Role of Higher Education Institutions and Industry Academia Collaboration for Skill Enhancement

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Abstract
The paper evaluates the role of higher education institutions and industry academia collaboration for skill enhancement. The success of higher education system depends significantly on the quality of teachers. The rising demand for higher education on account of changing demographic profile of the country and also from the demand from industry for good quality graduates puts more pressure on teachers to produce the desired results. The primary data was collected from private and public universities in North India with the help of questionnaire. The data was analyzed through SPSS using descriptive tools and factor analysis. It was found that faculties were not satisfied with assessment methodologies and collaboration with industry for research.

Keywords: Higher Education System, Assessment Methodologies, Collaboration with industry

Introduction
The demographic profile of India is a great opportunity for channelizing the energy of youth for economic prosperity. India has 65% of its population is 35 years or under (Virmani, 2014). However skill shortage is a big challenge before the country. Table 1 highlights the projected skill shortage in various industries by 2022. It was found in a survey by FICCI that 90% of companies are facing skill shortages. 89% companies are not able to meet potential demand for their products due to labour shortage (FICCI, 2011). Despite expansion in higher education sector with the entry of private players, the shortage of skills points to the failure of the higher education system to meet the expectations of the industry. The shortage of faculties, teaching effectiveness and separation of academia from industry is areas that require further investigation.

The training and development needs for teachers in higher education have been highlighted by various commissions and committees. Kothari Commission (1964-66) was appointed to advice government on general policies of education at all stages. The Kothari Commission recommended enhanced focus should be given on training of teachers. National policy on education 1968 also accepted that teacher is the most important factor to ensure quality of education. It was recommended that emoluments and service conditions should be adequate and satisfactory with regard to their qualifications and responsibilities.

To improve teaching methods The National Policy on Education (NPE) 1986 recommended use of audio-visual aids, electronic equipments and teacher orientation. It was suggested that interaction between technical and management institutions with the industry in planning, execution, exchange of personnel, training, research and consultancy and other areas for mutual benefit. The NPE1986 recommended establishment of Indian Education Service as an All India service to enhance the management of higher education institutions. It was also recommended that institutional framework should be set up and special focus should be given to training of people involved in management of higher education institutions. But the recommendation has not been implemented.

Programme of Action 1992 (PoA) was formulated after National policy of Education, 1986. PoA 1992 discussed about management of education as a separate chapter. It was recommended to establish Indian Education Service to promote national perspective on management of education. It was further recommended that to improve management system of education different agencies should develop proper coordination for recruitment, training, monitoring and evaluation, information management grievance settlement (MHRD, 1992).

Based on recommendations of NPE1986, University Grants Commission established 48 academic staff colleges. Academic staff colleges were established with the objective of enabling academic staff to become effective facilitators of student learning through becoming effective managers of the conditions that affect learning (UGCASCRU, 2014). There are 66 academic staff colleges in India (UGC, 2014).

Shortage of faculties in higher education makes the training and development of the available faculty resources to improve their performance. An Ernst and Young-FICCI 2012 report mentioned that there is 40% shortage in state and 35% in central universities (EY, 2012). Institutes of higher education are facing acute shortage of good quality faculty. The high ranking students prefer to join the industry due to better career prospects. The restrictions on the academic qualifications sometimes create the challenges in hiring good quality professionals from the industry. It is also found that industrial exposure of fac-
ultities is poor. The faculty shortage is expected to increase to 1.38 million by 2020 (Technopak, 2012).

The university infrastructure requires further expansion and restructuring. According to National Knowledge Commission India needs 1500 universities by 2015 to provide higher education opportunity to youth (NKC, 2006). We have more than 700 universities and 33000 colleges, but there is a wide gap in the quantity and quality of graduates (Sarkar and Choudhury, 2014). Majority (90%) of jobs requires vocational skills but 90% of our college/school output has bookish knowledge (TeamLease 2014).

Employability
The success of the higher education system can be assessed by the employability of the graduates in a real world scenario as compared to the marks scored in university exams. Unfortunately various studies have found that the majority of graduates are not employable. According to a report by Team Lease Services, 57% of India’s youth suffer some degree of un-employability (Teamlease, 2014). According to NASSCOM only 25% of engineering graduates are employable. The Aspiring minds study found only 4.22% engineering graduates employable in product companies and 17% in IT services (Julka and Mishra 2011). Poor quality of skills and education shows up in low incomes rather than unemployment as 58% of graduates make less than Rs. 75,000 per year (Teamlease, 2007).

Human Resource Problem
The higher education system is facing problems due to poor human resource management. Private sector institutions are being managed to earn short term profits and using poorly paid teachers. Public sector institutions are political battlegrounds and lack accountability. Acute shortage of qualified and competent faculty. Faculties with research focus and ambition tend to move to western countries due to better working conditions, salary and organizational framework. The shortage of faculties in different segments is expressed in table 2.

Objectives
The objectives are:
a) To study the issues and challenges of Indian higher education with regard to human resource
b) To study the teaching effectiveness and industry academia interaction in private and public universities.

Literature Review
Mohanty 2001, argued linking of academic staff college programs with IGNOU Diploma in higher education course to make such programs economically and academically sound. The author also suggested such programs should involve lecture demonstrations by experts, demonstration lecture by participants in front of experts and also real life lecture observation.

Mishra 2000 argued that in India adequate efforts have not been made for systematic and continuous professional development of teachers. The author proposed a professional development model using the Distance Learning Methodology (DLM). The model focuses on collaboration and sharing facilities to conduct the programs. The curriculum should be designed keeping in mind the profile of the teachers and after analysis of their needs. Formative and summative evaluations should be carried out to assess effectiveness of the programs.

Dhawan 2000 examined impact of academic staff college on teachers. The study was conducted on academic staff college Gorakhpur. The findings revealed that skill component of teachers were strengthened, teachers were found using variety of teaching aids, and teachers were found to be more sincere, punctual and exhibited a greater sense of discipline after attending the programs of academic staff college.

Dutta 2000 emphasized that academic staff colleges have contributed in enhancing the quality of teaching skills. The author recommended that the academic staff college should act as a platform for educationist society interface, social concern and as a data bank.

Rastogi, 2001 blamed the lack of orientation and training to the young recruits who learn by trial and error for the poor quality of higher education. It was argued that academic staff development is concerned with acquainting the teachers with latest methodologies of teaching and updating teacher’s subject knowledge. Further due to rapid expansion of the system, explosion of knowledge, it becomes all the more important to develop a structured framework for teacher training. The author argued that in many universities staff development is seen as a peripheral activity because its impact is difficult to assess.

Dubhashi 2001, argued that the due to overemphasis on bringing uniformity the institutions of higher learning became prisoners of uniformity and uniformity led to mediocrity. Conformity to UGC became a ritual. The spirit of scholarship was lost and research took a back seat.

Jyoti 2001 examined the impact of six academic staff colleges located in different universities of northern region. It was found that about 80% of the respondents noticed behavioral changes among the participating teachers. It was also found that about 85% respondents supported the UGC for linking these programmes with promotion.
Mohanty 2002 studied about innovations in teaching. The author highlighted class absenteeism as a common problem in colleges and universities. The author attributed absenteeism to lack of dynamism in teaching. The author explained an experiment of forming group of management students to review and give presentation in the class. The author expressed concern that many teachers teach with little enthusiasm and using old methods of chalk and talk, whereas the new generation has grown up with multimedia tools of modern technology. The feedback of the student was that they liked the new way of learning and they learned to work in groups and make presentations. It was concluded that the model may have certain limitations but it can make teaching effective, enjoyable and innovative.

Rajsekhar and Chander 2002 studied the impact of academic staff college programs and found results which were consistent with the results of other researchers. The authors found that refresher courses are very useful for the quality assurance in higher education. The study was done over a period of three year from 1998-2001 on UGC Academic Staff Collage, Mysore.

Finegold et al, 2011 study highlighted that Indian students move out to US for quality teaching as the most important reason.

Gupta and Gupta 2012 studied the challenges in Indian higher education. It was suggested that better salaries to teachers and collaboration with foreign universities should be encouraged to meet the challenges.

Pande 2013 argued that the problem of skill shortage has reached alarming levels because Indian is obsessed with textbook education and white collar. It was also highlighted that there is a lack of coordination between private skill development organizations and 17 ministries who provide a multitude of programmes.

The Planning Commission in Strategies for Accelerating Growth of Manufacturing in India in the 12th Five Year Plan and Beyond, identified industry academia collaboration to improve skill enhancement and joint intellectual property creation and improve competitiveness of industry (Planning Commission).

Dr M M Pallam Raju, previous Union Human Resource Development Minister also called for closer partnership between industry and academia to improve the employability of students (India Education Review, 2013).

Ministry of Labour and Employment has also identified poor industry academia collaboration as a weakness in our education system. The curriculum is being revised to make it industry relevant and revamp of Apprentices Act 1961 and promotion of incubation centers (Ministry of Labor and Employment, 2014)

**Research Methodology**

The descriptive type of research design was adopted. Primary data was used. The data was collected through questionnaire developed after review of literature. The data was collected from teachers from private and public universities of North India. Out of 600 questionnaires, 306 were returned representing a response rate of 51%. The questionnaire asked questions about teaching effectiveness and industry academia interaction. The data was analyzed by SPSS version 21 with the use of factor analysis and descriptive tools. The respondents were asked to give their views on teaching effectiveness and industry academia interaction on a 5 point likert scale. The scale represented 1 for strongly disagree, to 5 for strongly agree and 3 for neutral.

The internal validity was verified using Cronback’s Alpha separately for private and public universities. The Cronback’s alpha value for teaching effectiveness was obtained as 0.876 for private universities and 0.799 for public universities. The Cronback’s alpha was 0.948 for private and 0.908 for public universities.

**Findings**

Factor analysis is performed on the teaching effectiveness separately for private and public.

**Figure 1** shows Cattell’s scree plot teaching effectiveness for private universities, components on X axis. The corresponding Eigen values are shown as the Y axis. The number of factors to be extracted is decided from the screen plot. The factors above the part of elbow where the curve starts to flatten may be retained. As shown in figure 1 the curve starts to flatten out from 4th component. Though there is a twist in the curve at factor3, factor 3 is retained because the curve flattens at factor 4.

Three factors were extracted. The factors were pedagogy, accountability, and assessment.

**Figure 2** shows Cattell’s scree plot for teaching effectiveness for public universities. The number of factors to be extracted is decided from the scree plot. The factors above the part of elbow where the curve starts to flatten may be retained. As shown in figure 2 the curve starts to flatten out from 4th component. Three factors are extracted.

Three factors extracted were pedagogy, accountability, and assessment.

The respondents in public universities were satisfied (Mean 4.16 for private, Mean 4.10 for public universities) with pedagogy. Respondents in both the type of
universities were moderately satisfied (Mean 3.89 for private, Mean 3.83 for public universities) with the accountability. However respondents in both the type of universities were not satisfied (Mean 2.86 for private, Mean 2.85 for public universities) with assessment methods.

The low score on assessment in both private and private universities is a cause of concern. The lack of priority on research, and critical thinking in Indian higher education also reflects in the ranking of universities globally. Only one university (Panjab University) appeared in list of top universities by Times Higher Education 2013-14, placed in bracket of 226-250 (Times Higher Education, 2014).

The poor score on assessment also reflects in poor employability of graduates. The assessment strategies must be revised to reflect the changes social, technical and economic realities.

The factor analysis is also done on industry academia interaction in private and public universities.

Three factors were extracted namely, collaboration for skill enhancement, willingness for collaboration, and collaboration for research.

**Figure 3** shows Cattell’s scree plot for industry academia interaction of private universities, components shown on the X axis. The corresponding Eigen values are shown as the Y axis. The number of factors to be extracted is decided from the scree plot. The factors above the part of elbow where the curve starts to flatten may be retained. As shown in figure 3 the curve starts to flatten out from 4th component. Though there is a twist in the curve at factor 2, factor 2, 3 are retained because the curve flattens at factor 4.

**Figure 4** shows Cattell’s scree plot for public universities. The number of factors to be extracted is decided from the scree plot. The factors above the part of elbow where the curve starts to flatten may be retained. As shown in figure 4 the curve starts to flatten out from 4th component. Though there is a twist in the curve at factor 2, factor 2, 3 are retained because the curve flattens at factor 4.

Faculties in both private (Mean 4.03) and public universities (Mean 4.0) showed willingness for collaboration with industry. The respondents from private university (Mean 3.85) were more satisfied with the collaboration for skill enhancement as compared to public university (Mean 3.58) respondents. The respondents of private universities (Mean 2.82), and public universities (Mean 2.84) were not satisfied with collaboration for research.

It shows that the faculties are willing to enhance the collaboration with industry. The management needs to develop the framework to enhance such collaboration and provide incentives to the faculties for collaboration.

**Recommendations**

The assessment methodologies should be revised to minimize reproduction of facts and provide opportunity for students to demonstrate application of the concepts and critical discussion along with industry internships to bridge the gap between class room learning and skills required in industry.

The management of universities, teachers, regulatory agencies, and industry bodies should come together and provide supportive framework for fruitful industry academia collaboration. The industry training and internships should be made compulsory in every field of study with necessary modifications to meet the learning outcomes.

**Implement Recommendations of Education Commissions**

It is high time that government should implement the recommendations of the expert panels and commissions. It is a great loss to the nation that commissions are appointed by the government but the implementations of recommendation of such commissions are not up to the mark. There are examples from other countries where the recommendations have been taken seriously. In 20th century after G.Bush Commission Report Science-The Endless Frontier (1945), American Universities became research universities (Duderstadt, 2005).

**Industry Status to Training Institutions**

The institutions involved in training and development should be given industry status. The industry status will provide source of finance and professional management approaches. A Central Board of Education Committee (CABE) set up to suggest framework for National Mission on Teachers and Training had suggested that section 25 companies should be allowed to provide teacher training courses (Indian Express, 2012).

**Academic Audit of Teachers**

The appointments of teachers in public funded institutions should be done on short service commission for a period of 3 years. The continuation of service should be linked to academic and research output to be evaluated by an independent panel of experts on an objective basis. The faculties should be provided with target bands for academic and research outputs. The faculties with poor performance should be replaced with new faculties. Better salary packages after the sixth pay commission has failed to improve the performance of the teachers. The salaries have increased without an element of accounta-
bility. The academic audit should also take into consideration the unique nature of job of an academician.

Provide Research Driven Environment for Faculties
The research driven and talented faculties prefer to work in Western Countries instead of working in India due to bureaucratic set up and lack of research culture. To attract talented individuals to join teaching and research, there is a need to change the working environment. Finegold et al, 2011 found in their study on Indians studying in US that “potential candidates find academic positions that offer research opportunities far more attractive than those at teaching only institutions. This is particularly true for the most qualified candidates PhDs and post docs motives to return to India”.

Conclusion:
The faculty development programs should give priority to develop progressive approach towards industry academia interface and management should support the initiatives of the faculties in this regard. There are benefits for both the academia and industry from a fruitful industry academia interface. The learning outcomes of the student will improve with a better industry academia interface. The poor employability of graduates is a cause of concern for the higher education sector. The weaknesses in the system can be minimized by developing associations with industry.

The faculty development programs must incorporate the innovation outlook, so that the assessment methodologies are modified to assess critical thinking and innovation. The government and institutions need to promote staff exchange programs with foreign universities to bring vibrancy and uniformity of standards in teaching and research and stimulate the talented students to take up career in teaching.

References

Mishra Sudarshana, 2000, In Service Teacher Education through Distance Mode: An Innovative Model, University News, Vol. 38 (13), pp8-13


APPENDIX:
Table 1: Estimated Skill Shortage by 2022 (in Millions)

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<tr>
<th>Source: Business Today</th>
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Table 2: Gap in Faculty Resources

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<tr>
<th>Particulars</th>
<th>2012</th>
<th>2020</th>
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<tbody>
<tr>
<td>No. of Students</td>
<td>16.9</td>
<td>31.9</td>
</tr>
<tr>
<td>Undergraduate (UG)</td>
<td>14.6</td>
<td>27.4</td>
</tr>
<tr>
<td>Post Graduate (PG)</td>
<td>2.3</td>
<td>4.5</td>
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<tr>
<td>Faculty Student Ratio(As per UGC guidelines)</td>
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<td></td>
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<tr>
<td>Undergraduate (UG)</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Post Graduate (PG)</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Faculty Required</td>
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<td></td>
</tr>
<tr>
<td>Undergraduate (UG)</td>
<td>0.97</td>
<td>1.82</td>
</tr>
<tr>
<td>Post Graduate (PG)</td>
<td>0.19</td>
<td>0.37</td>
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<tr>
<td>Total</td>
<td>1.16</td>
<td>2.19</td>
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<tr>
<td>Current Faculty</td>
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<tr>
<td>Faculty Shortage</td>
<td>0.35</td>
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<tr>
<td>Annual Faculty Requirement</td>
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<td>0.17</td>
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<td>(Till 2020)</td>
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Source: Technopak, 2012

Figure 1: Cattell’s Scree Plot for Teaching Effectiveness in Private Universities
Figure 2: Cattell’s Scree Plot for Teaching Effectiveness in Public Universities

Figure 3: Cattell’s Scree Plot for Industry Academia Interface in Private Universities

Figure 4: Cattell’s Scree Plot for Industry Academia Interface in Public Universities