation, transforming the pedagogy through technology, new laboratory set-ups, university-affiliated science and technology parks, joint research, and taking the outcome of research to the market.

Today many of us lament the poor collaboration between the industry and the academia, the drop in quality of engineers from technical institutes and the dearth of employable candidates. At the same time, there are technical institutes that are passionately trying to do the right things in this area. The AICTE-CII Survey is a unique program to identify these pioneers, recognise them and co-opt them to drive the change.

I am extremely grateful for the support that the AICTE and their Chairperson Dr S S Mantha provided to this project. Special thanks to the jury members who invested their valuable time to evaluate the applications and help us decide the scores in this survey. Dhiraj Mathur (Executive Director at PwC) and his team helped us in the analytics and creation of the final report. I would also like to acknowledge the work done by the corporate and regional teams of CII during the design and execution of the survey and my colleagues in the CII National Committee on Higher Education for their inputs.

P Rajendran
Chairman,
CII National Committee on Higher Education
& Co-Founder and COO, NIIT Ltd

1. Background



This study was initiated by the All India Council for Technical Education (AICTE) and the Confederation of Indian Industry (CII) with the objective of showcasing best practices of industry partnerships across AICTE approved engineering institutes in India in six basic streams, viz. chemical, civil, computer & IT, electrical, electronics & communication and mechanical engineering. The survey was open for only those institutes which offer at least three out of these six streams and had completed 10 years as on August 2012. The questionnaire was put up on the AICTE website and was filled online by the eligible institutes themselves.

The evaluation has been done across seven parameters—governance, curriculum, faculty, infrastructure, services, entrepreneurship and placements—each consisting of specific sub-factors. This report is a compendium of the analysis conducted to understand:

i. how far the engineering institutes have been successful in providing demand-based, industry-responsive education;

ii. how well these institutes are equipped to produce talent to meet market requirements; and

iii. the extent to which they are connected with the industry to get inputs on future challenges in the market

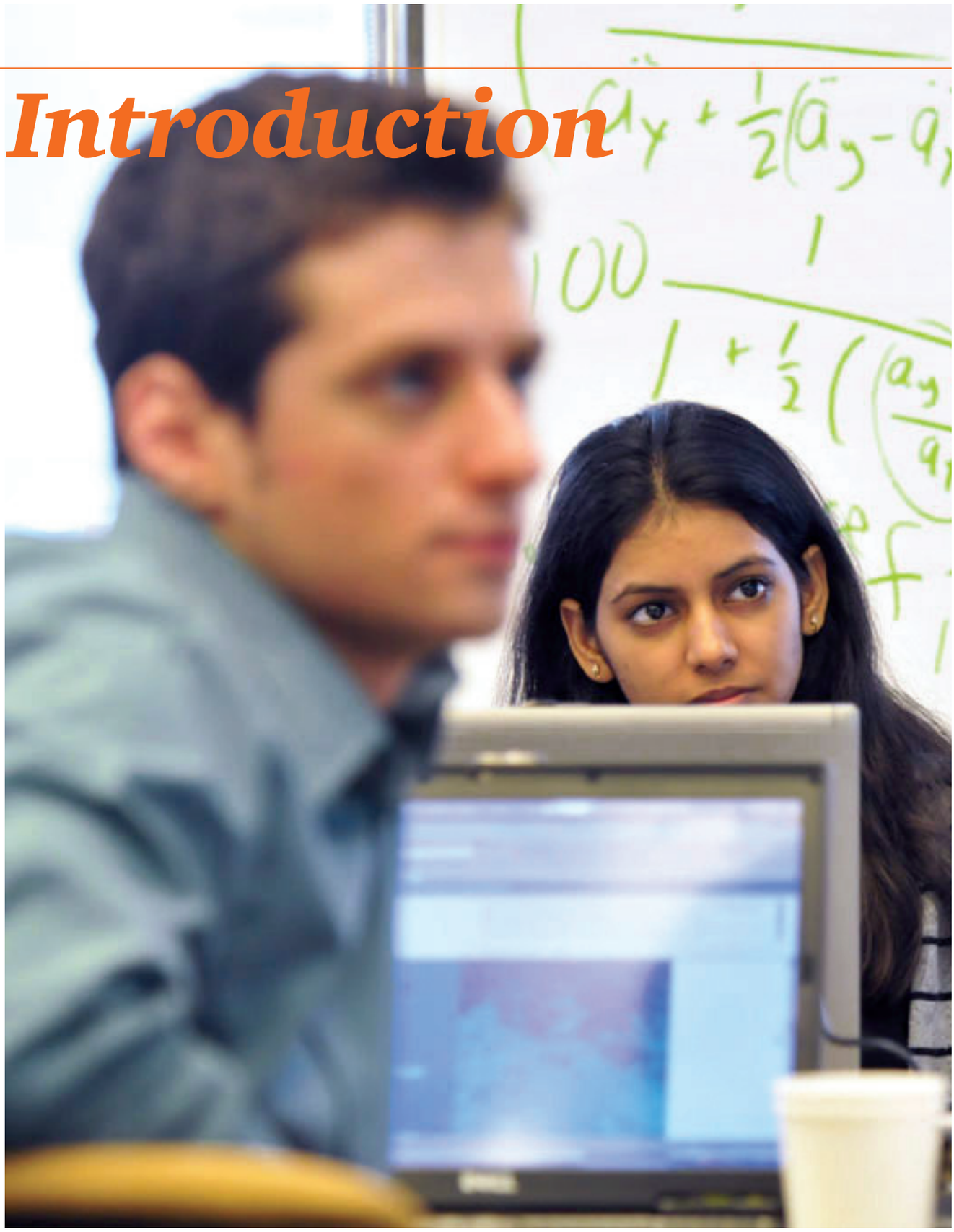
An attempt has been made to identify the key characteristics and best practices of the institutes featuring on the top of the scoring ladder and to identify areas of concern and common traits among those lower on the ladder. Key trends across the parameters have been brought out through this report. Linkages have been identified to study the relationships and interdependence across the key parameters. The report concludes by identifying a three-stage process of movement towards establishing a strong industry-institute linkage based on an understanding of the identified relationships.

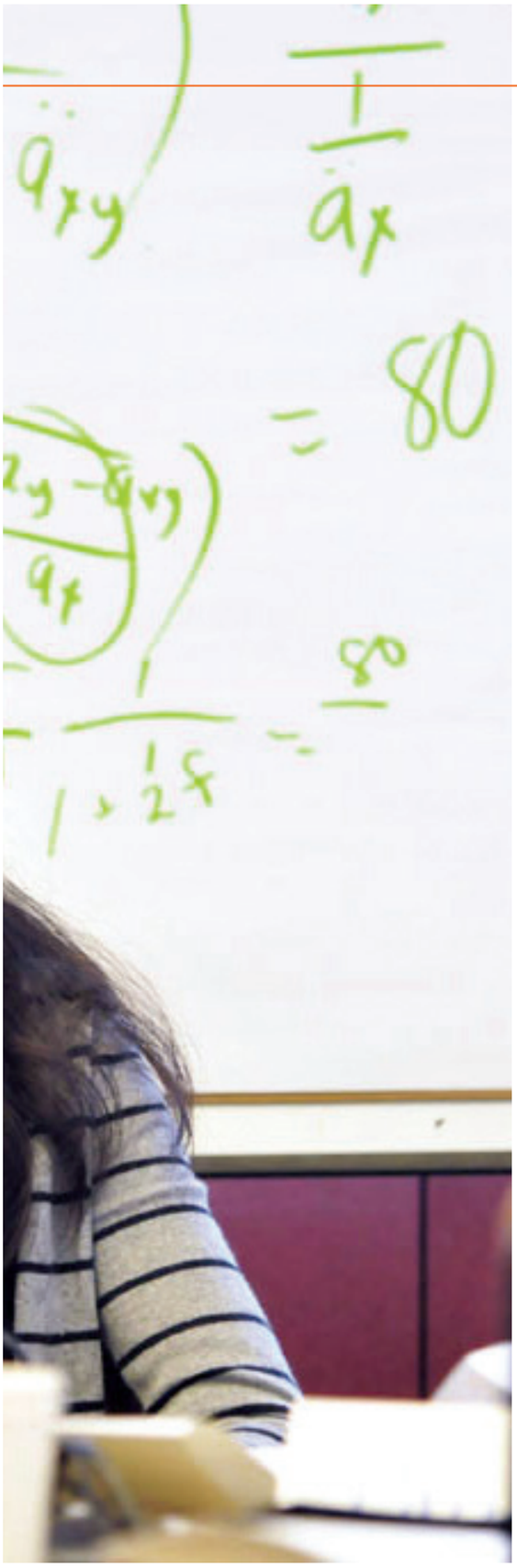
AICTE considers this as an important study in its attempt to improve the quality and relevance of technical education in the country. It sees this mapping as a much-needed tool to create more technical institutes of eminence in India.

CII is proud to be part of this first-of-its kind initiative which will go a long way in strengthening the link between industry and academia in higher education. It hopes that eventually the online tool will help institutes to undertake self evaluation of their efforts to strengthen their linkages with industry.

AICTE and CII are thankful to PwC for conducting the data analysis of the results and providing support in preparing this report.

2. Introduction





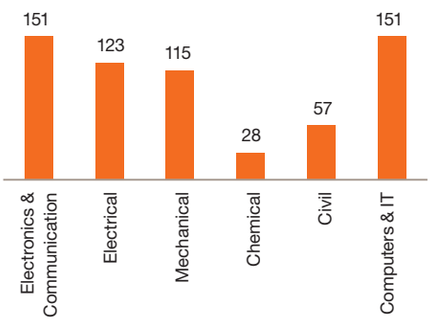
2.1. Coverage of the study

The survey was based on voluntary participation open to all engineering institutes that had completed 10 years as on 31 August 2012 and offered at least three out of six shortlisted streams of engineering. The study saw participation by 156 AICTE approved engineering institutes across eight AICTE zones in India. Following is the region-wise distribution of institutes that participated in the survey, along with the total number of eligible institutes in each state or zone.

Zone	States	Number of institutes that have completed 10 years as on 31-08-12[1]	Number of participating institutes	Percentage of participation
Central	Madhya Pradesh, Gujarat, Chhattisgarh	76	11	14.5%
Eastern	West Bengal, Orissa, Jharkhand	79	10	12.7%
Northern	Uttar Pradesh	75	12	16.0%
North-West	Punjab, Haryana, Rajasthan, Delhi	87	14	16.1%
South Central	Andhra Pradesh	202	29	14.4%
Southern	**Tamil Nadu, Puducherry**	**223**	**41**	**18.4%**
South-West	Karnataka, Kerala	184	21	11.4%
Western	Maharashtra	144	18	12.5%
Total		1070	156	14.6%

The institutes considered in the study offer various disciplines including electronics & communication engineering, electrical engineering, mechanical engineering, chemical engineering, civil engineering, and computers & IT engineering. Fig 2.1 shows the coverage of various disciplines across the institutes covered under the study.

Fig 2.1. No. of colleges offering the discipline



1 *Source: AICTE*

2.2. Methodology for evaluation

The selection criterion and the methodology adopted for evaluation is mentioned below. The survey was conducted online through login by institutes into AICTE portal using their AICTE ID.

Eligibility for participation:

- Operational for at least 10 years as on 31 August 2012
- Offering at least 3 streams out of following 6 streams: chemical, civil, computer & IT, electrical, electronics & communication and mechanical engineering

The selected institutes were evaluated across seven dimensions, each of which was allotted individual weightage as shown in the table below:

S. no.	Dimensions	Weightage
1.	Governance	10%
2.	Curriculum	15%
3.	Faculty	15%
4.	Infrastructure	10%
5.	Services	20%
6.	Placements	20%
7.	Entrepreneurship development	10%
Total		100%

Structured questions and evaluation parameters were designed across each of the dimensions mentioned above and respondents were asked to provide answers to the questions during the survey. The table below shows the evaluation parameters against each dimension.

The survey was open for three months i.e. from 7 June to 7 September 2012, during which 300 applications were received on the portal and final submission was made by 156 institutes. An objective evaluation was conducted based on computer-generated results and a five-member jury was formulated for conducting the expert evaluation.

	Dimensions	Evaluation parameters
1.	Governance	• Number of industry members on the board governors • Percentage of industry members attending the board of governors meetings last year • Number of industry members on the institute's committees • Percentage of industry members attending committee meetings last year
2.	Curriculum	• Number of courses that were amended based on inputs from industry • Average duration of industrial training or internship • Number of industry visits for students • Number of students visiting industry • Number of industry guest lectures or seminars conducted
3.	Faculty	• Number of executive programmes provided by faculty to industry executives • Number of industry executives attending such courses • Number of faculty members on the boards of the companies • Number of faculty members who provided in-company training or gave lectures to the industry • Number of programmes attended or trainings received by faculty from the industry • Number of faculty members who have sent or presented papers to the industry • Number of faculty patents adopted by the industry into products
4.	Infrastructure	• Number of centres, units or cells financially supported by the industry • Percentage of financial contribution by the industry in the unit
5.	Services	• Number of research projects assigned to institute during 2007-12 • Number of technology transfers to industry during 2007-12 • Number of consultancy or advisory services provided to industry during 2007-12 • Number of infrastructures used by industry during 2007-12 • Number of testing services provided to industry during 2007-12
6.	Placements	• Number of students offered jobs from campus in 2011-12 • Number of students offered jobs from campus during 2007-12 • Number of students offered jobs in respective core companies in 2011-12
7.	Social development	• Number of companies providing mentoring, teaching and funding to incubatees during 2007-12 • Number of innovation initiatives supported by industry during 2007-12

Validation visits to institutes and faculty interviews

To verify the scores obtained through the objective evaluation, the five-member jury made visits to the top-ranking institutes, namely, RV College of Engineering, Bangalore; PSG College of Technology, Coimbatore; Bannari Amman Institute of Technology, Coimbatore; Rajalakshmi Engineering College, Chennai; Shreenidhi Institute of Technology, Hyderabad; College of Engineering, Pune; and Walchand Institute of Technology, Sholapur. The key areas covered by the jury were as follows:

- Whether the institute met the expectations of the team in terms of having well-established linkages with industry (This was scored on a scale of 1-5)
- Whether the information provided by them in the online survey is authentic (to be gauged through random cross-checking and to be scored on a scale of 1-5)
- An analysis of the industry linkages of this institute (This was judged through a 100-word feedback)

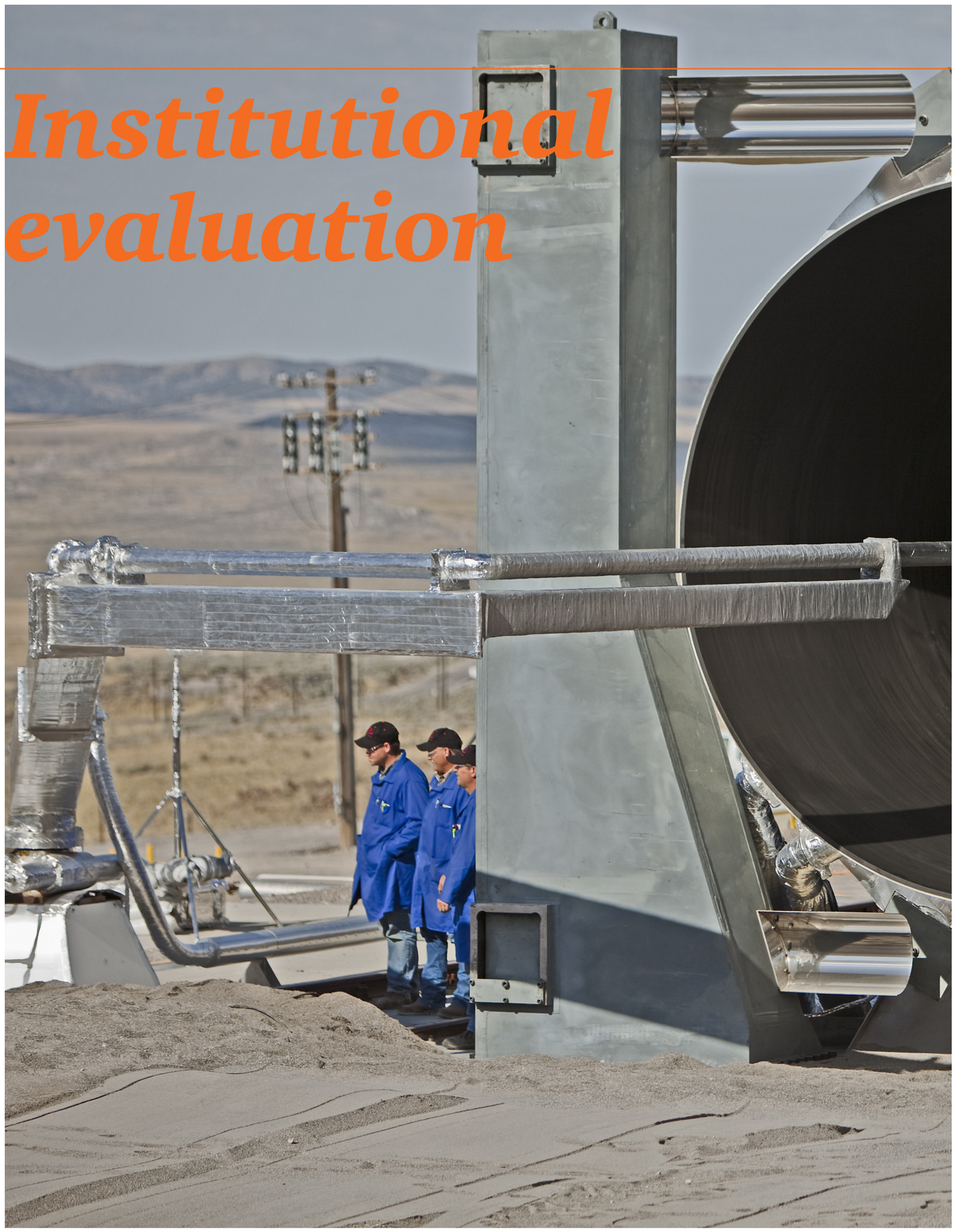
Based on the visits, the jury recommended three institutes for the -overall awards—PSG College of Technology, Coimbatore; College of Engineering, Pune and Bannari Amman Institute of Technology, Coimbatore. In mechanical engineering, PSG College of Technology, Coimbatore was selected.

In addition to the efforts on validating institutional response, a jury of three eminent academicians interviewed faculty members who were selected from the survey participants from across various institutes who participated under the 'best individual performers in industry relations' category':

- Number of refresher courses provided by faculty to industry executives
- Number of industry executives attending such courses
- Number of faculty members on the boards of industry
- Number of faculty members providing in-company training or lecture to industry
- Number of programmes attended or trainings received by faculty from industry
- Number of faculty members who have sent or presented papers to industry
- Number of faculty patents adopted by industry into products
- Number of services offered by a faculty to industry in 2011-12

Of the five faculty members shortlisted, four came for the final interviews. A thorough and detailed validation of credentials and verification of physical evidences was undertaken during the interviews of selected faculty members and their certificates, reports, letters, awards, citations, photographs, recommendation letters of selected faculty were reviewed. Based on the validation of the scores awarded to the shortlisted faculty members, the jury recommended one candidate for the faculty award—Prof Mohanram PV of PSG College of Technology, Coimbatore—for the mechanical engineering stream.

3. Institutional evaluation



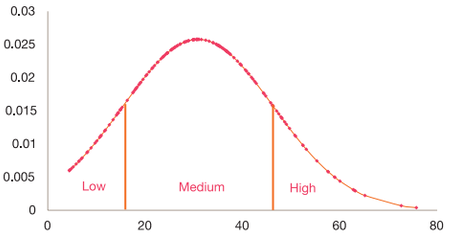
3.1. Assessment at the national level

The average composite score at the national level is 30.9. Minimum and maximum scores obtained by the institutes under study are 4.4 and 75.7, respectively. The scores obtained by the institutes under the study are presented in Annexure.

The institutes which participated in the survey were classified under three levels (high, medium, low) based on the performance scores they secured in the assessment, after mapping into a normal distribution curve.

The findings are shown below:

Fig. 3.1 Normal distribution of scores across 156 institutes



High
Index Score - About 46
Number of Institutes - 28
Percentage contribution - 19%

Medium
Index Score - 15 to 46
Number of Institutes - 99
Percentage contribution - 63%

Low
Index score less than 15
Number of Institutes - 29
Percentage contribution - 18%

Total
Number of Institutes - 156
Percentage contribution - 100%

Based on the understanding from the survey conducted, the key characteristics of institutes falling in the high and low categories, respectively, are highlighted in the table below:

Levels of sustainability	Characteristics
High	Institutes which rank high generally display most of the following characteristics across the seven parameters considered under the study: **Governance** • 60% of the institutes have three or more industry members on their board of governors and six or more committees with industry members on board **Curriculum** • More than 70% of the institutes have amended 10 or more of their courses based on inputs from the industry since 2007 • 80% of the institutes have organised 10 or more industry visits for their students, with 50 or more students visiting the industry since 2007 • 90% of the institutes have conducted more than 10 industry guest lectures or seminars since 2007 **Faculty** • 50% of the institutes have more than five refresher courses being provided by their faculty to the industry, with more than 50 industry executives attending such courses • 75% have four or more of their faculty members on boards of companies • 60% have more than 20 programmes/ trainings received by the faculty from the industry • 55% of the institutes have 20% or more faculty members who have presented/sent papers to the industry **Infrastructure** • More than 80% institutes have two or more centres, units, or cells that are financially supported by the industry, with 50% or more financial contribution by the industry in the unit **Services** • 60% of the institutes have been assigned five or more research projects and have provided consultancy or advisory services to five or more companies in the industry during 2007-12 • More than 40% have provided testing services to five or more companies in the industry since 2007 **Placement** • In 80% of the institutes, 50% or more final year students were offered jobs at campus interview during 2007-12 (60% in 2011-12) • 65% of the institutes were able to place 40% or more students in the companies directly aligning to the core disciplines taught **Entrepreneurship development** • 65% of the institutes have three or more companies providing training to incubatees with eight or more industry-supported innovation initiatives during 2007-12
Low	Institute which rank low generally display most of the following characteristics across the seven parameters under study: **Governance** • 50% of the institutes in this category have no industry members on their board of governors and only 15% have industry members attending board of governors' meetings • 80% have no committees with industry members on board and none of the institutes in this category have industry members attending committee meetings **Curriculum** • 60% of the institutes have undertaken no curriculum amendments based on industry inputs • More than 60% have organised no industry meetings for their students since 2007 **Faculty** • In 90% of the institutes in this category, no refresher course has been provided by the institute faculty to the industry and none of the faculty members from these institutes are on the board of any company • 95% of them have no faculty member with experience in providing in-house trainings and lectures to the industry Only 25% of this lot has faculty which has been exposed to trainings from the industry • None of the institutes, except one, has faculty members who have presented papers to the industry **Infrastructure** • 90% of the institutes have no industry supported centres, units or cells **Services** • 90% of the institutes haven't been assigned any research projects since 2007 • None of the institutes has participated in any technology transfer or infrastructure outsourcing to industry since 2007 • Only 10% have been involved in providing any consulting or advisory services to the industry **Placement** • From 2007 to 2012, less than 40% of students were offered job from campus in more than 90% of the institutes, whereas in 2011-12, only 24% institutes were able to secure job offers for more than 40% of the students • 30% of the institutes were able to place successful students in the companies directly aligning to the core disciplines taught **Entrepreneurship development** • Only 10% of the institutes have managed to establish two or less industry-financed centre, units or cells and have not undertaken any industry-supported initiative since 2007

*Among the **high rankers**, majority of the institutes are doing well on almost all the parameters. Well-established institute-industry linkages are visible in the following areas:*

- *Established channels of communication for knowledge transfer from industry to institute and vice-versa*
- *Connecting with industry for revamping curriculum as per industry requirements, encouraging knowledge transfer by facilitating industry visits for students and organising seminars and guest lecture; thus improving student-industry interface*
- *Direct as well as indirect engagement with the industry through participation in industry-mentored entrepreneurship programmes and access to funding in forms of industry-sponsored centres, units or cells*

*Among the **low rankers**, the following observations are made:*

- *The channels of communication are not well established, which is visible from the low or negligible interaction between the industry and the institutes. Majority of them haven't undertaken any research or consultancy project with the industry, nor have they been engaged in any technology or knowledge transfer*
- *This lack of interaction is visible in low placements figures and negligible focus on entrepreneurship development*

Southern states are most responsive in terms of participation as well as are the best performers across majority parameters (Annexure 4.2.). Best practices from such successful cases can be imbibed by institutes across country.

3.2. Assessment at the regional level

The institutes under the study are located across eight AICTE zones, spread across 17 states. Average scores across all dimensions for the eight zones are displayed in the Fig. 3.2.

Average scores across all parameters are higher than the national average in Southern and Western regions. Eastern zone is the least scorer, falling behind others by a huge margin whereas Central, Northern, North West, South-Central although are lower than the national average but the difference is not very significant.

On comparing the best and lowest performing zones i.e. the southern and eastern zones, respectively, it was found that Eastern zone is lagging far behind on the curriculum, faculty and placements.

On analysing the distribution of institutes among high, medium and low performing category across various zones and comparing that with national figures, the following trends emerge:

- The Eastern zone has the highest percentage of institutes falling in the low performing category (50%) with none of the institutes qualifying for the high performing category
- The Southern zone has the highest percentage of institutes in the high performing category (29%), followed by the South West zone (24%)
- The Western zone has the lowest percentage of institutes in the low performing category (6%) with a very high percentage of them lying in medium category (78%)
- A third of the institutes in the Northern and South West zones are in the low performing category. South West zone has the least number of institutes in the medium category (43%), with a good number of institutes falling in high performing category (24%)

Overall, the Southern, Western, Central and North West zone have more institutes in the high performing category than in the low performing category. These zones have better average scores, as can be seen in Fig 3.2.

Fig 3.2 Average scores across AICTE regions

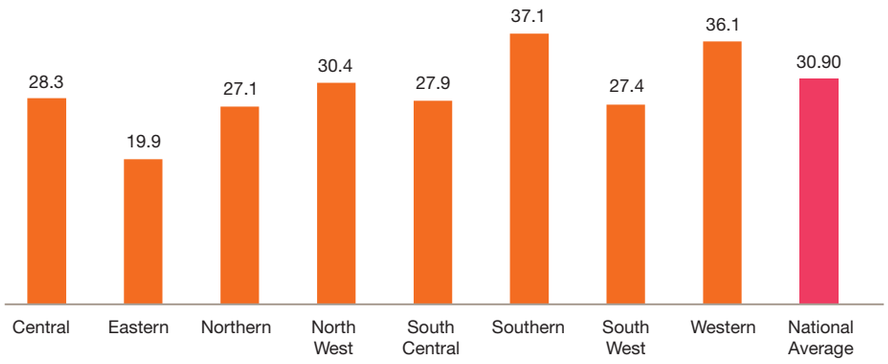
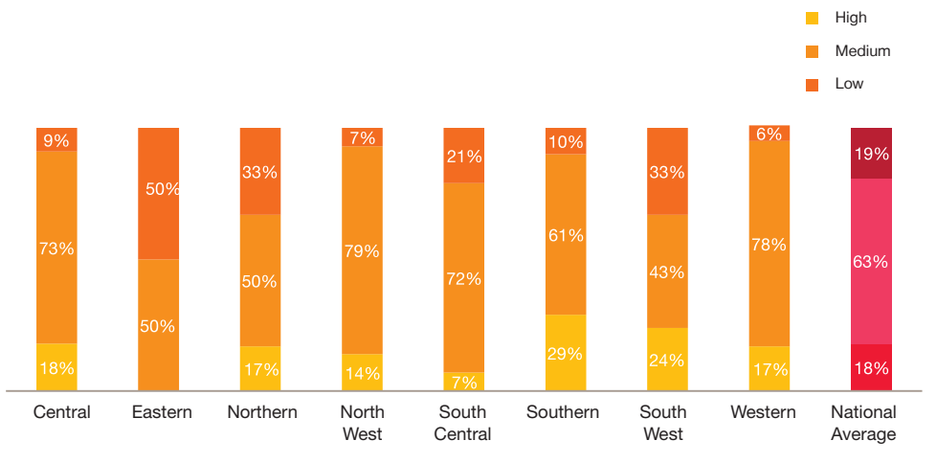


Fig 3.3. Distribution of colleges under various categories across zones



3.3. Assessment at parameter level

Under this section, an attempt has been made to understand the relationship among parameters and their individual contribution towards the ranking of the institutes under study.

3.3.1. Distribution of ratings across each parameter

Governance: The ratings range from 0 to 12, with a mean rating of 4.5 across 156 institutes. More than 50% of the institutes have a rating of 4 or less, indicating the lack of industry participation in the decision-making process. On analysing the sub-factors, it is observed that the presence of industry members on the board of governors and committees doesn't ensure their presence in the meetings. Major decision making still happens among institute authorities with limited industry-related inputs, which defeats the entire purpose of such interaction. This factor has reduced the parameter's average drastically.

'To ensure active participation from industry, efforts should be made to initiate interactions at the operational level than just securing representation as member in the Board of Governors. Such operational-level interactions will enable more tangible rewards mutually.

Curriculum: The ratings range from 0 to 19 with a mean rating of 11 across 156 institutes. Comparing the average score across various sub-factors; it was found out that factors such as industry guest lectures and industry visits for students appear much stronger than other factors such as courses receiving amendments. Majority of the institutes score 13 or more on this parameter.

Across all the disciplines, chemical engineering is the highest scorer on this parameter (Annexure 4.3.); the good scores can be credited to a high degree of student-industry interaction captured in the number of industry visits arranged for the students.

Fig 3.4. Distribution of ratings across 156 colleges in Governance

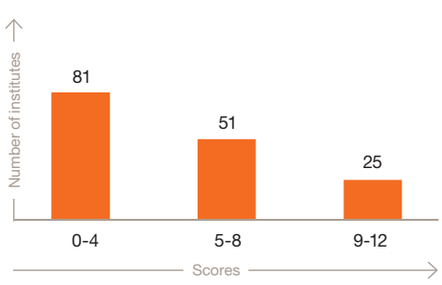
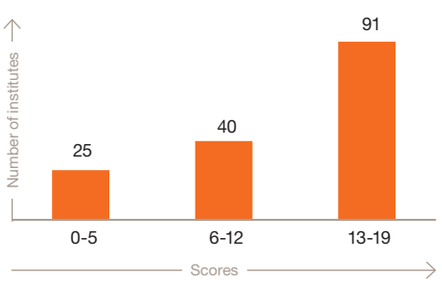


Fig 3.5. Distribution of ratings across 156 colleges in curriculum



Case Study
Developing market-relevant and consistently- updated curriculum

Bannari Amman Institute of Technology

A strong curriculum has both theoretical and practical elements that ensure that the students are not only academically qualified but also trained in practical skills relevant to the market. From an input perspective, some of the factors that determine the relevance of a curriculum include the number of courses that received amendments from industry experts, the number of guest seminars and lectures that are conducted on campus and the number of industry members actively contributing to the functioning of the institute's committees and the board of governors.

At the Bannari Amman Institute of Technology (BIT), for each of the five course disciplines offered, there are two members from the industry represented on each of its committees, including the Governance Council, Board of Studies, Academic Council and Standing Committee of the Academic Council. In addition to these industry experts, selected members from among the college's alumni pool are invited to be a part of its Board of Studies. The college also organises guest lectures by industry experts. In 2011-12, the college organised about 83 guest lectures—the most among the top seven colleges surveyed. The Academic Council of the college makes the necessary changes to the curricula based on inputs from all these sources.

In the academic year 2011-12, as many as 42 courses were amended. Of these, 18 received additional content, namely new chapters, more practical assignments and mandatory industry visits. Furthermore, the content of 24 courses was changed to make them more industry-friendly. The college also added three new courses to its electronics and communications engineering discipline, including System Design with FPGA, Automotive Electronics and Embedded systems, as well as three new courses to its computers and IT discipline on mobile operating systems and embedded systems to meet the growing requirement of these skills in the industry. BIT also offers value-added courses such as Embedded Systems, Illumination Engineering, Computers Networking Virtual Instrumentation, CISCO CCNA, Macromedia Flash, PL/SQL Programming, Multimedia and Animation, Java Certification, CISCO Certification, Web Design and Analysis, and Personality and Soft Skills Development.

Part of the credit for BIT's steadily increasing placement rates goes to the change in curriculum. From 338 job offers made on campus during the academic year 2009-10, the numbers increased to 670 offers after the changes in the curriculum came into effect during the academic year 2011-12. Moreover, these changes also ensure that students who wish to continue with their education are also better prepared to appear for the Graduate Aptitude Test in Engineering (GATE) and Graduate Record Examinations (GRE).

Faculty: The ratings range from 0 to 22 with a mean rating of 5 across 156 institutes. The numbers don't look very encouraging especially on certain sub-factors like faculty presenting papers to the industry and faculty patents adopted by the industry. 70% of the institutes score 6 or less on this parameter, bringing out the fact that industry–faculty linkages are not very well established across a majority of the institutes.

Across all the disciplines, the computer and IT engineering discipline stands out in terms of faculty-industry interaction. This can be attributed to the interaction platform being provided by the various trainings or programmes that the faculty receive from industry.

Infrastructure: The ratings range from 0 to 7; with a mean rating of 3 across 156 institutes. 26% of the institutes have scores more than 6. Wherever there is a centre, unit or cell financially sponsored by the industry, the percentage of financial contribution by industry to the unit is more than 21%. The overall performance on this parameter is noteworthy across majority of the institutes implying good access to financial assistance from the industry.

Across all the disciplines, civil engineering is lagging behind its counterparts implying low inclination of the industry to lend financing support to this stream.

Services: The ratings range from 0 to 14; with a mean rating of 1.6 across 156 institute. 90% of the institutes score 4 or less on this parameter. Low scores on almost all the sub-factors imply limited industry-institute interactions, reducing cases of institutes conducting research or consulting projects for the industry or sharing of infrastructure and other resources. The clearance required on various levels for sharing of resources, especially in government institutes makes this process complex, leading to limited development in this regard.

Placement: The ratings range from 2 to 18; with a mean rating of 8 across 156 institutes. Comparatively more number of students have been placed in 2011-12 as compared to those placed in last five years (2007-12) indicating an increased focus on placements in last couple of years. This is also indicative of the market focussed approach being adopted by the institutes to ensure industry alignment.

Among all the disciplines, computers and IT engineering stands out on this parameter with a remarkable gap, implying the huge demand of IT professionals in the job market.

Entrepreneurship development: The ratings range from 0 to 8; with a mean rating of 1.2 across 156 institutes. 80% of the institutes score 4 or less on this parameter, which indicates that entrepreneurship development is not an area of major focus among the institutes under study. One possible explanation for this trend is the lack of industry support with regards to mentoring the students and lack of financial support for such centres. A placement-focussed approach among students as well as the institute has ensured only limited development on this front.

Getting companies with an entrepreneurial base on board will certainly boost entrepreneurship development. Experience-sharing sessions for the students with successful entrepreneurs of their generation will motivate and encourage them towards entrepreneurship.

Fig 3.6. Distribution of ratings across 156 colleges in faculty

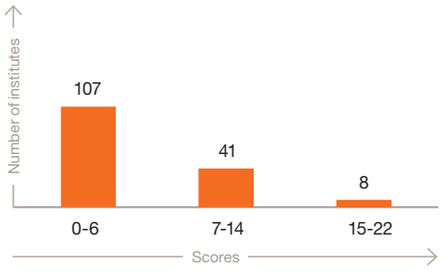


Fig 3.7. Distribution of ratings across 156 colleges in infrastructure

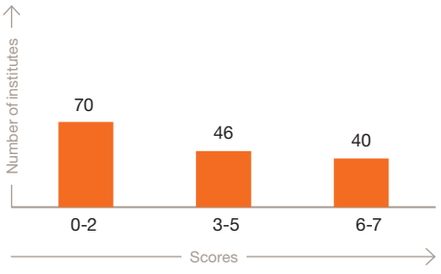


Fig 3.8. Distribution of ratings across 156 colleges in services

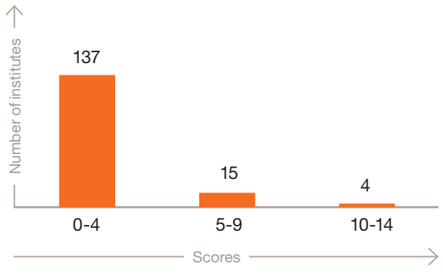


Fig 3.9. Distribution of ratings across 156 colleges in placements

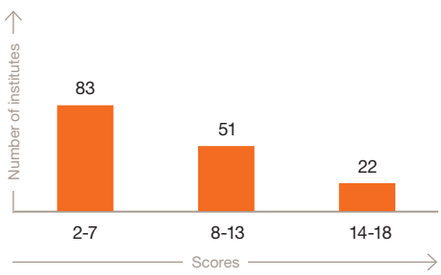
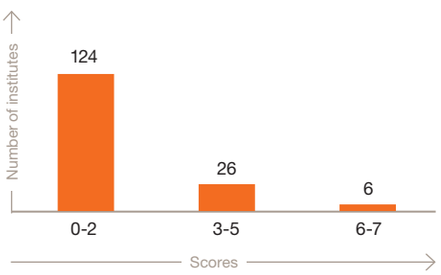


Fig 3.10. Distribution of ratings across 156 colleges in entrepreneurship



Case Study
Driving placements through a collaborative process

College of Engineering, Pune

One of the most important measures of a successful institution that has market relevance is its placements, because this aspect represents the industry's response to the institution's efforts to develop an employable workforce. The number of students offered jobs through campus placements during 2001-12 is the main parameter that determines how successful an institution has been in developing industry-demand based, employment-ready workforce that is relevant to the market.

With approximately 818 job offers made by 104 companies in a year, the College of Engineering, Pune, (CoEP) has the highest placement record among the top seven institutes for 2011-12. Among their more significant achievements, their placement records include 364 students recruited by Cognizant Technology Solutions in a single day. To ensure the continuity of this trend, CoEP is working with training and placement officers in 40 other institutes to implement a 'Day 1' placement model for the IT sector. This is mutually beneficial as it provides recruiters with a common campus for bulk recruitment and ensures that the institute is allowed to present its entire batch of eligible students to the visiting companies.

CoEP owes its placement success to a variety of reasons, most significantly to its Training and Placement department, which comprises officers and student representatives who handle training and placements. In addition to providing students with training and support for job interviews and group discussions, the department also ensures that all the students at CoEP are provided with finishing school treatment, which contributes to their all round development.

The department's placement efforts are further supplemented by the presence of industry personnel on its boards and committees, including its Governing Board, who provide inputs to CoEP's syllabus, contribute to infrastructure, give guest lectures and teach courses, which ensures that students are industry-ready. Lastly, the high placement rate for 2011-12 can be attributed to the institutes' vast number of clubs that aim to bridge the gap between the industry and academia by encouraging industry-student interaction through project development, industry events, educational workshops, training workshops and field visits. Some of CoEP's more innovative clubs include the Robot Study Circle, which is the robotics club of CoEP that conducts workshops for students and participates in the annual 'Robocon'; E-Cell - the Entrepreneurship Club, which organises seminars by eminent business personalities; the Satellite Club, which aims to improve communication in the coastal areas and is currently working on building a pico-satellite in collaboration with industry experts; CoFSUG, the CoEP Free Software Users Group, which aims at propounding the free software philosophy not just within CoEP but in other colleges as well and the oldest technical club of CoEP, the HAM Club, which conducts workshops in CoEP as well as in other colleges and provides the technical link during the college events. These initial industry interactions convert to full-time job opportunities as they ensure that students are better equipped to enter the workforce.

Trend analysis

Some of the key trends across various dimensions have been identified using various statistical tools like correlation and regression. The strength as well as dependence of relationships among the key parameters have been tested and the following relations have been identified.

3.3.2. Key observations

1. Based on the trends identified, the industry-institution linkage can be categorised into a three-stage process:

   Stage 1: Institute- industry interaction

   Interaction starts by exchange of resources in the form of industry supported centres, technology & infrastructure transfer

   This relationship is captured is services and infrastructure

   Stage 2: Faculty -industry interaction

   Interaction moves from just resource sharing to knowledge sharing, faculty is actively involved with industry

   This relationship is captured by faculty and governance

   Stage 3: Student -industry interaction

   One-on-one interaction between student and industry by way of field visits, internships and final placements

   This relationship is captured in curriculum, entrepreneurship and placements

2. Infrastructure and services are emerging as important dimensions and critical success factors with regards to their influence on factors like entrepreneurship, faculty and curriculum. These are the base structures for a stronger and longer lasting relationship between industry and institute in all other areas involving faculty and student interaction with the industry

   As can be seen from key characteristics of the high performers, 80% of the institutes have industry sponsored centres. These institutes are actively involved in taking research and consulting projects with industry as well as in resource sharing. This base building ensures good performance in all other areas, be it mentoring support to budding entrepreneurs, organising industrial visits for students and hosting training programmes for faculty and students among others.

Relationship	Reasoning
1. Entrepreneurship and faculty interaction with industries are highly correlated as well as dependent on infrastructure and services	**Common link:** Faculty interaction with industries and entrepreneurship development require active engagement between industry and institute; infrastructure and services assist in building the base to take the involvement to the next level. **Justification for dependence:** Sub factors such as company mentorship for students; innovation initiatives supported by industry; training programmes by industry to faculty and vice-versa; presence of faculty members on industry boards; and adoption of faculty patents by industry are of high involvement. These, to a very large extent depend on the day-to-day interaction and involvement between industry and institute. Financial and physical transfers between the two in the form of sharing infrastructure and services build grounds for extensive knowledge transfer and long-term engagements. This interdependence indicates that the long-term involvement needed for faculty interaction and entrepreneurship development is dependent on how well networked the industry and institute is.
2. Curriculum is highly correlated and dependent on faculty, infrastructure and governance	**Common link:** An active involvement of industry in curriculum design to make it more market-oriented depends on how well-aligned the industry is with the institute in terms of its active involvement in the board of governors and committees as well as the extent of physical and financial resource sharing and knowledge transfer between the two. **Justification for dependence:** Involvement of industry with the institute and the faculty is quintessential for student-industry interaction. Presence of industry representatives on institute boards and committees pave the way for their involvement in core academics.

Expert evaluation
Views of the jury following visits to top three institutes

Good practices across these three institutes:

- Regular transfer of technology, products, processes to industries
- Training sessions hosted by the institutes for industry personnel on topics related to the advance developments in the industry
- Pro-active involvement of industry members in modification of syllabi and guest lectures as well as for teaching Industry representation and participation on the governing board
- Presence of faculty with industry experience and linkages
- Initiatives in the direction of building industry related R&D being undertaken

Areas of improvement:

- Industry adoption of the patents awarded to the institute or faculty is low
- The infrastructure contributed by the industry is being used for training activities, rather than for carrying out industry-relevant research projects
- There is limited focus on entrepreneurship development

The low performers have almost negligible resource sharing or involvement with the industry. This weak base affects their prospects of moving further to step 2 and 3 i.e. establishing interactive relationships between faculty and students and the industry respectively. This is visible in their overall low scores.

Case Study
Supporting and facilitating innovation

PSG College of Technology

Innovation helps mobilise capability, harness creativity, create value and drive growth. Supporting innovation involves not only encouraging entrepreneurial activity but also maintaining mutually beneficial interaction with industry. It enables students and faculty to access market expertise and ensures that their research is academically relevant, can be leveraged commercially through technology transfers, and is secured through patenting. The ability of a college to support and facilitate innovation can be measured through three major channels—by the number of companies that provide ***financial support*** to research cells and development centres, the number of companies that provide ***mentoring, teaching support and research collaboration*** and the number of ***industry-sponsored research projects assigned*** to the institute.

Among the top seven colleges surveyed, PSG College of Technology holds the record for the highest number of companies funding and mentoring its faculty and students. Between 2007 and 2012, as many as 22 companies provided entrepreneurial support through either funding or mentoring incubatees. Additionally, during the same period, the industry financially supported 23 of the college's research centres and units. The funding is always project-specific and a majority of it flows through the Centre for Sponsored Research. This was established in 1989 and serves as the vital link between the industry and the college. As a result of this interaction with industry, 60 research projects were assigned to the college between 2007 and 2012.

In an effort to provide an atmosphere conducive to innovation and entrepreneurship, the college established PSG-STEP *(Science and Technology Entrepreneurial Park)* in collaboration with the National Science and Technology Entrepreneurship Development Board (NSTEDB) in 1984. In addition to infrastructural support, the park offers students a complete range of incubation facilities, including specialised mechanical, IT and electronics incubation centres to help formulate business plans and develop prototypes. Since it was established, STEP has incubated 79 entrepreneurs and currently supports 28.

Another testimony to the industry's acknowledgement of the institute's innovation capabilities is the fact that the college was approached by the Society for Bio-Medical Technology (SBMT) in 2003 to build a prototype of a ventilator that could be used at high altitudes. With inputs from the National Institute for Mental Health and Neuro Sciences (NIMHANS), Bangalore, PSG modified and improved the existing prototype, and in 2007, developed an indigenous critical healthcare ventilator— ***Inventa***—designed to meet the needs of the Indian healthcare system. Once Inventa was approved for medical use, the technology transfer was made to Pricol Medical Systems. Inventa is currently awaiting a patent. Based on its success with Inventa, the college is now working with industry experts to develop pediatric ventilators.

3. Only 17 institutes out of the 156 under the study have a composite score above 50% bringing out a not-so-encouraging picture when it comes to industry-institute interaction
4. With regard to performance on key parameters, in the last five years, there has been an increased focus on improving the placement numbers. Tuning the students to industry requirements by making industry-supported changes in the curriculum and arranging industry visits is also on rise. Access to industry-funded infrastructure is indicative of increased interaction between industry and institutes

   On the flipside, a majority of them are lagging behind on knowledge transfer dimension. Mere presence of industry members on the board of governors and committees doesn't suffice, in absence of active participation. Sharing of facilities and infrastructure isn't a visible trend. Limited development has happened with regards to the transfer of patents as well as industry hosted training programmes for students and faculty. Direct involvement of industry in mentoring budding entrepreneurs and supporting innovation initiatives is limited
5. Across disciplines, computer and IT engineering emerges as a good performer across all parameters indicating strong industry linkage which can be attributed to huge market demand for IT professionals. Civil engineering on the other hand has low scores on a majority of the parameters indicating a need for realignment with industry requirements

4. Annexure

4.1. List of institutes that participated in the survey

The scores are computer-generated first cut markings based on self entries by the institutes. These are indicators only and should not be treated as the final result. The score mentioned here was useful in the initial screening and narrowing down of the numbers to a few by a high-level jury. In the selection of final winners, actual visits by an expert team comprising AICTE and CII representatives to the narrowed-down institutes were undertaken to verify the data provided by the institutes. The score is indicative of only the industry collaborations of institutes and not of other parameters.

	Name of institute	State	AICTE region	Score
1.	PSG College of Technology	Tamil Nadu	Southern	75.72
2.	Walchand Institute of Technology	Maharashtra	Western	72.62
3.	Rajalakshmi Engineering College (engineering and technology)	Tamil Nadu	Southern	65.15
4.	Sreenidhi Institute of Science and Technology	Andhra Pradesh	South Central	63.18
5.	Bannari Amman Institute of Technology	Tamil Nadu	Southern	63.01
6.	R.V. College of Engineering	Karnataka	South West	62.75
7.	College of Engineering, Pune	Maharashtra	Western	60.02
8.	PSNA College of Engineering and Technology, Dindigul	Tamil Nadu	Southern	58.98
9.	Thiagarajar College of Engineering	Tamil Nadu	Southern	58.91
10.	Kasegaon Education Society's Rajarambapu Institute of Technology	Maharashtra	Western	57.62
11.	Panimalar Engineering College	Tamil Nadu	Southern	57.56
12.	R.M.K. Engineering College	Tamil Nadu	Southern	55.28
13.	Acharya Institute of Technology	Karnataka	South West	53.11
14.	Chandigarh Engineering College	Punjab	North West	52.42
15.	Ajay Kumar Garg Engineering College	Uttar Pradesh	Northern	52.4
16.	Hindustan College of Science and Technology	Uttar Pradesh	Northern	50.92
17.	Sir M.Visvesvaraya Institute of Technology	Karnataka	South West	50.76
18.	M. S. Ramaiah Institute of Technology	Karnataka	South West	49.66
19.	PES Institute of Technology	Karnataka	South West	49.02
20.	Anand Institute of Higher Technology	Tamil Nadu	Southern	48.66
21.	Sri Venkateswara College of Engineering	Tamil Nadu	Southern	48.12
22.	Patel College of Science and Technology	Madhya Pradesh	Central	8.19
23.	Kumaraguru College of Technology	Tamil Nadu	Southern	47.91
24.	Vignan Institute of Technology and Science	Andhra Pradesh	South Central	47.44
25.	Dr Mahalingam College of Engineering and Technology	Tamil Nadu	Southern	47.02
26.	Shri Shankaracharya Group of Institutions	Chhattisgarh	Central	19.09
27.	Kongu Engineering College	Tamil Nadu	Southern	46.27
28.	Thapar University	Punjab	North West	46.13
29.	Gayatri Vidya Parishad College of Engineering	Andhra Pradesh	South Central	45.78
30.	Padmasri DR B V Raju Institute of Technology	Andhra Pradesh	South Central	44.77
31.	Maharaja Agrasen Institute of Technology	Delhi	North West	44.42
32.	PROF Ram Meghe Institute of Technology and Research	Maharashtra	Western	44.3
33.	Prakasam Engineering College	Andhra Pradesh	South Central	42.83
34.	Government College of Technology	Tamil Nadu	Southern	42.52
35.	Erode Sengunthar Engineering College	Tamil Nadu	Southern	42.13
36.	Paavai Engineering College	Tamil Nadu	Southern	41.85
37.	Coimbatore Institute of Technology	Tamil Nadu	Southern	41.28
38.	Meenakshi Sundararajan Engineering College	Tamil Nadu	Southern	41.22

	Name of institute	State	AICTE region	Score
39.	Vignans Institute of Information Technology	Andhra Pradesh	South Central	40.82
40.	KIET Group of Institutions	Uttar Pradesh	Northern	40.6
41.	Sethu Institute of Technology	Tamil Nadu	Southern	39.74
42.	United College of Engineering and Research	Uttar Pradesh	Northern	39.59
43.	V. V. P. Engineering College	Gujarat	Central	21.55
44.	Shri Ramdeobaba College of Engineering and Management, Nagpur	Maharashtra	Western	38.96
45.	Bharati Vidyapeeth Deemed University College of Engineering	Maharashtra	Western	38.24
46.	Noorul Islam College of Engineering	Tamil Nadu	Southern	37.52
47.	Al Falah School of Engineering and Technology	Haryana	North West	37.39
48.	The National Institute of Engineering	Karnataka	South West	37.19
49.	Shri Ram Murti Smarak College of Engineering and Technology, Bareilly	Uttar Pradesh	Northern	37.02
50.	Jayamukhi Institute of Technological Sciences	Andhra Pradesh	South Central	36.85
51.	Veltech Multitech Dr Rangarajan Dr Sakunthala Engineering College	Tamil Nadu	Southern	36.83
52.	GMR Institute of Technology	Andhra Pradesh	South Central	36.81
53.	VNR Vignana Jyothi Institute of Engineering and Technology	Andhra Pradesh	South Central	36.77
54.	Dayalbagh Educational Institute	Uttar Pradesh	Northern	36.57
55.	Sri Jayachamarajendra College of Engineering	Karnataka	South West	36.36
56.	Sri Sukhmani Institute of Engineering and Technology	Punjab	North West	36.06
57.	Institute of Chemical Technology	Maharashtra	Western	35.85
58.	Velammal Engineering College (Engg. and Tech)	Tamil Nadu	Southern	35.23
59.	Malla Reddy Engineering College	Andhra Pradesh	South Central	35.34
60.	Sri Sai Ram Engineering College	Tamil Nadu	Southern	35.1
61.	Laljibhai Chaturbhai Institute of Technology	Gujarat	Central	17.48
62.	Mahendra Engineering College	Tamil Nadu	Southern	34.91
63.	Dronacharya College of Engineering	Haryana	North West	34.98
64.	Sona College of Technology	Tamil Nadu	Southern	34.59
65.	G. H. Raisoni College of Engineering, Nagpur	Maharashtra	Western	34.65
66.	Mepco Schlenk Engineering College	Tamil Nadu	Southern	34.01
67.	SSM College of Engineering	Tamil Nadu	Southern	33.15
68.	M.Kumarasamy College of Engineering	Tamil Nadu	Southern	30.99
69.	Regency Institute of Technology	Puducherry	Southern	30.69
70.	Chirala Engineering College	Andhra Pradesh	South Central	32.44
71.	Manipal Institute of Technology	Karnataka	South West	31.55
72.	Maharashtra Academy of Engineering, Alandi (D)	Maharashtra	Western	31.06
73.	Maamallan Institute of Technology	Tamil Nadu	Southern	28.98
74.	Army Institute of Technology	Maharashtra	Western	30.69
75.	Saveetha Engineering College	Tamil Nadu	Southern	28.09
76.	Bonam Venkata Chalamayya Engineering College	Andhra Pradesh	South Central	30.58
77.	Swvsms Tatyasaheb Kore Institute of Engineering and Technology	Maharashtra	Western	30.51
78.	TKR College of Engineering and Technology	Andhra Pradesh	South Central	30.11
79.	Amity School of Engineering and Technology	Delhi	North West	29.95

	Name of institute	State	AICTE region	Score
80.	All India Shri Shivaji Memorial Society's Institute of Information Technology	Maharashtra	Western	29.86
81.	Shri Guru Gobind Singhji Institute of Engineering and Technology	Maharashtra	Western	29.76
82.	Narayanaguru College of Engineering	Tamil Nadu	Southern	27.26
83.	Shri Vishnu Engineering College for Women	Andhra Pradesh	South Central	28.83
84.	Government College of Engineering, Salem	Tamil Nadu	Southern	27.11
85.	Sree Vidyanikethan Engineering College	Andhra Pradesh	South Central	28.29
86.	Ratnavel Subramaniam College of Engg. and Tech.	Tamil Nadu	Southern	23.67
87.	Saintgits College of Engineering	Kerala	South West	28.02
88.	Karpagam College of Engineering	Tamil Nadu	Southern	22.54
89.	R.M.D. Engineering College	Tamil Nadu	Southern	20.16
90.	Swarnandhra College of Engineering and Technology	Andhra Pradesh	South Central	26.63
91.	Shri Sant Gajanan Maharaj College of Engineering	Maharashtra	Western	26.58
92.	Sri Venkatesa Perumal College of Engineering and Technology	Andhra Pradesh	South Central	26.21
93.	Yeshwantrao Chavan College of Engineering	Maharashtra	Western	26.11
94.	BRCM College of Engineering and Technology	Haryana	North West	25.95
95.	ITM Group of Institutions (technical campus)	Madhya Pradesh	Central	25.72
96.	Shri Vaishnav Institute of Technology and Science	Madhya Pradesh	Central	25.48
97.	Jaipur Engineering College and Research Centre	Rajasthan	North West	25.4
98.	Veltech Hightech Dr Rangarajan Dr Sakunthala Engineering College	Tamil Nadu	Southern	18.95
99.	Vidyavardhaka College of Engineering	Karnataka	South West	24.61
100.	Vishwakarma Institute of Technology	Maharashtra	Western	24.55
101.	Sri Venkateswara College of Engineering and Technology	Andhra Pradesh	South Central	24.54
102.	Truba Institute of Engineering and Information Technology	Madhya Pradesh	Central	24.46
103.	SCMS School of Engineering and Technology	Kerala	South West	24.1
104.	Dr Babasaheb Ambedkar Technological University, Lonere	Maharashtra	Western	23.76
105.	Rajasthan Institute of Engineering and Technology	Rajasthan	North West	23.69
106.	Easwari Engineering College	Tamil Nadu	Southern	17.89
107.	Adi Shankara Institute of Engineering and Technology	Kerala	South West	23.28
108.	Rajasthan College of Engineering for Women	Rajasthan	North West	22.6
109.	V.S.B. Engineering College	Tamil Nadu	Southern	14.93
110.	Guru Tegh Bahadur Institute of Technology	Delhi	North West	21.93
111.	G H Patel College of Engineering and Technology	Gujarat	Central	35.22
112.	Kakatiya Institute of Technology and Science	Andhra Pradesh	South Central	21.39
113.	Chaitanya Engineering College	Andhra Pradesh	South Central	20.83
114.	Inderprastha Engineering College	Uttar Pradesh	Northern	20.34
115.	Francis Xavier Engineering College	Tamil Nadu	Southern	11.68
116.	G.Pulla Reddy Engineering College	Andhra Pradesh	South Central	19.56
117.	NRI Institute of Information Science and Technology	Madhya Pradesh	Central	39.53
118.	Sri Balaji Chockalingam Engineering College	Tamil Nadu	Southern	9.72

	Name of institute	State	AICTE region	Score
119.	Institute of Engineering and Technology, Bhaddal (Ropar)	Punjab	North West	18.72
120.	Alagappa Chettiar College of Engineering and Technology	Tamil Nadu	Southern	6.86
121.	Ghousia College of Engineering	Karnataka	South West	18.16
122.	Mahatma Gandhi Institute of Technology	Andhra Pradesh	South Central	18.06
123.	Gandhi Institute of Engineering and Technology	Orissa	Eastern	35.6
124.	Pragati Engineering College	Andhra Pradesh	South Central	17.57
125.	Shri G.S.Institute of Tech. and Science	Madhya Pradesh	Central	46.28
126.	MVJ College of Engineering	Karnataka	South West	16.33
127.	ABES Engineering College	Uttar Pradesh	Northern	15.27
128.	DR. B.C. Roy Engineering College, Durgapur	West Bengal	Eastern	33.91
129.	Konark Institute of Science and Technology	Orissa	Eastern	28.5
130.	Jagannath Institute for Technology and Management	Orissa	Eastern	25.3
131.	Hyderabad Institute of Technology and Management	Andhra Pradesh	South Central	14.47
132.	DR Ambedkar Institute of Technology	Karnataka	South West	14.44
133.	IIMT Engineering College	Uttar Pradesh	Northern	14.33
134.	Rajendra Mane College of Engineering and Technology	Maharashtra	Western	14.11
135.	Nalla Malla Reddy Engineering College	Andhra Pradesh	South Central	13.42
136.	Musaliar College of Engineering and Technology, Pathanamthitta	Kerala	South West	12.64
137.	Tontadarya College of Engineering	Karnataka	South West	11.83
138.	Indira Gandhi Institute of Technology, Sarang	Orissa	Eastern	18.32
139.	C.V.Raman College of Engineering	Orissa	Eastern	14.97
140.	Bharat Institute of Engineering and Technology	Andhra Pradesh	South Central	10.86
141.	Rao Bahadur Y Mahabaleswarappa Engineering College	Karnataka	South West	10.66
142.	Eastern Academy of Science and Technology (East)	Orissa	Eastern	14.88
143.	Narula Institute of Technology	West Bengal	Eastern	10.97
144.	Bhagwant Institute of Technology	Uttar Pradesh	Northern	8.89
145.	L. D. College of Engineering	Gujarat	Central	48.04
146.	University Visvesvaraya College of Engineering	Karnataka	South West	8.03
147.	MES College of Engineering, Kuttipuram	Kerala	South West	7.06
148.	Dhaneswar Rath Institute of Engineering and Management Studies (DRIEMS)	Orissa	Eastern	10.07
149.	G.Narayanamma Institute of Technology and Science, for Women	Andhra Pradesh	South Central	6.42
150.	Cambridge Institute of Technology	Jharkhand	Eastern	6.39
151.	Giani Zail Singh College of Engineering and Technology, Bathinda	Punjab	North West	5.83
152.	College of Engineering, Trivandrum	Kerala	South West	5.22
153.	Saroj Institute of Technology & Management, Lucknow	Uttar Pradesh	Northern	4.83
154.	Balaji Institute of Technology and Science	Andhra Pradesh	South Central	4.47
155.	Noida Institute of Engineering and Technology	Uttar Pradesh	Northern	4.44
156.	Siddharth Institute of Engineering and Technology	Andhra Pradesh	South Central	4.44

4.2. Average score on evaluation parameters across various zones

The scores are computer-generated first cut markings based on self entries by the institutes. These are indicators only and should not be treated as the final result. The score mentioned here was useful in the initial screening and narrowing down of the numbers to a few by a high-level jury. In the selection of final winners, actual visits by an expert team comprising AICTE and CII representatives to the narrowed-down institutes were undertaken to verify the data provided by the institutes. The score is indicative of only the industry collaborations of institutes and not of other parameters.

	Central	East	North	North West	South Central	South	South West	West
Entrepreneurship	1.0	0.7	0.9	1.1	1.1	1.9	0.9	1.7
Curriculum	10.4	6	9.6	12.1	12.5	13.9	9.6	14.4
Infrastructure	2.9	2.9	2.9	2.6	2.4	3.3	3.2	3.9
Services	1.6	0.5	1.0	1.1	0.9	2.1	1.3	3
Faculty	3.3	3.7	4.9	5.4	4.2	6.3	3.6	5.7
Governance	5.3	4.3	4.3	4.8	4.4	4.5	3.6	5.3
Placement	7.0	4.1	6.9	7.6	6.5	10	7.6	7.4

Average scores on evaluation parameters

4.3 Scores on evaluation parameters across various disciplines

Disciplines → / Parameters ↓	Electronics & communication	Electrical engineering	Mechanical engineering	Chemical engineering	Civil engineering	Computers and IT engineering
Governance						
Curriculum	7.4	7.46	7.74	9.35	6.31	8.16
Faculty	2	1.74	3.13	2.39	2.24	2.91
Infrastructure	1.43	1.3	1.54	1.78	0.63	1.76
Services	0.3	0.39	0.66	0.64	1.50	0.47
Placements	5.25	4.9	7.61	5	3.9	10.73
Entrepreneurship Development						
Total	16.38	15.79	20.68	19.16	14.58	24.03

4.4. Jury profiles

Dr SS Mantha
Chairman
AICTE

Dr SS Mantha is the Chairman of the All India Council for Technical Education (AICTE), and he has been at the forefront of bringing in some radical changes for transparency and accountability in its administration. He holds a Bachelor's degree in Mechanical Engineering from MS University, Baroda, a Master's degree in Mechanical Engineering from VJTI, Mumbai and a PhD in Combustion Modeling from the University of Mumbai. Under his guidance, 12 PhD students have completed their thesis. The Government of Maharashtra conferred the Best Teacher Award on him in 2002.

Dr Mantha implemented the first e-governance project, automating the workflows for the Department of Higher and Technical Education, Government of Maharashtra in 1995. The Citizen Facilitation Centre, Kalyan Dombivli Municipal Corporation, an e-governance initiative that won many national and international awards, was also completed with his expertise. Dr Mantha has more than 190 publications in national and international journals to his credit. He has co-authored two books titled *Object Oriented Programming in C++ and Aerodynamics of Cars, An Experimental Investigation - A Synergy of Wind Tunnel & CFD.*

Dr Y S Rajan
Chairman,
National Board of
Accreditation

Dr Rajan has a proven track record of excellence as a scientist, technologist, administrator, organisation builder and leader, diplomat, academician, writer and poet. He combines a unique ability for original and innovative thinking with strong implementation skills. He has the capability to network with multi–disciplinary and multi–cultural groups. He has wide international experience and was responsible for a large number of cooperative projects between India and other countries. He has led Indian delegations to United Nations (UN) and has visited about 40 countries in all continents as a part of cooperative efforts in science, technology and business.

As Vice-Chancellor, Punjab Technical University (2002-2004), he introduced key initiatives to improve the internal processes and the external interfaces of the university. He continues to be visiting faculty, board member and advisor to various renowned Indian academic institutions. He is also a prolific writer and has authored and co-authored a number of books. Till recently, he was Principal Advisor, CII. He holds several other positions in institutions and academies. Currently, he is The Dr Vikram Sarabhai Distinguished Professor, Indian Space Research Organisation (ISRO).

Prof PV Indiresan
Past President, Indian National Academy of Engineering and

Former Director, Indian Institute of Technology, Madras

Prof PV Indiresan, Past President, Indian National Academy of Engineering, was formerly Director, Indian Institute of Technology, Madras. Prior to that, he was Head, Department of Electrical Engineering at the Indian Institute of Technology, Delhi. He was twice awarded the top prize by the Inventions Promotion Board of the Government of India. He is a distinguished fellow and Past President of the Institution of Electronics and Telecommunication Engineers. He is also a Fellow of the Society of Electronics Engineers and Indian Railway Signal Telecommunication Engineers and Member, Institute of Electrical and Electronics Engineers (IEEE), USA. He has written a book titled *Managing Development: Geographical Socialism, Decentralization and Urban Replication.*

Dr Prahlada
Vice-Chancellor

Defence Institute of Advanced technology, Pune

Dr Prahlada is a distinguished scientist and formerly Chief Controller, Research and Development at Defence Research and Development Organisation, Ministry of Defence, Government of India at New Delhi. Dr Prahlada got his degree in Mechanical Engineering from Bangalore University, post-graduation in Aeronautics from IISc, Bangalore and PhD from JNTU, Hyderabad. Since 1971, he has served in various ISRO and DRDO establishments. He has worked as Project Director, mobile surface to air area defense missile system, AKASH, Director of the biggest DRDO laboratory, DRDL, Programme Director for the Joint Venture Missile Project-(Indo-Russian) BrahMos and Chief Controller Research and Development at DRDO headquarters.

Dr Prahlada is a Fellow of Andhra Pradesh Academy of Sciences, Indian National Academy of Engineering, Astronautical Society of India, Institution of Electronics and Telecommunication Engineers and a Managing Trustee of the Trust for Advancement of Aerodynamics in India.

Dr Naushad Forbes
Chairman, CII Innovation Committee and Managing Director, Forbes Marshall Private Limited

Naushad received his Bachelors, Masters and PhD degrees from Stanford University in industrial engineering and history.

Naushad is Director of Forbes Marshall, India's leading steam engineering and control instrumentation company, where he leads the steam engineering business.

He was a Consulting Professor in the management science and engineering programme at Stanford University from 1987 to 2004. His publications include a book authored with David Wield, *From Followers to Leaders: Managing Technology in Newly Industrialising Countries*.

Naushad is on the board of Kirloskar Engines India Ltd, Godrej Industries Limited, Tata Autocomp Systems Limited, National Institute of Industrial Engineering, Ruby Hall Hospital, Jump Associates LLC, California, IIT Bombay. He was also the Chairman of the Confederation of Indian Industry (Western Region) in 2009-10.

Mr Sanjiv Lal
Vice President, Tata Chemicals Ltd

Sanjiv is a B Tech in chemical engineering and graduated from IIT, Delhi in 1983. He has worked in the area of speciality chemicals, business development and fertiliser operations earlier with Hindustan Lever Ltd and presently with Tata Chemicals. Sanjiv has headed the site operations of the phosphates manufacturing facility of the company at Haldia in West Bengal and the chemicals operations in Mithapur.

Prior to his being seconded as the Joint Managing Director to the company's phosphates JV in Morocco in 2010, Sanjiv was responsible for the agri retail business of Tata Chemicals. In his current position which he holds since May 2012, Sanjiv is responsible for organisational transformation.

Dr S Unnikrishna Pillai
Former Director, Co-operative Academy of Professional Education

Dr Pillai started his career in 1958 as Junior Engineer, Kerala State Public Works Department and has held many academic positions in India and abroad since then. He has been a Professor at Regional Engineering College, Calicut, India and at Royal Military College, Kingston, Ontario, Canada and at the University of Sulaimaniya, Iraq. More recently, he has held the position of Director, Co-operative Academy of Professional Education, Trivandrum, Kerala, India, a period during which he was instrumental in establishing five engineering colleges and one medical college in different locations in Kerala.

Dr Pillai has been honoured with the U.P. Government National Award for Outstanding Work in Institutional Development in 1994, the Sir Arthur Cotton Memorial Prize in 1993, the Institution of Engineers (India), Architectural Engineering Division Gold Medal for 1988 – 89, the Canadian Commonwealth Scholarship for 1964 – 67 and the Kerala University Merit Scholarship for University First Rank for 1955 – 56 and 1956 – 57.

Dr Pillai has many technical papers and books published in his name. He has been actively involved with the American Society of Civil Engineers as a Fellow and is a life member of the Indian Society for Technical Education.

Prof Ajoy Kumar Ray
Vice-Chancellor, Bengal Engineering and Science University

Ajoy joined Bengal Engineering and Science University, Shibpur as its Vice-Chancellor in March 2009. Prior to this assignment he has been professor of electronics and electrical communication engineering and Head, School of Medical Science and Technology at IIT-Kharagpur. He has done his Bachelor's from Bengal Engineering College, Shibpur, followed by M Tech and Ph D from the Electronics and Electrical Communication Engineering Department of IIT Kharagpur. He joined IIT-Kharagpur as Faculty in 1980.

Ajoy has successfully completed 17 research projects of agencies such as the Defence Research and Development Organisation the Department of Atomic Energy and the Department of Science and Technology. He was the Principal Investigator of research projects, sponsored by Intel Corporation from 1997 to 2004.

Ajoy has co-authored more than 100 research papers in international journals and conferences. He has authored five books published by international publishing houses, such as John Wiley, Tata McGraw Hill, Prentice Hall of India and Taylor and Francies Publication, including one in Chinese.

In addition, under his leadership, his group in the School of Medical Science and Technology has initiated a number of research projects on molecular imaging and image processing, medical instrumentation, early detection of oral, breast and cervical cancer, coronary artery disease detection, epidemiological studies and bio informatics, all of which are of national importance. Ajoy has been serving as member of the working committee of the National Planning Commission on technical education.

Mr Kamlesh Pande
Chief Consultant, Forbes Marshall

An M Tech in mechanical engineering from IIT-Bombay, Kamlesh is Chief Consultant with Forbes Marshall, Pune. Till recently, he was Adjunct Professor at School of Management, IIT-Bombay, where he taught innovation management, knowledge management and R&D management and conducted management development programmes (MDPs) for industry managers. Kamlesh has been the Head of Technology Management at Mahindra & Mahindra, Vice-President (R&D and Innovation) with Thermax Ltd, Pune and Chief (R&D) with Forbes Marshall, Pune. Prior to that, he was with Tata Consulting Engineers, BHEL (R&D) and Tata Energy.

Kamlesh set up the Forbes Marshall Centre for Steam Engineering in Pune to impart hands-on training to fresh engineering graduates, engineering teachers and practicing engineers. He is on research advisory committees of various research centres and hospitals. He was the Honorary Professor of mechanical engineering at Government College of Engineering, Pune and visiting faculty at the Institute of Armament Technology, Tata Management Training Centre, and Symbiosis Institute of Business Management as well the MIT School of Business, Pune.

Dr Ashok Ghatol
Former Vice-Chancellor.
Dr Babasaheb Ambedkar Technological University

Dr Ghatol has been the Chairman of AICTE. He was the Principal of College of Engineering, Pune between 2001 and 2004 and Director, Technical at Dr D Y Patil Group of Institutes, Akurdi, Pune, between 2009 and 2011. A Fellow of the Institution of Electronics and Telecommunications Engineering, Dr Ghatol has also been a senate member and Dean, Faculty of Engineering at Pune University.

A recognised guide for doctoral and post-graduate studies in electronics and telecommunication engineering and electrical engineering at Amaravati, Pune University and BATU, Lonere, Dr Ghatol has mentored 20 PhD students and 33 students of ME.

He has done his B E in electrical engineering from Nagpur University and M Tech from IIT Bombay. He holds a Ph D from IIT-Bombay in the study of high power semiconductor devices.

Dr Ghatol is former Vice-President of the Indian Society for Technical Education, New Delhi and is also a Fellow of ISTE, New Delhi.

Dr Omprakash Gopal Kakde
Director, VJTI, Mumbai

Dr Kakde is Director at VJTI, Mumbai since June 2012. Before joining VJTI, he was Dean (R&D) and Professor of Computer Science Engineering at Visvesvaraya National Institute of Technology, Nagpur.

Been associated with Nagpur University as Chairman, Board of Studies (IT), Dr Kakde is also a Member of Senate at VNIT and Member of Doctoral Research Committee at CSVTU. He has demonstrable experience of handling quality issues, assessment and accreditation procedures and has experience in guiding Ph D students.

He has done his BE in electronics and power engineering from Nagpur University, VNIT and M Tech in computer science engineering from IIT-Mumbai. He has done his M A in public administration from Nagpur University and also holds a doctorate from the Nagpur University.

Prof P O J Lebba
Formal Principal, TKM College of Engineering

Prof Lebba is the General Secretary of Muslim Educational Society, a movement started in 1964 for the educational upliftment of socially and educationally backward people. He has done his B Sc in electrical engineering from Kerala University and M Tech in electrical machines from IIT-Mumbai. He has also served as the Vice President of Indian Society for Technical Education and Director of Kerala Minerals and Metals Ltd.

Prof Lebba has held many important positions including that of Consultant to the HRD Ministry and toAICTE. He was the Principal of TKM College of Engineering, Kollam, Kerala and has been the Dean, Faculty of Engineering and Technology at the University of Chennai.

He has been a member of Executive Committee and Governing Body of Energy Management Centre, government of Kerala, Governing Body, SIT Tumkur (AICTE nominee) and governing body, MES College of Engineering, Kuttippuram.

Prof R K Shevgaonkar
Director, IIT-Delhi

Prof Shevgaonkar is the Director of IIT-Delhi. He was earlier the Vice-Chancellor of University of Pune. He has also held the positions of Deputy Director, Finance and External Affairs, IIT-Bombay; Dean, Resource Mobilisation, IIT-Bombay and Head, Electrical Engineering Department, IIT-Bombay. Prof Shevgaonkar has also been a visiting professor at many international universities.

He has been honored with the IEEE UG Teaching Award 2011 and IETE - CEOT -94 Awards for outstanding contribution in the field of photonics and opto-electronics. He has written many books and published over 150 papers in international journals.

Prof Shevgaonkar is a gold medalist in BE in electronics engineering from Jiwaji University, Gwalior. He has done his Masters in electrical engineering from IIT-Kanpur in 1977 specializing in electromagnetics and optical fibres. He holds a Ph D in electrical engineering from IIT-Bombay on maximum entropy restoration of astronomical images.

Prof Sandeep Sancheti
Director, NIT Delhi

Sandeep holds a Ph D from the Queens University of Belfast, UK. He obtained his B Tech (ECE) from Regional Engineering College, Warangal and his M Sc (Engg) from Delhi College of Engineering in 1982 and 1985, respectively.

He was the Principal Coordinator of QIP (Poly) programme of AICTE and Chairman of NIMCET, an all-India MCA entrance test. Currently, he is the Chairman of Direct Admission of Students from Abroad (DASA) scheme of MHRD. Presently, he is serving as a Director, National Institute of Technology Karnataka, Surathkal and Mentor Director, National Institute of Technology, Goa.

Sandeep's area of research interest is high frequency electronics, RF circuits and systems, microwave antennas and semiconductor device modeling. He has to his credit more than 75 research papers in national and international journals and conferences. He has also delivered several invited talks and keynote addresses in conferences, seminars and workshops.

He has served in the capacities of Honorary Secretary and Chairman, IETE, Rajasthan Centre and is currently serving as Vice-President IEEE MTT India chapter.

Sandeep was a member of the government of India science and technology delegations to the Republic of Ireland and the US. He is also on the panel of a

Prof S K Kak
Vice-Chancellor, Mahamaya Technical University

Prof Kak is the founder Vice-Chancellor of Mahamaya Technical University, Noida. He holds a B Sc in electrical engineering and M Tech in microwave engineering from IT Banaras Hindu University, Varanasi. He received his Ph D in digital communication from BHU, Varanasi in 1985. Prior to his current appointment, he was Vice-Chancellor of Chaudhary Charan Singh University, Meerut, from 2008 and Professor, Electronics, Institute of Technology, BHU since 1985. He has over 40 years of experience in research.

Prof Kak has taught a wide spectrum of courses related to electronics engineering at IT BHU, Varanasi. He has published more than 20 research papers in reputed journals and more than 35 publications in national or international refereed conferences.

He holds one national and one US patent for the CPPM technique in collaboration with Dr Shubhra Verma.

Prof Kak has received a number of awards including best model awards in 1965, 1967, 1968 in technical models exhibition during undergraduate studentship in BENCO.

Mr Milind Joshi
Manager R&D, Forbes Marshall

Mr Joshi did his BE in Mechanical Engineering from Pune University in 1990. He has a total work experience of 22 years out of which 10 year he spent in the field of Production and Tooling. For the past 12 years he has been in the field of New Product Ideation and New Product Development.

He worked with Forbes Marshall from 1990 to 1994 and then moved to Tata Motors, Pune and worked there till 2000. Since 2000 he is working as Manager R & D at Forbes Marshall. Mr Joshi has two patents in his name and he has applied for four more.

4.5 Award Sponsors and organizers

Award Sponsors

Elico Award for Best Industry-Linked College in Electronics and Communication Engineering

ELICO Limited established in 1960, is an ISO 9000/14001/27001 certified company which designs, develops and manufactures electronic analytical instruments and offers high-end solutions in the field of instrumentation, mechoptronics, homeland security and application software development. Elico is the first analytical instruments company in India.

Elico has developed several technologies in the areas of spectrophotometry, chromatography, electrochemistry, flame photometry instrumentation and also works with global leaders in product development and manufacturing (ODM services).

Forbes Marshall Award for Best Industry-Linked College in Electrical Engineering

Forbes Marshall is a leader in the area of process efficiency and energy conservation for the process industry. We have 60 years of experience building steam engineering and control instrumentation solutions with focussed investments in manufacturing and R&D. Their joint ventures with the world's leading names enable them to deliver quality solutions in 18 countries. Forbes Marshall is unique in having extensive expertise in both steam as well as control instrumentation. This dual expertise has allowed them to engineer industry-specific systems that focus on energy efficiency as well as environment and process efficiency for diverse sectors.

Forbes Marshall began more than 60 years ago as a company offering steam generation solutions in association with Spirax Sarco of the UK. For decades, the firm has been designing, manufacturing and supplying steam engineering products and solutions to customers worldwide. While their oldest joint venture is with Spirax Sacro, the world leader in steam engineering, their newest joint venture is with Vynke Energietechniek, the world leaders in converting biomass into energy.

Forbes Marshall have long-standing partnerships with some of the best names in the control instrumentation industry such as Arca, Codel, Krohne and Shinkawa, to develop, design and supply innovative solutions for measurement and monitoring of process parameters. Forbes Solar is a revolutionary new solar technology project for solar co-generation (combined heat and power) systems. It is a unique solution wherein both electrical as well as thermal outputs are generated from a single solar collector. With a combination of specialist knowledge and the latest technology, Forbes Solar provides products and solutions to achieve optimum efficiency. The products are a unique combination of hardware and software that make them reliable and accurate.

Forbes Marshall teams are peopled by some of the finest engineers in the land. These highly trained professionals have developed innovative solutions and saved millions of rupees in process costs for clients. Forbes Marshall has been ranked the fifth 'best workplace' in India for 2012, based on a survey conducted by the Great Place to Work Institute® in association with The Economic Times. This is the fourth time the firm has made it to this list since it started participating in this survey in 2006.

HI-TECH GEARS LTD

Hi-Tech Group Award for Best Industry-Linked College in Mechanical Engineering

The Hi-Tech Group of companies comprises Hi-Tech Gears, Hi-Tech e-Soft, Hi-Tech Robotic Systemz. The Group spans a spectrum of products and services that include transmission components, engineering design services and advanced technology enabled products and solutions at the forefront of cutting-edge technology in the fields of robotics, artificial intelligence, vision and embedded systems. The Group primarily serves automobile manufacturers in the Indian subcontinent and renowned Tier 1 and Tier 2 suppliers in the overseas markets.

Hi-Tech's facilities have been awarded the Shingo Award. In addition, besides having international management systems, all the plants are recognised for the award for excellence in consistent TPM commitment by JIPM (Japan Institute of Plant Maintenance) for TPM (Total Productive Maintenance) Excellence. Hi-Tech has also secured IGBC gold under the IGBC green factory building rating system.

Hi-Tech Gears Ltd
Hi-Tech Gears is an auto component manufacturer (Tier 1 supplier) of repute, in the two-wheeler, passenger car, commercial vehicles, utility vehicles and off-highway vehicle segments. The company has two manufacturing facilities located in the industrial townships of Manesar (Haryana) and Bhiwadi (Rajasthan).

Hi-Tech Robotic Systemz
Hi-Tech Robotic Systemz Limited (HRSL) operates at state-of-the-art technologies with expertise in robotics, artificial intelligence, computer vision, machine vision and related technologies, developing solutions for industrial and military applications. It is India`s first enterprise focused on mobile robots, with 12 patents in various technologies of robotics and vision system.

Hi-Tech eSOFT
Hi-Tech eSoft is an ISO:9001 certified engineering services company that focuses on high-fidelity solutions for a wide variety of assignments and clients.

Infosys®

Infosys Award for Best Industry-Linked College in Computers & IT Engineering

Infosys today is a global leader in consulting, technology and outsourcing. Many of the world's most successful organisations rely on Infosys to deliver measurable business value. The firm provides business consulting, technology, engineering and outsourcing services to help clients in over 30 countries.

The award-winning Infosys Labs and its breakthrough intellectual property can be leveraged as a co-creation engine to accelerate innovation across the enterprise.

Infosys pioneered the Global Delivery Model (GDM), based on the principle of taking work to the location where the best talent is available, where it makes the best economic sense, with the least amount of acceptable risk. Continued leadership around GDM enables Infosys to drive extraordinary efficiencies and frees up client resources for strategic transformation or innovation initiatives.

Infosys has a global footprint with 66 offices and 69 development centres in the US, India, China, Australia, Japan, Middle East, the UK, Germany, France, Switzerland, Netherlands, Poland, Canada and many other countries. Infosys and its subsidiaries have 153,761 employees as on 30 September, 2012.

Infosys takes pride in building strategic long-term client relationships. Almost all its revenues come from existing customers.

Infosys gives back to the community through the Infosys Foundation that funds learning and education.

Mindlogicx Infratec Ltd Award for Best Overall Industry-Linked Engineering College

Mindlogicx Infratec Ltd is a new-generation software product development and services company providing end-to-end solutions and services in domains such as virtual education framework, integrated examination management and digital valuation system, online knowledge management and skills assessment, enterprise content management, etc under the broader framework of KPO. The company further has expertise in handling large projects in e-governance, e-business, enterprise management, etc and has rich experience in research and analysis, contract R&D and IT consulting. The company handles large turnkey projects in the above areas of operations for universities, corporate and business enterprises, globally.

Mindlogicx has positioned itself as a product company in the niche market segment of knowledge management and delivery domain with the development and deployment of products for automating the lifecycle of the virtual learning process–right from admission to awarding the degree. The product offerings from Mindlogicx under the virtual education framework are transaction based and are provided to clients on demand. The integrated solutions and services are thus offered through to clients under the managed application service (MAS). The company is R&D focused and people-driven. It has therefore delivered products and offered solutions and services that are innovative, scalable and robust. The 'innovation' quotient is within the company and the value system and has been a guiding parameter for sustained growth.

Mindlogicx Infratec Limited is a member of NASSCOM (www.nasscom.org), the apex body of the Indian software industry, a member of the Confederation of Indian Industry (www.ciionline.org) as well as other prestigious trade and industrial bodies the world over.

Mindlogicx Infratec's mission is technology to the common man. Its vision is to continually innovate and deliver quality products and services, strive for business excellence and create tangible value for all stakeholders in order to position ourselves as a respectable global corporate in the knowledge-based eco system.

Tata Chemicals Award for Best Industry-Linked College in Chemical Engineering

A part of the over 100 billion USD Tata Group, Tata Chemicals Limited (TCL) is a global company with interests in businesses that focus on LIFE—Living, Industrial and Farm Essentials. The story of the company is about harnessing the fruits of science for goals that go beyond business.

Through its Living Essentials portfolio, the company has positively impacted the lives of millions of Indians. Tata Chemicals is the pioneer and market leader in India's branded iodised salt segment. With the introduction of an innovative, low-cost, nanotechnology based water purifier, TCL is providing affordable, safe drinking water to the masses. TCL unveiled India's first national brand of pulses in 2010, extending its portfolio from salt to other food essentials.

The company's Industry Essentials product range provides key ingredients to some of the world's largest manufacturers of glass, detergents and other industrial products. Tata Chemicals is currently the world's second largest producer of soda ash with manufacturing facilities in Asia, Europe, Africa and North America. Starting 1 April 2011, these key international subsidiaries have been rebranded under the Tata Chemicals umbrella.

In its efforts to focus on sustainability, about 60% of TCL's soda ash comes from natural resources.

With its Farming Essentials portfolio, the company has carved a niche in India as a crop nutrients provider. It is a leading manufacturer of urea and phosphatic fertilisers and, through its subsidiary Rallis, has a strong position in the crop protection and seeds business. TCL is also a pioneer in the customised fertiliser segment and a leading supplier of farm services and speciality products.

The Tata Chemicals Innovation Centre is home to world-class R&D capabilities in the emerging areas of nanotechnology and biotechnology. The company's Centre for Agri-Solutions and Technology provides advice on farming solutions and crop nutrition practices.

The company has also entered into a joint venture with Temasek Life Sciences Laboratory Ltd. Singapore (JOiL) to develop *jathropa* seedlings to enable bio fuels capability.

In line with its mission, ***serving society through science,*** the company is applying its expertise in sciences, to develop high-tech and sustainable products.

Organisers

The AICTE was set up in November 1945 as a national-level apex advisory body to conduct surveys on the facilities in technical education and to promote development in the country in a coordinated and integrated manner. To ensure this, the AICTE was vested with statutory authority for planning, formulation and maintenance of norms and standards, quality assurance through accreditation, funding in priority areas, monitoring and evaluation, maintaining parity of certification and awards and ensuring coordinated and integrated development and management of technical education in the country.

The Ministry of Human Resource Development also constituted a national working group to look into the role of the AICTE in the context of the proliferation of technical institutions, maintenance of standards and other related matters. The working group recommended that the AICTE be vested with the necessary statutory authority to make it more effective. This would consequently require restructuring and strengthening with necessary infrastructure and operating mechanisms.

Pursuant to the recommendations of the working group, the AICTE Bill was introduced in both houses of Parliament and passed as the AICTE Act No. 52 of 1987. The Act came into force on 28 March 1988.

The purview of AICTE covers programmes of technical education including training and research in engineering, technology, architecture, town planning, management, pharmacy, applied arts and crafts, hotel management and catering technology, etc. at different levels.

In accordance with the provisions of the AICTE Act (1987), for the first five years after its inception in 1988, the Minister for Human Resource Development was the Chairman of the Council. The first full-time Chairman was appointed on 2 July 1993 and the Council was re-constituted in March 1994 with a term of three years. The Executive Committee was re-constituted on 7 July 1994 and the all-India boards of studies and advisory boards were constituted in 1994-95. The regional offices of MHRD, located in Kolkata, Chennai, Kanpur and Mumbai were transferred to the AICTE and the staff working at these offices were also deputed to the Council on foreign service terms with effect from 1 October 1995. These offices functioned as secretariats of regional committees in the east, south, north and west. Three new regional committees in the southwest, central and northwest regions with their secretariats located at Bangalore, Bhopal and Chandigarh respectively, were also established on 27 July 1994. One more regional committee in the south-central region with its secretariat at Hyderabad was notified on 8 March 2007.

Three years to date, AICTE has implemented complete e-governance procedures, which are stakeholder driven, in all its processes. This has brought about transparency, accountability and flexibility, integrating the entire eco-system. A purely transaction-based system was converted to a robust process-driven system which was based on rules and open to scrutiny and RTI compliance. The system is one of its kinds with ease of use, is scalable, is retrievable, and is secure and robust. This has increased the credibility of the system and improved its brand value. MIS reports in the public domain add value to the organisation's efforts of providing clean environment in the apex regulator's many endeavours.

Organisers

Confederation of Indian Industry

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the growth of industry in India, partnering industry and government alike through advisory and consultative processes.

The CII is a non-government, not-for-profit, industry-led and industry-managed organisation, playing a proactive role in India's development process. Founded over 116 years ago, it is India's premier business association, with a direct membership of over 8100 organisations from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 90,000 companies from around 400 national and regional sectoral associations.

The CII catalyses change by working closely with the government on policy issues, enhancing efficiency, competitiveness and expanding business opportunities for industry through a range of specialised services and global linkages. It also provides a platform for sectoral consensus building and networking. Emphasis is laid on projecting a positive image of business, assisting industry to identify and execute corporate citizenship programmes. Partnerships with over 120 NGOs across the country carry forward initiatives in integrated and inclusive development, including health, education, livelihood, diversity management, skill development and water.

The CII has taken up the agenda of 'business for livelihood' for 2011-12. This converges the fundamental themes of spreading growth to the disadvantaged sections of society, building skills to meet emerging economic compulsions, and fostering a climate of good governance. In line with this, the CII is placing increased focus on affirmative action, skills development and governance during the year.

With 64 offices and seven Centres of Excellence in India, and seven overseas offices in Australia, China, France, Singapore, South Africa, the UK and the US, as well as institutional partnerships with 223 counterpart organisations in 90 countries, the CII serves as a reference point for Indian industry and the international business community.

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5. Glossary

AICTE	All India Council for Technical Education
BHEL	Bharat Heavy Electricals Limited
BIT	Bannari Amman Institute of Technology
CCNA	Cisco Certified Network Associate
CII	Confederation of Indian Industry
COEP	College of Engineering, Pune
CSIR	Council of Scientific and Industrial Research
CSVTU	Chhattisgarh Swami Vivekananda Technical University
DASA	Direct Admission of Students from Abroad
DRDL	Defence Research and Development Laboratory
DRDO	Defence Research and Development Organisation
FPGA	Field-programmable gate array
GATE	Graduate Aptitude Test in Engineering
GDM	Global Delivery Model
GRE	Graduate Record Examinations
HRSL	Hi-Tech Robotic Systemz Limited
IEEE	Institute of Electrical and Electronics Engineers
IIT	Indian Institute of Technology
INR	Indian Rupee
ISO	International Organization for Standardization
ISRO	Indian Space Research Organisation
IT	Information Technology
JIPM	Japan Institute of Plant Maintenance
MAS	Managed Application Service
NGO	Non-governmental organization
NIMHANS	National Institute for Mental Health and Neuro Sciences
NSTEDB	National Science & Technology Entrepreneurship Development Board
SBMT	Society for Bio-Medical Technology
STEP	Science & Technology Entrepreneurial Park
TCL	Tata Chemicals Limited
TPM	Total Productive Maintenance
UN	United Nations
VJTI	Veermata Jijabai Technological Institute
VNIT	Visvesvaraya National Institute of Technology

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About PwC India

PricewaterhouseCoopers Pvt Ltd is a leading professional services organisation in India. We offer a comprehensive portfolio of Advisory and Tax & Regulatory services; each, in turn, presents a basket of finely defined deliverables, helping organisations and individuals create the value they're looking for. We're a member of the global PwC Network.

Providing organisations with the advice they need, wherever they may be located, PwC India's highly qualified and experienced professionals, who have sound knowledge of the Indian business environment, listen to different points of view to help organisations solve their business issues and identify and maximise the opportunities they seek. Their industry specialisation allows them to help create customised solutions for their clients.

We are located in Ahmedabad, Bangalore, Bhubaneshwar, Chennai, Delhi NCR, Hyderabad, Kolkata, Mumbai and Pune.

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