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Explaining Gender Discrimination in the Employment and Earnings of Engineering Graduates in India[#]

Pradeep Kumar Choudhury[*]

Abstract

The paper analyzes the factors responsible for gender discrimination in the employment and earnings of engineering graduates in India. It has used the data collected in 2009-10 through a survey among the fourth year students in Delhi who had gone through the placement exercise. The author finds, among other things, that a smaller percentage of women engineering graduates than men have got job offers and it varies widely across socio-economic settings. Furthermore, it is found that the offered earnings of women are about 54 per cent less than that of men. The results provide strong and consistent evidence that institutional factors account for a sizable portion of the employment and earnings' gap between male and female graduates, with type of institution (government/private) contributing a large part of it. There is no significant difference in the employment of students by their branch of study (traditional/IT-related) but it has a role to play in the offered earnings of the graduates. The study suggests minimising the gender discrimination in terms of employment and earnings of engineering graduates that may increase the access of females to this discipline.

[#] This paper is a part of the author's Ph.D. work on the topic "An Economic Analysis of Demand for Higher Education in India: A Study of Engineering Education in Delhi" at National University of Educational Planning and Administration, New Delhi, India. I am grateful to Professor Jandhyala B. G. Tilak for his comments and suggestions to improve the paper and also for allowing me to use the NUEPA survey data. An earlier version of this paper was presented in an international Conference on Education and Gender organized by European Union research group on Education and Gender, at Izmir University of Economics, Turkey (16-17 May, 2014). I wish to acknowledge Dr. Kristof De Witte and other participants of the conference for their useful comments. The author is solely responsible for interpretation or any error in the analysis.

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Introduction

In many developing countries, including India, the gender differences in employment and earnings are a common phenomenon and also seen as a serious policy issue. The employers' positive bias favouring male candidates, keeps many talented and highly qualified females out of the workforce. In India, the female labour force participation (FLFP) has remained lower than male participation and, in recent years, has declined further. According to the International Labour Organization's (ILO's) Global Employment Trends 2013 report, India's FLFP rate fell from 37.3 per cent in 2004-05 to 29 per cent in 2009-10. Out of 131 countries, India ranks 11th from the bottom in female labour force participation. The most recent figure of World Bank shows a FLFP rate of 28.7 in India, as compared to the world average of 50.4 (World Bank, 2012).

Further, in the economics of education literature, labour market discrimination against women is one of the most cited explanations of the gender gap in education (Tilak, 1990; Kingdon, 1998). Some of the potential causes of the discrimination against women in the Indian labour market lie in the established argument that employers expect, on an average, better performance from men compared to women. They might feel that male employees tend to work for longer hours, while there may be interruption of the work by women because of uneven pressure of family responsibilities. Besides, it is relatively easy to transfer male employees from one establishment of the company to another as compared to female employees. Examining the reasons for the stagnant FLFP in India, Klasen and Pieters (2012) have found that rising male education and income induces women to drop out of the labour force. Moreover, the issue of gender discrimination in the job market is more clearly visible in the engineering sector, where male candidates are strongly preferred over females. It is often argued that engineering and technical education is a masculine domain and, hence, out of reach for women. Those who advocate this line of argument point to the persistence of certain social myths such as 'women are emotional while technology is strictly logical and, hence, both do not go together [Rao, 2007, pp. 187]. Considering these popular observations, one can expect that, other things being equal, companies coming for on-campus recruitment prefer to hire male graduates compared to females.

What are the factors that determine gender discrimination in employment and earnings among engineering graduates? Economist Paula Stephan (1996) has observed that the extent science and engineering jobs value measurable skills and knowledge over less tangible traits such as personality or appearance (which are more important in some non-science and engineering jobs such as management, sales and service), then a small set of human capital variables might be expected to capture a large portion of the gender variation in employment opportunities and offered earnings. A similar argument is also given by Kingdon (1998) for India. However, by contrast, sociologist Laurie Morgan (1998) offers an alternative view and argues that since science and engineering jobs have been traditionally male-dominated, women find themselves at a disadvantage in terms of entry, pay and promotions. This view suggests that factors other than human capital are likely to account for much of the gender variations in employment and earnings. Combining these two alternative views, one can suggest that both human capital and socio-economic factors are likely to account for much of the gender differential in getting a job as also in earnings. Thus in this paper, both human capital and other socio-economic factors are included in the

analysis to understand the gender discrimination in employment and offered earnings of engineering graduates in India.

This study on gender discrimination in the engineering job market assumes greater significance because of two potential reasons. The first reason is gender differences in the choice of institutions – the participation of women students in the private institutions are relatively higher than that of government institutions in India, and therefore, it is expected that the scope of getting a job in the labour market by women students is less. It is because of the fact that the large scale expansion in private engineering education has come at the cost of quality of the educational offerings due to outdated curricula, inadequate infrastructure, shortage of qualified teachers and, poor teaching/learning process and, hence, the employability in the job market. The second reason is gender differences in the choice of courses – a wide range of literature show the differences in the employment avenues of engineering graduates by their fields of specialisation. Further, it is noticed that the choice of subjects within engineering is influenced by gender. More clearly, women are more likely to opt for IT-related courses like computer science, electronics and communication engineering, information technology etc., whereas majority of men go for traditional courses such as electrical, mechanical and civil engineering. Thus, one needs to examine the impact of gender differences in the choice of fields of specialisation on their employment and offered earnings. The importance of carrying out this study also lies in the widely argued fact that certain personal factors like choice of the location of the job, rigid job preferences (for example, preference for public sector jobs over private jobs) etc. may influence the gender differences in employment and earnings of the engineering graduates, which, perhaps, not many studies have highlighted in their analysis. Given the lack of evidence and the voiced concern of policy-makers and other stakeholders about the gender inequality in the engineering labour market in India, based on survey data, this study examines factors determining the gender differences in employment and offered earnings of engineering graduates in Delhi, by considering a fairly large set of demand side factors.

The rest of the paper is organised as follows: Section 2 presents data and method used for the analysis. This is followed by the description of results on the determinants of gender discrimination in employment. The next section examines the factors that are responsible for the gender differences in earnings among the graduates. Section 5 relates to the study's conclusion.

Data and Method

Issues raised in the paper are examined using the primary survey data from 2009-10.[1] The survey collected information on the status of engineering education in four states of India, namely Delhi, Maharashtra, Karnataka, and Tamil Nadu. The present study is based on data collected from Delhi and the survey respondents include fourth year students of selected

[1] The survey was conducted by the National University of Educational Planning and Administration (NUEPA) as part of a research project titled 'Potential Economic and Social Impact of Rapid Expansion of Higher Education in the World's Largest Developing Economies.' This international comparative study was conducted in collaboration with Stanford University covering India, Brazil, Russia and China. Hereafter, it will be referred as 'NUEPA Survey.'

departments in 11 engineering institutions.[2] These comprise five government institutions (including Indian Institute of Technology, Delhi) and six private institutions. The selection of fourth year students was done due to the fact that the information related to labour market aspects can be answered by these graduates, as in majority of the colleges, the campus recruitment among students take place when they are in the fourth year of their course. Also, the fourth year students are assumed to be mature enough to maintain consistency in answering questions. The total number of students surveyed was 1178 out of which 41 per cent were from government institutions, and 59 per cent from private institutions.[3] Distribution of engineering students, according to their branch of study, shows that three-fourth were from IT-related departments and the rest one-fourth from traditional departments of study. Traditional branches include mechanical engineering, civil engineering and electrical engineering which have been the standard departments in engineering institutions for a long period; and Information Technology (IT) — related departments, also called modern departments, include computer science and engineering, electronics and communication engineering, and information technology.[4] Of the total students covered in the study, 15 per cent were females (177 in numbers), their share being 10 per cent in government institutions and 21 per cent in private institutions.[5] Distribution of students by social category shows that 83 per cent were from general category followed by Scheduled Castes (9 per cent), Other Backward Classes (5 per cent) and Scheduled Tribes (3 per cent). Further, the representation of Scheduled Caste and Scheduled Tribe students in private institutions was less than the government institutions.[6]

The student questionnaire was administered to collect information on labour market aspects, socio-economic profile of the students, academic background of the students, and students' current education detail which are used in the analysis. Generally in India, on-campus recruitment of engineering graduates takes place when they are in the third/fourth year of their programme through the placement cell of the institution. Different companies or organizations visit engineering institutions for on-campus recruitment and select

[2] The survey was targeted to include all the then existing 15 graduation level engineering institutions in Delhi; however, data was collected from 11 because two institutions did not permit conducting of the survey in them, and the other two institutions had no traditional and/or IT-related departments of study, as they were offering courses only in power engineering and tool engineering.

[3] The survey had planned to cover all the fourth year students of selected traditional and IT-related departments of 11 institutions, but some students were absent at the time of data collection and some who were present did not wish to be included in the survey. The absentees and those who did not wish to participate in the survey together constitute 1 to 4 per cent of total enrolment in different engineering institutions.

[4] Institution-wise number of students surveyed is given in Table A1 in appendix.

[5] The representation of female students in this survey data is better than the national average. In India, the share of females in the discipline of engineering education is only 11 per cent in 2011-12 and it was further less (7.7 per cent) in 2009-10, the year in which the primary survey was undertaken (Annual reports 2009-10 & 2011-12, University Grants Commission).

[6] In India, for the purpose of affirmative action in education, students belonging to various castes and communities are broadly classified as Scheduled Caste (SC), Scheduled Tribe (ST), Other Backward Classes (OBC) and General category. It is well recognised that the students from the SC, ST and OBC categories fare relatively poorly in several socio-economic indicators compared to General category students.

graduates as per their requirements with the help of interviews or group discussions or any other selection criterion developed by the employers.[7] The data collected from the survey on 'whether engineering graduates have got job offer or not' is taken as indicator of their prospect of getting employment. At the time of survey (in 2009-10), students were in the fourth-year of their study and they would join their offered job after completion of the course. They have not entered the job market yet. Through the campus placement, at the time of the survey, some engineering graduates had received job offers while some had not. In the questionnaire, the students who had received job offers were asked to provide their job information on three important aspects: type of job (engineering/non-engineering), type of the company (domestic/foreign/joint venture), and annual salary offered. The annual salaries offered to the graduates, who had got campus placement, are regarded as the earnings from their jobs.

To analyse the factors responsible for the gender variation in employment probabilities and expected earnings, the following two models are used:

i) Logit Model: This is used to find out the factors determining the gender discrimination in employment of engineering graduates.
ii) Ordinary Least Square (OLS) Technique: This is used in examining the determinants of the gender differences in the offered earnings of engineering graduates.

Keeping in view the possible determinants of gender differences in employment of engineering graduates in the labour market in India, the major hypothesis of the study is: the probability of getting employment in the labour market and the offered earnings differs significantly between male and female engineering students. The explanatory variables used in the regression are broadly categorised as individual characteristics, household factors, student's academic background, student's current education status, and job characteristics. The summary statistics of the explanatory variables used in the analysis is given in Table A2 in Appendix.

Determinants of Gender Discrimination in Employment

During the process of recruitment of engineering graduates, companies primarily consider their academic and current educational backgrounds, individual characteristics and household factors, besides some other specific aspects such as willingness to work in a particular place, expected salary etc.. Academic and current educational background here relates to past academic information and present educational background of graduates. Information relating to senior secondary level of education, such as whether students were taught in English or not and percentage of marks scored in the senior secondary examination, are regarded as academic background of graduates. Likewise, current

[7] Major companies represented at different engineering institutions in Delhi for the campus placement in the 2009-10 academic year, as mentioned in the mandatory disclosure of different institutions, included Microsoft, McKinsey, International Business Machines, Tata Consultancy Services, Computer Science Corporation, Maruti, Tata Motors, Samsung, Bharat Heavy Electrical Limited, National Thermal Power Corporation, and Defence Research and Development Organisation, Accenture, Birlasoft, Convergys, I-Flex, Hindustan Computer Limited, Infosys, Sapient, Syntel, Tata Tele Services etc.

educational background comprises factors related to present programme of study, such as the type of institution and department of study that the graduates are enrolled in, whether any formal mechanism is set up by the institution to keep in touch with their alumni, and whether or not they have availed educational loan from commercial banks. An attempt is made in this section to find out how the effect of these factors on employment of engineering graduates differ by gender, using binary logistic regression. Three separate logit equations (male, female and total) are estimated for this and take the following form:

$$Employment = \alpha + \beta_1 Gender + \beta_2 Mgtpvt + \beta_3 Deptit + \beta_4 Secmarks + \beta_5 Secmed + \beta_6 Eduloan + \beta_7 Alumni + \beta_8 SC + \beta_9 ST + \beta_{10} OBC + \beta_{11} Fathocpprf + \beta_{12} Fathocpbsn + \beta_{13} Fathsch + \beta_{14} Mothsch + \varepsilon \quad (Eqn.\ 1)$$

Where,

Employment = whether graduates have been employed or not, which is a dummy variable and defined as

1, if the graduates have been employed and 0, otherwise, i.e. if the graduates have not been employed

α = constant
βi = respective coefficient of the explanatory variables
ε = error term

Explanatory Variables

Gender[8]*:* Despite significant progress of the female participation in the workforce in recent decades, labour markets across the world (specifically in less developed and developing countries) remain divided along gender lines, and improvement towards gender equality seems to have been stalled (Woytek et al., 2013). It is generally observed that, other things being equal, employers coming for on-campus recruitment prefer male to female candidates. They might feel that male employees tend to work for longer hours, while females have family obligations. Further, recruiting a male candidate will help the companies transfer employees to different locations of their establishments. Moreover, the problem of gender discrimination in the job market is predominantly visible in the engineering sector, where male candidates are strongly preferred over females. Considering these popular observations, one can expect that, other things being equal, companies coming for on-campus recruitment would prefer to hire male graduates as compared to females.

Gender = 1, if the students are male
= 0, otherwise i.e. if the students are female

Type *of Institution:* Companies generally prefer employing graduates of government institutions as compared to private institutions. This may be due to the quality and brand name (if any) differences between these two types of institutions. Very often, it is seen that graduates of government institutions are better trained than the private institutions due to the availability of experienced faculty and requisite physical infrastructure. The level of competition to enter some of the public technical educational institutions such as the Indian Institutes of Technology (IITs), National Institutes of Technology (NITs) is very intense as

[8] GENDER is used as an explanatory variable only in the equation where male and female are taken together.

graduates from these institutions command better job opportunities and higher incomes than those from other institutions. In the global ranking of educational institutions, IITs and other public-funded educational institutions rank among the topmost and influence parental decision to enrol their children in these institutions.[9] Therefore, it is interesting to analyse how the type of institution matters in gender differences in employment.

Mgtpvt = 1, if the students have enrolled in private institutions
= 0, otherwise, i.e., if the students have enrolled in government institutions

Department *of Study:* Another important factor that may determine the employment of graduates is the choice of department of study. Due to large scale expansion of IT sector in India in recent years, one can expect that graduates from IT-related courses will have higher probability of getting employment than their counterparts from the traditional courses. However, the global economic downturn, that started in the end of 2008, had a significant impact on the job market in India, particularly in IT-related areas with a consequent adverse impact on the graduates of these courses. Thus, at this juncture, it is important to analyse the influence of the choice of departments on employment. In addition to this, analysing the gender discrimination in the employment of graduates by department of study is an important concern to examine. Men are much more likely than women to study traditional courses in engineering; a factor which greatly enhances their prospects of getting a job offer in the labour market. It is likely that the employers may prefer female graduates from IT-related courses and male graduates from traditional courses, mainly due to the nature of job they are expected to perform.

Deptit = 1, if the students have enrolled in IT-related departments
= 0, otherwise, i.e. if the students have enrolled in traditional departments

It is commonly felt that the academic background of the graduates has a significant effect on their getting a job due to the fact that they can perform well in the selection process and, in the process, have greater chances of securing employment than the graduates with poor academic backgrounds. Considering this, two factors related to academic background (percentage of marks scored and whether or not English is the medium of instruction at the senior secondary level of education) are included in the analysis. The common understanding here is that with more or less the same academic background, employers treat male and female differently in the recruitment process. For example, a male is preferred to a female with weak academic performance if the job is in a remote area or involves frequent travelling.

Percentage *of Marks Scored at Senior Secondary Level*[10]*:* Graduates scoring higher percentage of marks in senior secondary examination may have a better chance to be

[9] Four IITs (Delhi, Kanpur, Kharagpur, and Roorkee) have been placed within the top 400 institutions in the world university rankings 2013-14 done by the Times Higher Education, UK. Similarly, five IITs (Delhi, Bombay, Kharagpur, Kanpur and Madras) are among the top 20 institutions in the 2014 QS University Rankings, which grades higher education institutions of the BRICS countries-Brazil, Russia, India, China and South Africa.

[10] Percentage of marks scored by the students in the first three years of their engineering course would have been a better indicator to measure the quality of graduates than the percentage of marks scored in senior secondary examination, as considered in the present analysis. However, this information was not collected in the survey.

employed than those scoring comparatively less. This is because most of the companies coming for campus recruitment also take note, in their selection process, of the previous academic background of the graduates. Further, it is important to find out its effect on employment and earnings by gender.

Medium *of Instruction in Senior Secondary Level:* It is widely felt that graduates with English as a medium of instruction will be able to perform better in the selection process and have a fair chance to get employment vis-à-vis graduates with Hindi or regional language as their medium of study at the senior secondary level. The effect of this on gender- wise variation in employment and earnings are also discussed.

Secmed = 1, if the students have been taught in English medium
= 0, otherwise, i.e. if the students have been taught in non-English medium

Alumni *of the Institutions:* Engineering institutions usually develop formal mechanisms to keep current students in touch with their fellow graduates via group mails, organising annual alumni meeting etc.. This helps graduates discuss the employment perspectives after completion of their programme of study. Fellow graduates share their job experiences and give guidelines to the fresh graduates which help them get a better job. Thus, one can expect that students enrolled in institutions having a formal mechanism to keep in touch with their fellow graduates/alumni have higher likelihood of getting employment in the labour market than those enrolled in institutions having no formal mechanism set up for alumni contact. It is generally acknowledged that the impact of alumni contacts on employment is more effective among males than females. This is perhaps for the obvious reason that in institutions having a formal and common mechanism to keep in touch with their alumni, male students take advantage of it by readily talking to their seniors whereas the females are somewhat reluctant to do so.

Alumni = 1, if there is any formal mechanism in the institutions to be in touch with their alumni
= 0, otherwise, i.e. if there is no formal mechanism in the institutions to be in touch with their alumni

Educational *Loan:* Graduates availing educational loan from commercial banks would have higher likelihood of securing employment in the labour market. It may be due to the fact that they have financial responsibility that prompts them to take any job on completion of their programme of study. Male graduates with educational loan would be more keen to take the job than females. This is because the educational loan availed by female graduates are usually borne by their parents whereas in the case of most of the male graduates, they themselves take the responsibility of repaying the loan.

Eduloan = 1, if the students have availed educational loan from commercial banks
= 0, otherwise, i.e. if the students have not availed educational loan from commercial banks

Social *Category:* It is included as an explanatory variable to assess the impact of social category in getting a job in the engineering labour market. It is generally observed that majority of the companies, coming for on-campus recruitment, belong to the private sector that does not offer the reservation facility to students belonging to Scheduled Castes (SCs), Scheduled Tribes (STs) and Other Backward Classes (OBCs). This may lead to higher chances of securing employment by general category students than those belonging to SCs,

STs and OBCs. The effect is expected to be higher among females than males i.e. the female graduates from SC, ST and OBC will have less chance to get a job offer than males belonging to similar social category as they face double disadvantages, being female while also belonging to lower social strata.

SC = 1, if the students belong to Scheduled Castes
= 0, otherwise
ST = 1, if the students belong to Scheduled Tribes
= 0, otherwise
OBC = 1, if the students belong to Other Backward Classes
= 0, otherwise
General (reference category) = 1, if the students belong to non-SC, non-ST and non-OBC
= 0, otherwise

Occupation *of the Father:* Generally, it is felt that the parents' occupation influences the probability of their wards getting employment. For example, a student's father, who is engaged in the engineering sector, helps his/her child to get a job easily. Information on occupation of the parents was collected from 16 occupation categories and these are re-classified here into three groups viz. (a) professional or technical worker; (b) businessmen; and (c) others. The reclassification was done mainly due to lesser numbers observed in many of the occupation categories such as clerical and related workers, service workers, farmers, fishermen and related workers, skilled workers (foreman, craftsman etc.), unskilled workers (ordinary labourer), retired, and workers not classified by occupation (athlete, actor, musician, unemployed, partially unemployed). All these occupation categories were included in the category of 'others'. The 'professional or technical worker' includes both junior and senior professional workers like doctor, professor, lawyer, architect, engineer, nurse, teacher, editor, photographer and bank employees. As there is a general view that sons follow the occupation pattern of their fathers more than daughters, the effect of father's occupation on employment will be greater for male graduates as compared to females. It is pertinent to note here that while mother's occupation may be an important factor in determining the employment, it is, however, not included in the analysis. This is because there is not much variation in the mother's occupation as three-fourth of them are housewives, and, thus, it may not make much sense to include the same in the analysis.

Fathocpprf = 1, if father's occupation is professional work
= 0, otherwise
Fathocpbsn = 1, if father's occupation is business
= 0, otherwise
Fathocpoth (Reference Category) = 1, if father's occupation is others (occupation other than professional work and business)
= 0, otherwise

Educational *Level of the Parents:* Educated parents (also other educated adult members of the household) are more aware of the benefits of education and invest more for providing quality education to their wards, as has been established in a number of studies (Kanellopoulos and Psacharopoulos, 1997; Dang, 2007; Masterson, 2012; Saha, 2013). Therefore, a positive association between parents' education and the employment scope of graduates is usually expected. More educated parents are also well informed about the job market and give tips to their children on how to get a job without much difficulty. This has a

positive influence on the scope of employment of such children compared to those whose parents have not gone in for higher level of education. To examine this fact, students were asked to report the highest level of education of both father and mother. In the analysis, the levels of education were converted to years of schooling, as it is considered as a better indicator and has been extensively used in the literature rather than the level of education. Many studies in the context of developing countries have widely observed a pro-male bias in household spending on education and a few of these have also confirmed that the variation in household investment on education by gender is primarily due to the parents' preference for better quality education for boys (by investing more) over girls (Kingdon 2005; Aslam and Kingdon 2008; Lancaster et al. 2008; Himaz 2009; Zimmermann 2012; Azam and Kingdon 2013). For example, parents send their sons to good quality coaching centers for preparing them to get a seat in prestigious engineering institutions such as the IITs and hesitate to invest on girl children and do not mind if she gets admission in any of the institutions. Thus, it is likely that the probability of employment among male graduates will increase more (compared to female graduates) with the increase in the parents' level of education, as parents are more anxious to facilitate their son getting a job (through investing more and providing quality education to him) rather than their daughters.

Result and Discussion

The survey data reveals that only 32 per cent of the graduates got employment in the year 2009-10. The possibilities for the low employment may include: (a) companies might have come for the recruitment of graduates from specific department of study; (b) companies may have low manpower needs and hence, recruited fewer graduates; and (c) graduates might not have liked the jobs they had been offered, possibly due to mismatch of their expectations with that of the companies on earnings, job location and other employment-related factors. Besides, around one-third of the students have wished to go in for higher studies on completion of their undergraduate programme, which may be one of the reasons for not accepting the offer through campus placement. In our sample, 40 per cent of males and 25 per cent of females received job offers in 2009-10. Also, logit results show that all else being equal, male students are more likely (by five percentage points) to be employed in the job market than females (column 2, Table 1). This finding is in agreement with literature, which emphasises that science and engineering jobs have been traditionally male-dominated and women find themselves at a disadvantageous position with regard to them (Morgan, 1998; Graham and Smith, 2005; Rao, 2007). The gender difference in employment may also be attributed to: (a) the lack of adequate and suitable employment opportunities for women, and (b) deliberate discrimination against women in the job market, based perhaps on the employers' perception of women's productivity or simply the prejudice against women. The descriptive as well as logit results provide strong and robust evidence of gender discrimination in the employment of engineering graduates. The concern here is how much of such differential in the job offer between men and women can be explained by taking into account the different individual, human capital and institutional factors.

The logit estimates reported in Table 1 show that the type of institution the graduates have enrolled in has the strongest influence on their employment. As revealed from the marginal effect, graduates of private institutions had 36 percentage points less chance of

getting employment compared to graduates from government institutions. It is commonly observed that government institutions in India provide better quality engineering education and graduates from these institutions have higher scope of employment in the labour market compared to students from private engineering intuitions (Choudhury, 2013). Further, both male and female graduates from government institutions are more likely to get jobs compared to private institutions. Interestingly, the effect of the type of institution on employment is higher among females than males. All else being equal, women (men) students from the private engineering institutions are 51 (34) percentage points less likely to get job offers than the students from government engineering institutions (column 7 and 10, Table 1). Therefore, this supports the already stated argument that the lower participation of female graduates in the labour market is primarily due to their poorer access to government engineering institutions. Of the total female students surveyed in this study, as high as 75 per cent are from private institutions. In India, parents usually seek better quality education for boys compared to girls and, therefore, send their sons to prestigious engineering institutions such as IITs, and do not mind if the daughter gets admission in any of the institutions.

TABLE 1

Gender Differences in the Employment of Engineering Graduates: Logit Estimate

Variable	*Total*			*Male*			*Female*		
(1)	*Coeff. (2)*	*S.E. (3)*	*M.E. (4) (dy/dx*)*	*Coeff. (5)*	*S.E. (6)*	*M.E. (7) (dy/dx*)*	*Coeff. (8)*	*S.E. (9)*	*M.E. (10) (dy/dx*)*
Mgtpvt	-1.65***	0.22	-0.36	-1.56***	0.23	-0.34	-2.51***	0.83	-0.51
Deptit	0.14	0.22	0.03	0.23	0.23	0.05	-1.19*	0.81	-0.24
Secmarks	0.03**	0.01	0.01	0.02*	0.01	0.00	0.07*	0.05	0.01
Secmed	0.27	0.31	0.06	0.20	0.32	0.04	0.56	1.51	0.08
Alumni	0.25*	0.19	0.05	0.41**	0.21	0.09	-0.79	0.63	-0.13
Eduloan	-1.16***	0.24	-0.22	-1.01***	0.25	-0.20	-2.81**	1.18	-0.30
Gender	0.22*	0.26	0.05	...	...	...	...	...	...
SC	0.09	0.36	0.02	-0.02	0.39	0.00	2.48*	1.48	0.55
ST	-0.68*	0.42	-0.13	-0.91**	0.46	-0.17	1.43	1.53	0.31
OBC	-0.58*	0.47	-0.11	-0.68	0.51	-0.13	1.46	1.48	0.32
Fathocpprf	0.02	0.28	0.00	-0.10	0.29	-0.02	1.02	1.28	0.15
Fathocpbsn	0.19	0.32	0.04	0.25	0.33	0.06	-0.41	1.46	-0.07
Fathsch	-0.05	0.06	-0.01	-0.02	0.07	0.00	-0.75**	0.32	-0.13
Mothsch	0.09**	0.04	0.02	0.11**	0.04	0.02	0.29*	0.20	0.05
Constant	-2.54**	1.25		-2.62**	1.23		2.35	5.63	
Log-Likelihood	-357.69			-304.24			-41.68		
Pseudo R^2	0.16			0.15			0.35		
Observations	657			552			105		

Note: (a) ***significant at 1 per cent level of significance; **significant at 5 per cent level of significance; *significant at 10 per cent level of significance

(b) (*) *dy/dx* is for discrete change of dummy variable from 0 to 1

The availing or not availing of educational loans from commercial banks by the students emerged as the second most important factor in determining the employment of graduates.

The results show that students who availed educational loan were less likely to get employment than those not availing the loan. More clearly, as shown in the marginal effect, students availing educational loan had 22 percentage points less chance of getting employment than those who have not taken it. This is not in line with the general observation that the students availing loans have financial obligations and, hence, have a higher chance of joining the job market. It is worthwhile to mention here that of the total number of students who have availed educational loan from commercial banks, around 35 per cent have planned to go in for further studies and may not have given priority to employment. As expected, the effect of availing educational loan on employment is higher for females compared to males. The values of the marginal effect show that male students, who have availed educational loan, are less likely to get job offer by 20 percentage points whereas in the case of females, it is 30 percentage points. It supports the argument that the educational loan taken by female graduates are usually borne by the parents whereas in the case of most male graduates, they themselves bear the responsibility of repayment of the loan by going in for employment in the labour market.

The third most important factor determining the employment of graduates is their social category. Engineering graduates of STs and OBCs are less likely to get employment compared to graduates from the 'general' category. Employers may not prefer the graduates belonging to these social categories in recruitment. Approximately 33 per cent of graduates from general category got employment, whereas it was 26 per cent for OBCs, 19 per cent for STs. The effect of social category on gender discrimination in the employment of graduates gives rise to some interesting findings. The male graduates belonging to SCs, STs and OBCs are less likely to get job offer than the general category students whereas the opposite is the case for females wherein students belonging to SC, ST and OBC are more likely to get jobs compared to the general category. It is interesting to note that SC female students are 55 percentage points more likely to be employed compared to general category students and statistically significant at five per cent level of significance. This does not support the view that female students belonging to lower social category (double disadvantaged) have lower chances of getting employment. The finding rather encourages larger participation of women from socially disadvantaged sections of society in engineering education.

The logit estimates show that the graduates from the institutions having formal mechanism of keeping in touch with their fellow graduates (*Alumni*) have a five percentage points' higher chance to get employment than students from institutions having no provision of alumni association. It is perhaps due to the fact that institutions having alumni association make efforts to organise talks and group discussions between the graduates and alumni on job market details, that they facilitate their graduates in getting employment. In the case of only males, having alumni association in the institute increases the likelihood of getting placement in the job market. However, having or not having any alumni association in the institution does not influence the placement of female graduates in the job market as the coefficient is statistically not significant (column 8, Table 1). This is in accordance with the general view that male students take advantage of the existence of alumni contact in the institute by interacting with their seniors, whereas female graduates are somewhat reluctant in this regard.

Among the two explanatory variables included under students' academic background, percentage of marks scored in the senior secondary examination (*Secmarks*) is statistically significant in determining the probability of getting employment (the result is significant at five per cent level). It appears that the companies coming for on-campus recruitment take

into account the performance of the graduates at higher secondary level besides looking into their knowledge and skill acquired in the engineering course. Similar picture emerges from the analysis of both male and female graduates, except the fact that its effect is marginally higher for females than males. This finding is in consonance with the literature, which emphasises that human capital variables might be expected to capture a large portion of the gender variation in employment opportunities (Paula Stephan, 1996). The medium of instruction followed in the senior secondary level of education turned out to be statistically not significant. The general impression that the teaching in English medium compared to non-English medium helps graduates get a job easily is not supported in the study.

The results show that education of the mother is positively related with the employment of engineering graduates. With the increase in the mother's years of schooling by one year, the probability of getting employed in the job market will go up by two percentage points. Between males and females, the effect of mothers' education on getting job offer is higher among females as compared to males. Having an educated mother in the family raises the likelihood of employment by two percentage points for males and five percentage points for female graduates. It is found that for all the three equations, the effects of other two related factors (father's occupation and educational attainment) are statistically not significant.

It is important to mention here that the department of study turned out to be statistically not significant in the determination of employment of graduates, though gives expected signs, except the female equation. The evidence does not support the hypothesis that higher proportion of graduates in courses such as electronics and commucation engineering, computer science and engineering, information technology etc. get employment compared to graduates of courses like electrical engineering, mechanical engineering and civil engineering. The difference in getting employment is found to be very less between the students of traditional and IT-related courses, with 33 per cent of graduates in traditional departments and 30 per cent in IT-related courses securing employment in 2009-10. Hence, the general opinion that the demand for IT-related courses is mainly due to its employment providing capacity is not supported in the present case. Perhaps this is on account of the global economic slowdown, which had affected the Indian job market, particularly the IT-related fields, very badly. However, this issue does require further and in-depth investigation.

Determinants of Gender Discrimination in Earnings

In this section, an attempt is made to find out the determinants of wage differentiation among male and female engineering graduates using OLS technique. Explanatory variables included in the model are: academic and current educational background of students, job characteristics, and individual and household factors. Equation used for OLS estimation is as given below:

$$lnEarnings = \alpha + \gamma_1 Gender + \gamma_2 Mgtpvt + \gamma_3 Deptit + \gamma_4 Jobtype + \gamma_5 Compforeign + \gamma_6 Compjoint + \gamma_7 Fathocpprf + \gamma_8 Fathocpbsn + \gamma_9 Fathersch + \gamma_{10} Secmed + \gamma_{11} Secmarks + \varepsilon \quad \text{(Eqn. 2)}$$

Where,

lnEarnings = annual earnings of engineering graduates (in logarithmic form)

α = constant

γ_i = respective coefficient of the explanatory variables

ε = error term

Explanatory Variables

Though the general tendency is to accept a job with higher earnings, in some cases, students accord higher priority to the nature and field of employment, place of posting, type of company etc.. For example, students may opt for jobs with relatively less salary in their native city or state than jobs with higher pay in faraway places. Hence, it is likely that the earnings of the graduates may differ significantly with the nature and field of job. Though this is the overall picture, its impact on earnings is expected to vary between male and female graduates. For example, there is a higher chance among female graduates to get compensated with additional earning if they are posted in odd locations (mainly places far away from their native towns/city) whereas this may not be the case for male graduates. Similar is the case if the female graduates happen to be posted in a job other than their preference. Considering this, the OLS estimation includes two factors related to job market, namely field of employment and type of company in which students have got their employment; in addition to other explanatory variables (individual characteristics, household factors, academic background of the students, and current education status of students) that are used in the logit model and have been discussed in Section 3.

Field of Employment: Occupational difference by gender is an important characteristic in the Indian labour market and this has further contributed to the difference in the earnings. In the survey, graduates were asked to mention the field of the job secured by them through on-campus requirement. Jobs in which students are employed are classified as engineering and non-engineering. Jobs in engineering field include professional and technical works, whereas non-engineering jobs include human resource, marketing etc.. Of the total number of students to have received job offers on their graduation, 78 per cent have opted for engineering-related jobs while the rest have gone in for non-engineering jobs. The variable is defined as follows:

Jobtype = 1, if the students have been employed in engineering-related jobs;
= 0, otherwise, i.e. if the students have been employed in non-engineering related jobs.

Individuals select their occupation to derive the maximum utility from it, which, in turn, depends upon the earnings and other job-related benefits, covering both pecuniary aspects (like health and pension benefits) and non-pecuniary ones such as overall job satisfaction. One can expect that the choice of the type of job may be an important determinant of earnings for both male and female students. A comparatively higher percentage of male graduates as against their female counterparts are in engineering- related jobs (79 per cent against 74 per cent). It appears that the companies going in for campus recruitment prefer males for engineering jobs and females for non-engineering jobs.

Company Type: Companies that came for on-campus recruitment to different institutions in Delhi are categorised as domestic, joint-venture and foreign. About half of the male students got their jobs in foreign companies followed by domestic companies (41 per cent), with only 14 per cent securing jobs in joint-venture companies. On the other hand, majority of the female students got their jobs in domestic companies and restricting largely to this may limit their earnings. The 'type of company', included as an explanatory variable in the determination of annual earnings of the graduates, is based on the hypothesis that

graduates employed in foreign companies will earn more, followed by those in the joint-venture companies, with those employed in the domestic companies earning the least.

Dummy variables for type of company are defined as:

Compforeign = 1, if the students have been employed in a foreign company;
= 0, otherwise, i.e. if the students have not been employed in a foreign company.

Compjoint = 1, if the students have been employed in a joint-venture company;
= 0, otherwise, i.e. if the students have not been employed in a joint-venture company.

Compdomestic = 1, if the students have been employed in a domestic company;
= 0, otherwise, i.e. if the students have not been employed in a domestic company.

The *Compdomestic* is taken as the reference category in the analysis.

Result and Discussion

Since pay is the primary reason for most people to work, earning expectations are very important for graduates (Carvajal et al., 2000). In this study, of the 377 engineering students securing employment through on-campus recruitment, around 80 per cent have reported their first year earnings offered, which was Rs. 4.43 lakh per student per annum on average. The annual average salary offered to the male students was Rs. 4.5 lakh while the females received Rs. 3.98 lakh. The OLS results show that male engineering graduates earn around 54 per cent more than females, as expected (column 2 Table 2). Several other studies have also found similar results, both in India and elsewhere (Kingdon, 1998; Toumanoff, 2005). What are the different factors contributing to gender differences in the earnings of engineering graduates? Not surprisingly, the institutional factors tend to be the strongest and significant determinant of earnings. Students from government engineering institutions, like IITs, earn significantly more than those from private engineering institutions. Annual average earnings of graduates from private institutions are 43 per cent less than those from government institutions.

Difference in the earnings may be due to the fact that students from government institutions are more skilled and competent (because of the quality education) compared to the students of private institutions and, hence, can bargain for higher salary. The main reasons emphasised in different studies for better quality education provided in government institutions in India include the availability of trained faculties and physical infrastructure such as laboratories, classrooms, hostels etc..[11] As revealed in the institutional questionnaire of the survey, in 2009-10, the average number of faculty in government engineering institutions was 140 whereas it was 90 in private institutions. Furthermore, the average number of faculty with Ph.D. qualification was 123 in government institutions while it was merely 12 in private institutions.[12] Similarly, the average number of books and journals available in the libraries of government engineering institutions was 133000 whereas it was

[11] See Rao (2006); and Biswas *et al.* (2010) for a detailed discussion on quality-related aspects of technical education in India.

[12] This large difference is mainly due to the inclusion of IIT Delhi in government engineering institutions where out of 357 full-time faculty, 351 hold Ph.D. degrees. Excluding IIT Delhi, the average number of faculty with Ph.D. qualification in government engineering institutions is 38, which is still three times higher than private engineering institutions.

just 16000 in private engineering institutions. The earning to study in the government engineering institutions is higher for both male and female graduates but with different degree. Male students from private institutions get 46 per cent less salary than government institutions whereas for females, the corresponding figure is 33 per cent. Both the coefficients are statistically significant at one per cent level of significance. This reveals that the choice of institution matters more in respect of earnings of male graduates as compared to females. As discussed in Section 3, the reverse is true as far as employment is concerned i.e. the male students from government institutions are having higher probability of getting a job compared to private institutions and females. This evident that the female students are paid better irrespective of the institutional affiliation once they manage to get a job, which is not the case among male graduates.

TABLE 2

Gender Differences in the Annual Earnings of Engineering Graduates: OLS Estimate

Variable	*Total*		*Male*		*Female*	
	Coeff.	*SE*	*Coeff.*	*SE*	*Coeff.*	*SE*
Mgtpvt	-0.43***	0.08	-0.46***	0.09	-0.33***	0.12
Deptit	-0.07*	0.08	-0.10*	0.09	-0.06*	0.11
Secmarks	0.01**	0.00	0.01*	0.01	0.02*	0.01
Secmed	0.01	0.13	0.01	0.14	0.13	0.20
Gender	0.54**	0.06	...	...	...	...
Jobtype	-0.15**	0.08	-0.20**	0.09	0.10	0.12
Compforeign	0.03	0.07	0.04	0.08	0.09	0.11
Compjoint	-0.07	0.11	-0.08	0.13	0.00	0.13
Fathsch	-0.01	0.02	-0.01	0.02	-0.03	0.04
Mothsch	0.01	0.02	0.01	0.02	0.02	0.03
Constant	0.95	0.49	1.06	0.51	0.17	0.90
R Square	0.21		0.21		0.52	
Adjusted R Square	0.18		0.17		0.35	
F-Value	6.12***		5.64***		3.01***	
Observations	232		198		34	

Note: ***significant at 1 per cent level of significance; **significant at 10 per cent level of significance

The second most important factor determining the offered earnings of graduates is the field of job in which they are employed. Regression coefficient suggests that the graduates employed in engineering firms earn 15 per cent less than the students employed in non-engineering fields. It appears that the companies coming for campus recruitment prefer male students in engineering jobs and female students in non-engineering jobs. This may be one of the macro reasons for less participation of women in the discipline of engineering education in India. It does not support the general presumption and the findings of the study by Graham and Smith (2005) that the earnings in engineering-related jobs are higher than that in non-engineering related jobs. Higher earnings from non-engineering related jobs in India may be one of the important reasons for the recent trend of engineering graduates to work in fields other than engineering. It is surprising to note that the offered earnings of the male graduates, who have got their job offers in the engineering-related fields, is around 20

per cent less than the graduates who have got the offers in non-engineering related fields. But the effect of *Jobtype* on the earnings of female graduates is found to be positive though statistically not significant. More clearly, female graduates who have been offered the jobs in engineering- related fields are paid higher than non-engineering fields.

After type of institution and field of employment, the department of study (*Dept_IT*) emerged as the third most significant factor in determining the annual earnings of students. The payoff to study in IT-related courses is seven per cent less than that of traditional courses. It does not confirm the general opinion that IT-related graduates get higher earnings than the graduates of traditional courses, which requires a detailed probe. However, the impact of the slowdown of IT sector (which started in the middle of 2008) may be an important factor for such a finding. The impact of *Deptit* on earnings varies by gender: for males studying in IT-related courses reduces earnings by 10 per cent; for females studying in IT-related courses lowers earnings by upto 6 per cent. Thus, it is evident that studying in IT-related courses costs more for females as compared to males which may be due to the fact that the female graduates might opt for non-IT jobs which gives them better payoffs.

The human capital variable (academic background of the student) is strongly related to getting higher wages. Out of the two such variables (*Secmarks, Secmed*) included in the model, only the percentage of marks scored in senior secondary examination turned out to be statistically significant and positively associated with the earnings of both male and female graduates. Students with better results in the senior secondary level are offered higher wages while the students with poor performance are earning less. Scoring one per cent more in senior secondary examination raises earnings by one per cent for male and two per cent for female graduates. Chakravarty and Somanathan (2008), using data of 242 final-year students of IIM-Ahmedabad, have also found that academic performance of the students is an important determinant of salary offered to them. An increase of one grade point in the first year Grade Point Average (GPA) is estimated to increase the wage by more than 40 per cent.

Conclusion

The study specifically analyses the gender discrimination in employment opportunities and offered earnings of engineering graduates in Delhi. The author finds that the share of women graduates getting a job offer are less than that of men. Similarly, employers offer substantially higher payoffs to male graduates compared to females. The findings suggest that female graduates are discriminated in both the employment and earnings offered to them. Interestingly, gender differences in earnings are much more pronounced than in job prospects. While some of the gender pay gap can be explained by the nature of the jobs and companies, it has some wider implications like professional inequality between genders. Therefore, the possible reasons of gender differences in the earnings such as women work less, leave early due to family obligations, are reluctant to relocate etc. cannot be avoided. Not surprisingly, the institutional factors (particularly, type of institution and branch of study) are strongly related with the gender discrimination in employment and offered earnings of graduates. Some other important factors responsible for gender discrimination in employment and earnings include the academic background, contact with the alumni, educational level of the mother and social category. The findings of the paper supports the

major hypothesis of the study, i.e. both human capital and socio-economic factors are likely to account for gender discrimination in employment and earnings of engineering graduates.

The lower level of participation among women in the engineering discipline may be partly attributed to gender discrimination in the labour market. More clearly, unfavourable labour market conditions and unattractive educational returns in the form of low wages reduce the participation of women in this discipline. In the case of women, it works as a vicious circle. In a sense, the labour market discrimination reduces women's participation in engineering and less participation, in turn, further reduces their scope to work. Using a household survey data of Andhra Pradesh on employment and wages, Tilak (1980) has also given a similar argument, i.e., in the case of the weaker sections, education and labour market results in a vicious cycle — less amount of education, bleak employment opportunities, unattractive educational returns in the form of low wages and, hence, less investment in education in the future (p. 112). Thus, to increase women's participation in the engineering discipline, among other steps, the gender discrimination in the labour market needs to be minimised.

The findings of the study have a few policy implications. It is important to note here that even though the graduates of private institutions are investing comparatively more than the graduates of government institutions, their probability of employment through on-campus recruitment is less and more so in the case of females. Furthermore, the graduates of private institutions, who have secured employment, earn less than their counterparts from government institutions. Thus, the private engineering institutions need to improve their quality to increase the employability of their graduates in the labour market. Further, providing better quality of education to women, especially by investing on them and creating a women- friendly work environment, are some of the important ways of increasing the scope of employment and earnings of female engineering graduates. Efforts in this direction will not only help bridge the gender gap in the labour market, but also increase the access of females to engineering education.

The paper has two important limitations. The first one is that the choice and measurement of variables were restricted in the analysis, as the study had used data of an international study conducted by NUEPA. Information on some of the important variables would have been collected and used to enrich the quality of analysis of the study. For example, the study has examined only the effect of demand-side factors on gender differences in employment and the offered earnings of engineering graduates. Due to the lack of information in the survey data, supply-side factors of labour market are not considered in the analysis, even though they are expected to affect the gender discrimination in the labour market. Different employers/companies, coming for the campus placement to recruit engineering graduates, have their own polices for employees that differently influence the choice for a job between male and female graduates in the labour market. For instance, the female graduates may consider the working conditions (specifically transfer, and maternal and child-care policies) of the employers seriously before accepting the job offer. On the other hand, male graduates are more concerned about the offered earnings rather than other terms and conditions.

Second, the analysis was carried out by considering only Delhi as the area of study and similarly, it has focused only on engineering education without including other disciplines of higher education. Therefore, any generalisation or extrapolation of findings to the rest of the country needs to be done cautiously. However, as Delhi is the capital city of India, where

students have converged from different parts of the country as also from different socio-economic settings to pursue their undergraduate level engineering programme, these results can, as such, be generalised to some extent. Out of all the students surveyed for the study, 60 per cent were from Delhi with the remaining 40 per cent coming from 20 other major states of India. Nevertheless, the study has made a unique start in taking some of the very important factors in analysing the gender discrimination in the employment and earnings of engineering graduates. Promising avenues for future research may include examining the gender discrimination in labour market by considering the graduates who are already in the labour market, studying the employer's perspective (supply side factors) on engineering labour market etc.. There is also a need for comparative studies to find out whether these results can be generalised in other fields of technical and professional education such as management, law, and medicine, as the present study is only limited to engineering education.

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Appendices

TABLE A1

Institution-wise number of Students surveyed for the Study

Sl. No.	*College Name*	*Institution type*	*Students Surveyed*
1.	Indian Institute of Technology, Delhi	Central Government	73
2.	Faculty of Engineering and Technology, Jamia Milia Islamia	Central Government	103
	Sub-Total (Central Government)		*176*
3.	Ambedkar Institute of Technology	State Government	68
4.	Delhi College of Engineering	State Government	159
5.	Netaji Subhash Institute of Technology	State Government	76
	Sub-Total (State Government)		*303*
	Total Government (State + Central)		*479*
6.	Bharati Vidyapeeth's College of Engineering	Private	56
7.	Guru Premsukh Memorial College of Engg.	Private	201
8.	Guru Teg Bahadur Institute of Technology	Private	49
9.	HMR Institute of Technology and Management	Private	109
10.	Maharaja Agrasen Institute of Technology	Private	87
11.	Maharaja Surajmal Institute of Technolgy	Private	197
	Total (Private)		*699*
	Total		**1,178**

Source: Compiled by the author from NUEPA survey data.

TABLE A2

Summary Statistics of the Variables used in the Logit and OLS Model

Variables	*NOB*	*Mean*	*SD*	*Min*	*Max*
Dependent Variables					
Employment	1178	0.36	0.48	0	1
LnEarnings*	232	443	0.56	151	738
Individual Characteristics					
Gender	1178	0.84	0.37	0	1
SC	1178	0.10	0.30	0	1
ST	1178	0.05	0.22	0	1
OBC	1178	0.07	0.25	0	1
General	1178	0.78	0.42	0	1
Household Factors					
Fathocpproff	1178	0.63	0.48	0	1
Fathocpbsn	1178	0.22	0.42	0	1
Fathocpoth	1178	0.15	0.36	0	1
Fathsch$	1104	14.64	1.89	0	16
Mothsch$	1070	13.42	3.09	0	16
Student's Academic Background					
Secmarks@	1178	77.58	9.23	45	99
Secmed	1178	0.85	0.35	0	1
Student's Current Education Status					
Mgtpvt	1178	0.59	0.49	0	1
Deptit	1178	0.76	0.43	0	1
Eduloan	1178	0.24	0.42	0	1
Alumni	657	0.38	0.49	0	1
Job Characteristics					
Jobtype	287	0.78	0.41	0	1
Compforeign	302	0.45	0.49	0	1
Compjoint	302	0.14	0.35	0	1
Compdomestic	302	0.41	0.49	0	1

Notes: (a) The number of observations (NOB) is 1,178 except for some variables with missing information. Weighted means and standard deviations (SD) are reported, which were corrected for the differences in sampling probabilities.

(b) * = Rs. in thousand; $ = years of schooling; @ = percentage of marks

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A Model to Evaluate Teaching and Institutional Performance in Higher Education

— A Case Study of HBTI, Kanpur

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Abstract

The evaluation of teaching-learning and institutional performance in higher education has become imperative to meet the objective of raising the quality of education according to changing economic and social requirements. In this context, a model is proposed in this paper that focuses on the matter related to formulation of suitable methods for cardinally evaluating faculties' teaching performance and separately, the overall performance of an educational institution. This also suggests how to frame questionnaires for collecting information required for evaluation and how to interpret and analyze the data. The model is based on the approach of 'quality-rating' and 'utility creation' for the stakeholders. The method of feedback from main stakeholders of the educational institution is adopted for quality-rating. In order to demonstrate its application, a case study of Harcourt Butler Technological Institute (HBTI) has been considered.

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Introduction

A major development in higher education worldwide, over the last two decades, has been focused on the issues of institutional performance measurement and evaluation of faculty performance. There is inter-linking between faculty quality and institutional performance. A high standard educational institution can attract and retain quality faculties and, consequently, can produce quality students to meet the continuously changing demands of the modern workplace.

The political, economic and industrial issues surrounding 'educational effectiveness' are sensitive regarding the macro and micro economic importance of teacher quality and quality of teaching for equipping students adequately to cope with the changing environment [Ingvarson and Ken: 2007]. Globally, it is accepted that a comprehensive faculty performance review is necessary for any academic institution looking forward to maintain a high standard of excellence, effectiveness and accountability [Aubrecht: 1984]. The goals of faculty performance review are to assess the individual job performance to promote faculty development and productivity [Centra: 1977].

The OECD countries in 2001 and 2005 at the Paris Convention unanimously decided that the objective of education must be aimed at how to raise the quality of learning for all [OECD: 2001, 2005]. In order to fulfil this objective, "the teachers are to be equipped with subject-matter knowledge and evidence and standards-based repertoire of pedagogical skills that are demonstrably effective in meeting the developmental and learning needs of all students for whom they have responsibility- regardless of students' backgrounds and intake characteristics, and whether or not they experience learning difficulties [Coltheart and Prior: 2007]. It is imperative that a minimum required standard of quality of an educational institution is to be maintained to ensure the above requirements for fulfilment of the objective of raising quality of learning. In recent years, there have been national and international pressures on higher educational institutions to adopt industrial concepts, formulae and techniques to their educational systems. Following the trend in industry, the higher education has chosen to base its performance measurement initiatives on the notion of 'quality' [Pounder: 2000].

In this paper, an attempt has been made to develop and demonstrate the method for separately evaluating teaching-learning process (in terms of faculty performance in teaching) as well as overall institutional performance, especially in technical-educational institutions. The study is mainly based on primary data collected by us. The quality-rating approach, based on feedback of stakeholders, is adopted for both. The formats of the questionnaire for feedback collection are designed in such a manner as to make it easy for respondents to fill it up. The open-ended questions are also included, wherever necessary, in questionnaires. The main objective of this study is to find out strengths and weaknesses in teaching and its linkages with institutional performance and accordingly, to suggest remedial measures for improvement. HBTI, Kanpur, being one of the oldest technical-educational institutions in India, was selected for the case study.

Since the year 2003, our Institution (HBTI, Kanpur) has been adopting the practice of evaluating and analyzing the faculty performance in class-room teaching and overall performance of the Institute for its use for various purposes. This practice is also adopted by other premier educational institutions in the country like IITs. They use varying methods for the above exercise. In our Institution, this work has been continuously assigned to us. We

have developed on our own some methods of evaluation of faculty performance in class-room teaching and overall performance of the whole Institute on the basis of our past experience, statistical knowledge, observation of the evaluation practices being adopted by other premier institutions and universities as well as of trial and error processes. The methods, as developed by us, have been experimented several times. Each time, the results obtained for our Institute through these methods were cross-checked by the fact, and we found that the variation between estimated results and the fact is negligible. Moreover, many experts from various premier institutions and universities, visiting our Institute from time to time for National Accreditation to the Institute, have thoroughly examined these methods and compared the estimated results, as obtained through these methods, with the fact and they appreciated and recommended the same for publication. Thus, the evaluation tools as developed by us were a reliable and valid instrument.

The main objective of writing this article is to develop some methods as also demonstrate their applications for evaluating faculty's teaching and overall institutional performances as well as for interpreting and analyzing the data and the estimated parameters. We call it a model with the understanding that it consists of a group of evaluation tools, model questionnaires for collecting information, methods of data collection etc. which can be uniformly adopted by higher educational institutions within the country and abroad intending to assess periodically their teachers' and institutional performances. This is an empirical model which can be experimented universally, and moreover, it fulfils many requirements of model-building in social sciences.

The paper consists of four sections, including introduction and concluding remarks.

Evaluation of Teaching-learning

The teaching-learning is a continuous process in educational institutions and goes beyond classrooms. In assessing faculty performance in colleges and universities, three aspects-teaching, quality of publications and personal qualifications of a faculty is usually considered [Centra: 1977]. In the USA, class-room teaching and research are given equally high weightage in assessing faculty performances in colleges and universities [Astin and Lee: 1967]. In Australian universities and colleges, high weightage is given to classroom teaching in faculty performance assessment [Ingvarson and Ken: 2007]. As stated earlier, OECD countries have laid more emphasis on classroom teaching and pedagogical skills of the teachers in order to raise the quality of learning for all. The 'classroom' teaching has been universally accepted as an extremely critical factor for evaluating the quality of learning and for assessing faculty performance. 'Faculty performance' and 'faculty quality' are two different aspects of faculty evaluation. The faculty quality is essential for faculty performance in classroom teaching. In this section, the teaching-learning is evaluated in terms of faculty's performance in teaching.

For evaluation of teaching performance of a faculty, multiple methods and multiple sources of data are now widespread all over the world. Students, colleagues (peer review) and self-reflection (teaching dossiers) are the main sources for assessing faculty performance in teaching [CRLT: 2012]. The students are considered as more reliable and viable source for the above purpose. Out of multiple complementary methods, students' systematic rating method is universally adopted.

In higher education, a student is considered as the best judge of his/her teacher in so far as the teaching-learning is concerned. In the teaching-learning process, the student is the end-product and the biggest beneficiary who can well judge the benefit that he/she receives from the teacher. The bias in the students' rating method for assessing teachers' performance would be minimum as compared to other methods. This single method can give reliable results. Thus, this method is largely preferred by many esteemed academic institutions for evaluating teachers' performance in classroom teaching

In our study, we adopted 'students rating method' for evaluation of faculty performance in teaching. The study encompasses both class-room teaching and also teaching beyond class-rooms. Students' feedback at the end of a semester was collected through a well designed questionnaire [see format in Appendix-I]. A total of 20 parameters related to teaching-learning are taken into consideration. All these parameters are designed in question forms. For each parameter, there are three rank-values, of which a student has to choose only one. No doubt, the parameters are subjective by nature which depends on students' thinking and perception. It is quite obvious that the subjective evaluation of one parameter will vary from student to student. There will be some degree of both positive and negative bias. By the process of averaging in estimation, the bias is minimized. Thus, the chance of subjectivity creeping into the findings is the least.

Again, for developing the method to evaluate teaching-learning, the students' learning objective was taken into consideration. The students not attending classes regularly (ie. class attendance less than 75% in a semester) were excluded from our sample as their feedback about teachers' performance may not have been reliable.

The evaluation of teaching-learning and faculty performance in teaching at HBTI, Kanpur is done as follows:

Methodology

A sample survey of students of different years and branches in even semester: 2011-12 was conducted for eliciting feedback. The sample size was around 20% of total students in a course. For the survey, the random sampling method was adopted in order to ensure a representative sample. In the student-feedback questionnaire, there are 20 attributes related to teaching in question form (called as variable) that are to be rated by the students for a faculty in a course being taught by the latter. There are three rank options against each variable out of which a student has to choose only one by putting a tick mark '√' in the given box in the questionnaire.

In order to estimate and compare faculty performance in teaching (course-wise), the cardinal values are assigned to students' answer options. As stated above, for each variable, there are three rank options for answering. For a given variable, the first rank option measures the highest quality, the second rank option measures the medium quality and the third rank option measures the lowest quality. For translating these into cardinal numbers (score-points), we assign value '5' to the first rank options, '3' to the second rank options and '2' to the third rank options. Thus the total points for all 20 variables for the First Rank Options are 100 (5x20), for the Second Rank Options 60 (3x20) and for the Third Rank Options 40 (2x20). Therefore, a faculty's average score-points of teaching performance would vary between 40 and 100, i.e. the lower limit of the score is 40 and the upper limit is 100.

The overall performance of a faculty in teaching is measured by the average score-points obtained by him/her in a course from the students' feedback. For comparing faculties' performance, four quality ranks such as 'excellent', 'good', 'average' and 'below-average' are provided as follows:

Sl. No.	*Quality rank of performance*	*Range of average score-points required*		
1.	Excellent	86.0	-to-	100.0
2.	Good	71.0	-to-	85.0
3.	Average	56.0	-to-	70.0
4.	Below-average	41.0	-to-	55.0

The major deficiency of a faculty in a course is detected by carefully examining the students' feedback against the 'third rank options' (as defined above). If 50% or above respondents ticks the 'third rank option' for one or more variables, the faculty concerned is identified as having certain deficiency. Among the 'third rank options' of the respondents, the ticked option which is mostly repeated throughout the sample is the major deficiency of the faculty. This is also cross-checked by estimating total sum of score-points against each variable in the questionnaire. The variable having total sum equal to or less than the value of (Sample Size X 2.5) indicates weakness of the concerned faculty in that aspect. For example, if the sample size of students' feedback is 10, then the total sum of score-points of a variable measuring faculty deficiency will be equal to or less than 25. The multiplier 2.5 in our example is the mid-point between second-rank option and third-rank option. This confirms that 50% or above students opted for 'third rank' for a particular variable in rating faculty's performance.

Analysis

The estimation of average score-points (total score-points for all 20 variables divided by the size of sample) is done course-wise and faculty-wise for all teaching departments (Table-1). The important findings are summarized as follows:

* At the Institute level, about 52.35 % of faculty displayed excellent performance in teaching various courses.
* Across various departments, the percentage of faculty displaying excellent performance in teaching is relatively greater in the Departments of Oil Technology, Paint Technology, Plastic Technology, Food Technology, Humanities and Social Sciences and Physics as compared to other departments.
* In the matter of faculty's teaching performance in various courses, the Departments of Civil Engineering, Mechanical Engineering, Electrical Engineering, Computer Science and Engineering, Information Technology, Bio-chemical Engineering, Leather Technology and Chemistry figure below the Institute's average teaching performance.
* At the Institute level, around 29.53% of total faculty is reported as having some deficiencies in teaching.
* The most common deficiencies found among identified teachers are:
  (i) Coverage of syllabus is less than 80.0% of total,
  (ii) Teachers' ability to explain in the classes is not good,
  (iii) Attitudes of the teachers towards students are not favourable.

(iv) The evaluated answer books are not shown to students.
(v) The subject knowledge is poor.

* A relatively greater proportion of deficient teachers are found in the Departments of Computer Science and Engineering, Information Technology and Chemical Engineering.

TABLE 1

Percentage of Teachers (course-wise) with Different Performance Ranks and Deficiencies

S.N.	*Department*	*Faculty Quality Rank*					*Defi-ciencies*
		Excellent	*Good*	*Average*	*Below average*	*Total*	
1.	Civil Engineering	46.15	30.77	23.08	0.00	100	30.77
2.	Mechanical Engineering	36.36	63.64	0.00	0.00	100	27.27
3.	Electrical Engineering	43.75	37.50	18.75	0.00	100	25.00
4.	Electronics Engineering	50.00	50.00	0.00	0.00	100	42.86
5.	Computer Science & Engineering and Information Technology	46.15	50.0	3.85	0.00	100	50.00
6.	Chemical Engineering	41.67	41.67	16.66	0.00	100	50.00
7.	Oil Technology	57.14	28.57	14.29	0.00	100	0.00
8.	Paint Technology	87.50	12.50	0.00	0.00	100	0.00
9.	Plastic Technology	100.00	0.00	0.00	0.00	100	0.00
10.	Biochemical Engineering	40.00	60.00	0.00	0.00	100	40.00
11.	Food Technology	80.00	20.00	0.00	0.00	100	0.00
12.	Leather Technology	14.29	71.43	14.29	0.00	100	28.57
13.	Mathematics	60.00	40.00	0.00	0.00	100	40.00
14.	Humanities and Social Sciences	100.0	0.00	0.00	0.00	100	0.00
15.	Chemistry	40.00	60.00	0.00	0.00	100	40.00
16.	Physics	75.00	25.00	0.00	0.00	100	0.00
17.	All Departments	52.35	40.27	7.38	0.00	100	29.53

Source: Students feedback data

Remedial Measures

The following few measures are suggested for the rectification of common deficiencies found among faculties in classroom teaching and for the improvement in the overall quality of teaching-learning**:**

(1) The faculties with whom certain deficiencies are found, as per the above analysis, should be officially communicated the same and instructed by the Director and the Head concerned for rectification through corrective actions. We propose that no punitive action against a deficient faculty shall be mooted unless any abnormal situation arises.

(2) At the end of each semester, every faculty shall be required to submit a certificate to the Director through the Head about the coverage of syllabus for the course being conducted by him/her. Accordingly, the Head of the Institution may take administrative action against those who cannot cover 80% syllabus of their courses.

(3) In general, the faculties should be motivated to take extra classes in order to cover up the whole syllabus of the courses

(4) There should be the provision for remedial classes (excluding tutorial classes) for weaker students during holidays and vacations, particularly for first year and second year students. Students counseling must be stressed in remedial classes. The institute should provide extra budget for conducting these classes.

(5) Showing the evaluated answer books to students shall be mandatory for every faculty, and a deadline for showing evaluated copies to students by faculties should be officially declared and also be incorporated in the academic calendar. The teachers not showing evaluated answer books to students in the stipulated time should be issued show-cause notices.

(6) The faculties having the deficiencies in subject-knowledge and communication skills should be given prior chance to attend refresher courses and participate in seminars, conferences and workshops. Among these faculties, those who are not having higher academic degrees should also be given prior chance to pursue higher qualifications under QIP or similar programmes, part-time programmes etc.

(7) In order to widen the faculties' knowledge base and their acquaintance with the latest invention and discoveries in their specialization, the faculties should always be motivated by the Head of the Institute for writing and publishing papers, seeking sponsored research projects, attending seminars and conferences, and refreshing their knowledge in teaching subjects by consulting standard text books and journals.

Evaluation of Institutional Performance

Institutions of education have increasingly come under governmental and social pressure to demonstrate value for money performance [Liaison Committee of Rectors' Conferences: 1993; Goedegebuure, et.al.: 1990 and Lucier: 1992]. As stated in the introduction, the performance of an educational institution is directly linked to the quality of teaching-learning. In order to improve the quality of teaching-learning, the institution has to develop teaching-supporting infrastructure and facilities. The physical stock of educational resources is necessary, but it cannot alone measure the performance of the educational institutions. The 'utility creation' of the physical stock is a crucial indicator of performance of the institutions. The 'utility creation' is reflected through the quality of physical stock of educational resources and the process of their uses by the stakeholders. Many higher educational institutions in the world have adopted 'quality approach' as the base to measure performance. For example, in Hong Kong's higher education, a set of organizational effectiveness self-rating scales were used to assess higher educational institutions. The self-rating scales were based on the nine effectiveness dimensions as contained in the Competing Values Model of Organizational Effectiveness [Quinn and Rohrbaugh: 1981, 1983].

In our study, the assessment of performance of educational institution is based on quality-notion. The quality of overall facilities supporting teaching-learning is the main consideration that we have taken up in the analysis in order to evaluate institutional performance. For quality rating of various facilities, we relied on the feedback of main stakeholders such as students, faculties and non-teaching staff of the educational institutions. Our presumption is that the 'utility creation' of a facility which is reflected

through quality can be correctly measured through feedback from the user of the facility. The overall quality of education-related resources such as teaching, laboratories, library, class-rooms, hostels, placement of students, promotions and incentives for teachers and staff, etc. was evaluated by adopting a specific method as developed by us. Feedback from the students, faculty and staff was collected through separate questionnaires for two consecutive academic sessions: 2010-11 and 2011-12. On the basis of evaluation analysis, strengths and weaknesses of the Institute were highlighted and remedial measures also suggested.

Methodology

The above analysis is exclusively based on the feedback-results of students, faculties and non-teaching staff for two consecutive years 2010-11 and 2011-12. For the feedback, a sample survey of students, faculties and staff was adopted. For students, the stratified random sampling technique was used. All the registered students, including M. Tech. and Ph.D. students, were stratified by their course, branch and year. From each stratum, 20% of students were chosen randomly for the survey. For faculty and non-teaching staff, the technique of simple random sampling was used. More than 50 percent of faculties and 20 percent of staff were chosen randomly for the feedback. The size of sample for students was 428 in the session 2010-11 and 416 in the session 2011-12 (20% of total registered students), whereas that for the faculty was 52 and 70, and for staff, it was 22 and 26 in the academic session 2010-11 and 2011-12 respectively. In students' sample, a proportionate number of girl students were included so that the above process gave representative samples for the feedback.

The feedback was collected with the help of a well-designed questionnaire. Separate questionnaires were used for students, faculties and staff. (See the format of questionnaires in Appendices-II, III and IV).

In order to measure the quality of various teaching-related resources/facilities such as faculty, library, class-rooms, laboratory, etc., a few parameters determining the quality of a resource are chosen and a weight is assigned to each parameter according to its relative importance (see Tables 2 to 13). In quality determination, each parameter has a specific role to influence the quality, with some parameters being highly influential whereas some others are less influential. Accordingly, a high weight is assigned to highly influential parameters and a low weight is assigned to less influential parameters. This exercise was done by a committee consisting of senior professors, as constituted by the Director of our Institute. The main objective of this exercise was to obtain the weighted average for the quality assessment of a resource/facility. The simple average would not give reliable result in this case. In the feedback, some respondents gave positive response, some gave negative response while a few did not respond at all against a parametric question. We considered only the positive response of the feedback. For quality ranking, the weighted average of positive responses in feedback of all parameters determining the quality of a resource/facility was estimated and was taken as base. The following cut-off points were used for quality ranking of a resource/facility:

If the value of weighted average of positive responses for parameters determining quality a facility was: below 25%, the quality of the facility was ranked at 'extremely poor'; above 25% but below 50%, its quality was 'poor'; above 50% but below 75%, its quality was 'good'

and above 75%, its quality was ranked at 'excellent'. The facilities, which were ranked at poor or extremely poor, were included in weaknesses and those which were ranked at good or excellent, were included in strengths.

Analysis

Strengths

1. Students' High Preference to HBTI for Admission

In admission counseling of UPTU-CEE examination, it is observed that a large majority of the high-ranking students in the merit lists franchises choice for HBTI rather than any other government or private engineering colleges in U.P. In students' preference of colleges for admission, HBTI usually figures just after IITs. During 2011-12, out of total top ranking students ranging from 1 to 100 in the merit list of UPTU-CEE, 75 students took admission in HBTI. As per faculty feedback result (Table-3), the quality of students is excellent.

2. Top-Ranking Institute in the State

Among all government and private technical institutions in U.P. State, HBTI is placed at the top [see GBTU website]. HBTI's high academic quality and high placement record greatly contribute to its reputation.

About 93.26% of students in HBTI chose this Institution for its academic reputation and good placement record. Around 88.70% of students expressed the view that HBTI is relatively better than all other government and private engineering colleges in U.P. From the students' perception, HBTI's standard is excellent [Table-10].

3. High Quality Faculty and Teaching

The total size of faculty positions and non-teaching staff at HBTI is as good as any standard state residential university in India. Among total existing faculty members, the proportion of Asst. Professors, Associate Professors and Professors was 31.43%, 42.86% and 25.86% respectively in 2012. The average teaching and research experience of all faculty members is around 14 years. HBTI has to its credit a large number of highly qualified, talented and experienced faculty members who significantly contribute to the quality of teaching and research.

By quality ranking on the basis of students' feedback, the quality of faculty and the quality of teaching in HBTI is rated 'Excellent'. The weighted average of positive responses of students for 10 factors determining teachers' quality is about 76.48% corresponding to the rank set of 'Excellent' [Table-2].

4. Improvement in the conditions of Class-rooms, Laboratories and Library

(a) Classrooms

For measuring the overall quality of class rooms, the weighted average of positive responses of students and faculty for some selected parameters was estimated separately in Tables-4(a) &4(b). For students, 10 parameters and for faculty, six parameters were chosen.

TABLE 2

Faculty and Teaching Quality (from Students' Perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Clear understanding of lectures in the classes	0.20	64.02	12.80	74.04	14.81
2.	Asking questions to teachers	0.10	78.04	7.80	81.97	8.20
3.	Teachers encouraging students to ask questions	0.10	67.06	6.71	81.49	8.15
4.	Teachers answering students' questions satisfactorily	0.15	61.21	9.18	73.80	11.07
5.	Frequent use of teaching aids by teachers in the classes	0.10	89.72	8.97	89.66	8.97
6.	Teachers punctuality in taking classes	0.05	85.05	4.25	84.14	4.21
7.	Teachers' referring standard test-books for class-teaching	0.15	85.75	12.86	83.17	12.48
8.	Students' satisfaction with the quality of teachings in the classes	0.10	40.19	4.02	57.21	5.72
9.	Help and guidance by teachers to students	0.02	44.39	0.89	48.56	0.97
10.	Teachers attitude of un biasness and unprejudiced	0.03	53.04	1.59	63.22	1.90
	Weighted average score points	1.00		69.07		76.48
	Quality rank			**Good**		**Excellent**

Source: Students' feedback data through field survey

Note: If the weighted average of positive responses is:

Below 25% = extremely poor
Below 50% but above 25% = poor
Below 75% but above 50% = good
Above 75% = excellent

The weighted average of positive responses, on students' side, increased from 69.49% in 2010-11 to 71.95% in 2011-12 [Table-4(a)], and on faculty side, increased from 59.15% in 2010-11 to 78.92% in 2011-12[Table-4(b)]. According to the quality ranking norms, the quality-rank of classrooms has moved up from 'Good' to 'Excellent'. As compared to previous years' feedback results, the classroom conditions have remarkably improved.

TABLE 3

Students' Quality (from Faculty Perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Students punctuality	0.10	86.54	8.65	97.14	9.71
2.	Students' tendency to avoid class bunk	0.10	28.85	2.89	20.00	2.00
3.	Attentiveness in the classes	0.20	100.00	20.00	98.57	19.71
4.	Monitoring the performance of students	0.10	96.15	9.62	97.14	9.71
5.	Students' interest in asking questions in the classes	0.20	98.08	19.62	98.57	19.71
6.	Teachers' satisfaction with the average quality of students	0.20	92.31	18.46	90.00	18.00
7.	Positive change in the quality of students	0.10	9.62	0.96	22.45	2.25
	Weighted average score points	1.00		80.02		81.09
	Quality rank			**Excellent**		**Excellent**

Source: Faculty feedback data through field survey.

TABLE 4 (a)

Class Room Conditions (from Students' perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Availability of proper seating space in the classes	0.20	85.28	17.06	86.30	17.26
2.	Adequacy of light and fan in the classes	0.20	56.31	11.26	60.82	12.16
3.	Proper cleanliness and ventilation of classrooms	0.10	59.81	5.98	57.69	5.77
4.	Availability of proper black boards and other teaching aids	0.15	77.80	11.67	84.38	12.66
5.	Good audibility of lectures in the classes	0.10	75.70	7.57	76.68	7.67
6.	Good visibility of writings on the black boards	010	73.83	7.38	76.93	7.69
7.	Class rooms being free of outward noises	0.05	55.37	2.77	41.11	2.06
8.	Proper toilet facility nearby class rooms	0.05	64.25	3.21	63.22	3.16
9.	Proper drinking water facility nearby class rooms	0.05	51.87	2.59	70.43	3.52
	Weighted average score points	1.00		69.49		71.95
	Quality rank			**Good**		**Good**

Source: Students' feedback data through field survey

TABLE 4 (b)

Class Room Conditions (From Faculty perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Proper class room facility to students	0.20	73.08	14.62	87.14	17.43
2.	Compatible seating arrangement in the classes	0.10	80.77	8.08	81.43	8.14
3.	Adequate facility of light and fan in the classes	0.25	42.31	10.58	68.57	17.14
4.	Availability of proper teaching aids in the classes	0.25	55.77	13.94	84.29	21.07
5.	Proper cleanliness and ventilation of class rooms	0.10	46.15	4.62	64.29	6.43
6.	Favourable environment of the classes to deliver lectures	0.10	73.08	7.31	87.14	8.71
	Weighted average score points	1.00		59.15		78.92
	Quality rank		**Good**		**Excellent**	

Source: Faculty feedback data through field survey

(b) Laboratories

For ranking laboratories standard, 10 parameters for students and five parameters for faculty were chosen [Tables-5(a) &5(b)]. On students' side, the weighted average of positive responses for 10 parameters increased from 55.24% in 2010-11 to 64.00% in 2011-12, and on faculty's side, for five parameters, it was 55.57% in 2010-11 and increased to 67.65% in 2011-12. Although the positive feedback in favour of laboratories has increased, yet there is no change in their standard-rank position, as per the ranking norms. In 2010-11 as well as in 2011-12, the quality rank of laboratories was set at 'Good' [Table-5(a) & 5(b)].

In Table 5(a) & (b), for some parameters, the students' positive responses are found relatively very low. For example, parameters such as – 'availability of all equipments in working conditions' and 'whether labs are equipped with modern instruments, machines, etc.' have very low positive responses. For the same parameters, the faculties' positive responses are relatively higher. It implies that many new instruments and machines have already been installed as faculty knows, but since all of them have not been brought to students' uses in the laboratories, the students gave low positive response. Thus, it is suggested that all the new machines and equipments recently purchased and installed in the labs under TEQIP (Technical Education Quality Improvement Programme), funded by World Bank, should be allowed for students' use for ensuring utilising of newly purchased modern machines and equipments by students.

TABLE 5 (a)

Laboratories Quality (from Students' Perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Availability of all equipments in working conditions	0.20	41.12	8.22	58.42	11.68
2.	Availability of equipments, tools, chemicals, etc. as per students' requirements	0.15	57.24	8.59	64.90	9.68
3.	Whether labs are equipped with modern machines, tools and instruments	0.10	38.79	3.88	54.33	5.43
4.	Adequacy of laboratory assistants in labs	0.05	63.08	3.15	65.38	3.26
5.	Equal chance to all students for experimentation in labs	0.10	75.93	7.59	76.20	7.62
6.	Competence of lab assistants to handle labs	0.05	53.30	2.67	56.01	2.80
7.	Students satisfaction with the supports from lab assistants	0.05	52.34	2.62	52.64	2.63
8.	Positive changes in labs over past one year	0.10	50.00	5.00	63.22	6.32
9.	Whether labs are neat and clean	0.05	67.76	3.39	63.22	3.16
10.	Whether students' are really benefited from labs	0.15	67.52	10.13	75.72	11.36
	Weighted average score points	1.00		55.24		64.00
	Quality rank			**Good**		**Good**

Source: Students' feedback data through field survey.

TABLE 5 (b)

Laboratories Quality (from Faculty Perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Sufficient number of instruments, tools, machines, etc.	0.15	50.00	7.5	75.71	11.36
2.	Availability of modern systems	0.20	53.85	10.77	74.29	14.86
3.	Minimum capacity to accommodate properly all students for practical classes	0.25	57.69	14.42	67.14	16.79
4.	Cleanliness of laboratories	0.15	69.23	10.38	71.43	10.71
5.	Positive change in the stock of laboratories	0.25	50.00	12.50	55.71	13.93
	Weighted average score points	1.00		55.57		67.65
	Quality rank			**Good**		**Good**

Source: Faculty feedback data through field survey

(c) Library

As per the present feedback of students and faculty, the library condition is rated 'good'..

For rating the overall quality of library, 15 parameters for students' feedback and seven parameters for faculty feedback were considered. On students' side, the weighted average of positive responses for 15 parameters is 58.44%, which increases by 1.65 percentage points over last year's result (56.79%). On faculty side, for seven parameters, it is 63.00% which increases by 7.99 percentage points over last year's result (55.01%). As per quality ranking norm, the overall quality of the Central Library is good from the perception of students as well as faculties [Table 6(a) & (b)].

TABLE 6 (a)

Library facility (from Students Perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Availability of adequate number of text books	0.15	51.87	7.78	74.28	11.14
2.	Adequacy of seating space for reading in the library	0.10	91.12	9.11	90.14	9.01
3.	Proper light and fan in the library	0.10	78.97	7.90	78.61	7.86
4.	Peaceful environment in the library	0.05	84.81	4.24	85.58	4.28
5.	e-journal facility in the library	0.05	39.49	1.97	39.42	1.97
6.	Facility of digital library	0.05	10.75	0.54	14.42	0.72
7.	Adequacy of journals and reference books	0.10	46.19	4.62	28.85	2.89
8.	Adequacy of facility for photocopying in the library	0.05	34.81	1.74	19.47	0.97
9.	Desired helps from librarians and library staff	0.05	61.21	3.06	64.90	3.25
10.	Convenience to search and trace out books and journals	0.05	35.51	1.78	35.34	1.77
11.	Satisfaction with the timing and functioning of the library	0.05	74.07	3.70	69.71	3.49
12.	Satisfaction with the process of issuing and returning books	0.05	68.69	3.43	73.08	3.65
13.	Whether the library is properly neat & clean	0.05	76.40	3.82	69.95	3.50
14.	Facility of drinking water and toilets nearby the library	0.05	22.66	1.13	27.88	1.39
15.	Positive change in the library over past one year	0.05	39.49	1.97	50.96	2.55
	Weighted average score points	1.00		56.79		58.44
	Quality rank			**Good**		**Good**

Source: Students' feedback data through field survey

TABLE 6 (b)

Library facility (from Faculty Perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Scientific arrangement of books and periodicals	0.15	40.38	6.06	64.29	9.64
2.	Adequacy of seating space for reading & writing	0.20	40.39	8.08	42.86	8.57
3.	Adequacy of standard text books	0.25	50.00	12.50	58.57	14.64
4.	Adequacy of referred journals	0.20	57.69	11.54	71.43	14.29
5.	Cooperation of librarian and library staff	0.05	92.31	4.62	85.71	4.29
6.	Satisfaction with the opening and closing times of the library	0.05	82.69	4.13	77.14	3.86
7.	Increasing the stock of books/journals over past one year	0.10	80.77	8.08	77.14	7.71
	Weighted average score points	1.00		55.01		63.00
	Quality rank		**Good**		**Good**	

Source: Faculty feedback data through field survey

5. Students' Job-placement Record Highly Attractive

For quality ranking of Training and Placement Cell (TPC) at HBTI, seven parameters were selected for students' feedback [Table-9]. The weighted average of positive responses of students for seven parameters was 52.53% in 2010-11 and that increased to 68.16% in 2011-12. As per quality ranking norm, the overall quality of the TPC is, therefore, set at the rank 'Good'**.** The monthly salary-packages offered to selected students through TPC by different companies were much attractive. About 38.33% of selected students grossed monthly salary packages ranging between 20 and 30 thousand rupees, 13.33% accounted for salary contracts of over 30 thousand rupees per month.

Parameters such as 'whether students are free of any skill deficiency while appearing in interviews', and 'qualifying for a job in any multinational company' carry relatively low positive response of students. This means that a large number of students face the problem of skill deficiency (particularly, 60.34% of them feel the deficiency of communication skills) while appearing in interviews. Perhaps, this deficiency is the main reason for disqualification in interviews in multi-national companies. This issue should be addressed by the Head of the Institute through TPC on priority basis.

TABLE 7

Quality of Hostel Facility (from Students Perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	*Regular supply of water and electricity in the hostels*	*0.15*	*14.72*	*2.21*	*30.05*	*4.51*
2.	Good quality of food in the hostel messes	0.15	26.17	3.93	39.90	5.99
3.	Cleanliness and hygienic conditions of mess and dining halls where meals are served	0.05	35.05	1.75	36.06	1.80
4.	Regular cleanliness of residential rooms, toilets and bathrooms	0.05	38.55	1.93	35.58	1.78
5.	Peaceful and favourable environment in the hostels	0.10	46.26	4.63	45.43	4.54
6.	Proper security arrangement in the hostels	0.05	69.39	3.47	74.76	3.74
7.	Necessary helps from Wardens, Deans and Proctors	0.05	60.28	3.01	65.63	3.28
8.	Students' satisfaction with the general facilities available in the hostels	0.10	28.50	2.85	39.42	3.94
9.	Regular maintenance of hostel rooms, mess and dining halls	0.02	35.75	0.72	37.74	0.75
10.	Students participation in the extra curricular activities in the hostels	0.05	72.20	3.61	75.72	3.79
11.	Facility of indoor and outdoor games	0.02	64.02	1.28	58.65	1.17
12.	Common room facility in the hostels	0.03	80.61	2.42	75.72	2.27
13.	Reading room facility in the hostels	0.03	9.81	0.29	11.06	0.33
14.	Availability of guest rooms for students' parents/guardians	0.05	14.02	0.70	16.11	0.81
15.	Students satisfaction with the hostels disciplines	0.10	65.89	6.59	57.69	5.77
	Weighted average score points	1.00		39.39		44.47
	Quality rank : (2005-06)		**poor**		**Poor**	

Source: Students' feedback data through field survey

TABLE 8

Quality of Extra-curricular activities (from Students' Perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Participation in extra curricular activities	0.25	82.48	20.62	92.31	23.08
2.	Whether extra curricular activity are properly planned and well distributed throughout the session	0.10	61.21	6.12	66.35	6.64
3.	Participation in planning and managing the extracurricular activities	0.10	61.45	6.15	62.26	6.23
4.	Feeling benefits from participation in extracurricular activities	0.20	78.27	15.65	86.29	17.26
5.	Students' satisfaction with the facilities provided by different sub-councils of CSA	0.20	55.14	11.03	52.64	10.53
6.	Obtaining Institute's magazine regularly	0.02	19.39	0.39	29.33	0.59
7.	Contribution of articles to Institute's Magazine	0.03	29.67	0.89	30.53	0.92
8.	Whether CSA sponsors students to participate in other institutes' extra curricular activities	0.05	30.61	1.53	24.52	1.23
9.	Whether sponsored students received any prize/awards	0.05	19.08	0.95	72.55	3.63
10.	Weighted average score points	1.00		63.33		70.11
	Quality rank			**Good**		**Good**

Source: Students' feedback data through field survey

TABLE 9

Quality of Training & Placement Facility (from Students' Perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Opportunity of appearing in employment tests through TPC	0.25	77.07	19.27	98.98	24.75
2.	Whether qualified for jobs through TPC	0.10	37.07	3.71	61.23	6.12
3.	Availability of training facility from TPC for appearing in employment tests	0.25	44.39	11.10	55.10	13.78
4.	Satisfactory performance of students in campus tests for jobs	0.05	43.90	2.20	69.90	3.50
5.	Whether students free of any skill deficiency while appearing in interviews	0.05	36.10	1.81	27.55	1.38
6.	Qualifying a job in any multinational company(s)	0.10	34.15	3.42	47.45	4.75
7.	Satisfaction with the existing Infrastructure facility of TPC	0.20	55.12	11.02	69.39	13.88
	Weighted average score points	1.00		52.53		68.16
	Quality rank : (2005-06)			**Good**		**Good**

Source: Students' feedback data through field survey

TABLE 10

HBTI's Standard (from Students' Perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Choosing HBTI due to its academic reputation and good placement record	0.40	79.68	31.87	93.26	37.30
2.	HBTI being relatively better than all other government and private engineering colleges in UP	0.20	85.75	17.15	88.70	17.74
3.	High placement record in HBTI	0.40	91.59	36.64	92.79	37.12
	Weighted average score points	1.00		85.66		92.16
	Quality rank		**Excellent**		**Excellent**	

Source: Students' feedback data through field survey

TABLE 11

Standard of basic facilities (from Faculty Perception)

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Availability of residential accommodation	0.10	55.77	5.58	44.29	4.43
2.	Maintenance of residential faculty quarters	0.03	13.46	0.40	8.57	0.26
3.	Opportunity of promotion/selection to higher posts/scales	0.15	69.23	10.39	85.71	12.86
4.	Opportunity of study leave	0.03	40.38	1.21	38.57	1.16
5.	Facility of sabbatical leave for foreign travel	0.03	17.31	0.52	14.29	0.43
6.	Financial supports and leaves for presentation of papers	0.03	73.08	2.19	58.57	1.76
7.	Availability of vacations	0.03	51.92	1.56	38.57	1.16
8.	Timely release of salary and annual increments to faculty	0.07	96.16	6.73	94.29	6.60
9.	Cooperation from the administration	0.03	90.38	2.71	84.29	2.53
10.	Cooperation from higher authorities	0.03	92.30	2.77	92.86	2.79
11.	Cooperation from colleagues	0.03	92.30	2.77	100.00	3.00
12.	Adequacy of space and furniture in the faculty offices	0.03	69.23	2.08	80.00	2.40
13.	Medical facility	0.10	3.85	0.39	22.86	2.29
14.	Computer and internet facility in faculty offices	0.03	57.69	1.73	92.86	2.79
15.	Regularity in the supply of electricity to faculty offices and laboratories	0.10	90.00	9.00	95.00	9.5
16.	Opportunity of participation in decision makings	0.10	53.85	5.39	71.43	7.14
17.	Support and facility from the department for providing handouts and lecture notes to students and sending research papers	0.03	42.31	1.27	55.71	1.67
18.	Satisfaction with the administrative functions	0.05	48.08	2.40	61.43	3.07
	Weighted average score points	1.00		59.09		65.84
	Quality rank		**Good**		**Good**	

Source: Faculty feedback data through field survey

TABLE 12

Working Environment and Cooperation among Administrative Staff

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1	Satisfaction with works	0.35	72.73	25.46	80.77	28.27
2.	Satisfaction with the working environment	0.35	77.27	27.04	69.23	24.23
3.	Cooperation from the higher authorities and faculty members	0.15	86.36	12.95	73.08	10.96
4.	Cooperation from colleagues	0.15	95.45	14.32	88.46	13.27
	Weighted average score points	1.00		79.77		76.73
	Quality ranking			**Excellent**		**Excellent**

Source: Staff feedback through field survey

6. Good Facilities and Incentives to Faculties and Staffs

For measuring the quality of basic facilities, 18 parameters on the faculty side and 14 on the staff side were considered [Table 11 & 13]. Weightage to a parameter is determined on the basis of its relative importance in motivating members to work intensively and adopting a distinct favourable culture in the Institute.

For faculty, the weighted average of positive responses of total 18 parameters was 50.28% in 2010-11 and increased to 57.20% in 2011-12 [Table-11]. As per quality ranking norm, the basic facilities available to faculty is ranked good in both the time periods. In the year 2011-12, the basic facilities are marginally improved. In some specific cases such as maintenance of faculty residences, sabbatical leave, medical facility, etc., the positive responses of the faculty are relatively low.

For the non-teaching staff, the weighted average of positive responses for 14 parameters was 60.81% in 2010-11 and declined to 55.00% in 2011-12 [Table-13]. At both the time periods, the quality of basic facilities to the non-teaching staff is ranked as good. The variables such as 'timely promotion', 'maintenance of staff quarters', and 'cleaning facility in the staff residential campuses' carry relatively low positive responses. These matters should be attended to on priority basis.

7. Viability of Students' Extra-curricular Activities

The students' participation rate in different extra-curricular activities was 82.48% in 2010-11 and increased to 92.31% in 2011-12. In activities such as sports, literary, cultural and others, the students' participation rate was 38.55%, 20.79%, 22.20% and 11.92% respectively in 2010-11 and 50.26%, 19.01%, 20.31% and 10.42% respectively in 2011-12. A relatively large proportion of students prefer sports over other activities. About 86.29 % of participants realized the benefits of extra-curricular activities. Out of the total students who realized the benefits, about 39.83% felt the benefit was one of personality development, 2.23% felt it was by way of improvement of communication skills, 5.85% regarded it as improvement of leadership quality, while the remaining 51.53% felt other benefits. Moreover, these personality traits are the requirements of companies in selecting students

for job-placement. Indirectly, the above benefits to students from extra-curricular activities of the Institute greatly contribute to their selection for jobs.

For ranking the quality of extra-curricular activities, we chose nine parameters [Table-8].

The weighted average of positive responses for nine parameters was 63.33% in 2010-11 and this increased to 70.11% in 2011-12. According to quality ranking norm, the overall quality of extra-curricular activities is good.

TABLE 13

General Facilities to Staff

Sl. No.	*Parameters*	*Weightage*	*2010-11*		*2011-12*	
			Percentage of positive response	*w x p*	*Percentage of positive response*	*w x p*
1.	Timely salary and annual increments	0.12	100.00	12.00	86.54	10.38
2.	Timely promotion	0.12	27.27	3.27	30.77	3.69
3.	Residential accommodation	0.12	59.09	7.09	61.54	7.38
4.	Regular maintenance of staff quarters	0.05	18.18	0.91	15.38	0.77
5.	House loan facility	0.05	59.09	2.95	46.15	2.31
6.	Ex-gratia monetary incentives such as bonus, honorarium, etc.	0.05	90.91	4.55	73.08	3.65
7.	Facility of inter departmental transfer	0.05	68.18	3.41	50.00	2.50
8.	Minimum required furniture and fixtures in the staff offices	0.05	86.36	4.32	76.92	3.85
9.	Computer and internet facility in the staff offices	0.05	68.18	3.41	73.07	3.65
10.	Drinking water and toilet facility in the staff offices	0.05	59.09	2.95	61.54	3.08
11.	Regular supply of electricity to offices	0.06	92.0	5.52	98.00	5.58
12.	Medical facility from the Institute's dispensary	0.12	59.09	7.09	57.69	6.92
13.	Cleaning facility in the staff residential campuses	0.05	13.64	0.68	11.54	0.58
14.	Leave facility as per rules	0.06	95.45	5.73	76.92	4.62
	Weighted average score points	1.00		63.88		58.96
	Quality ranking		**Good**		**Good**	

Source: staff feedback through field survey

Weaknesses

1. Inadequate Hostel Facilities to Students

There are total nine hostels in HBTI to accommodate students willing to stay in hostels. Three girls' hostels and three boys' hostels (including G.V. hostel) are located in east campus, and three boys' hostels are located in west campus of the institute. As per students' feedback, the total number of hostels are not, at present, sufficient to accommodate the registered students seeking hostel facility. About 20.19% of students seeking hostel accommodation were not able to get hostels in 2011-12. Over the past few years, this problem has arisen due to over-increase of the students' intake in almost all branches of engineering and technology.

Besides the above problem, the general facilities in the existing hostels are not good, and are not upto students' satisfaction, as per their feedback. For measuring the quality of hostel facilities, 15 parameters are used, with each of them of varying weightages. The weighted average of positive responses for the above parameters was as small as 39.39% in 2010-11 and marginally increased to 44.47% in 2011-12 [Table-7]. According to quality ranking norm, the average quality of the hostel facilities was rated 'poor' in the above years.

The parameters, which bear relatively lower positive responses of students, are – (i) supply of electricity and water regularly, (ii) quality of food served in the hostel messes, (iii) cleanliness and hygienic conditions of rooms, toilets, bathrooms, mess and dining halls, (iv) reading room facility in the hostels, (v) regular maintenance of hostels, and (vi) facility of guest rooms for students' parents/guardians. These points should be taken up on urgent basis in order to improve the quality of hostels.

2. Lack of Proper Maintenance of Institute's Buildings and Residences

Lack of maintenance of the Institute's hostels, staff quarters and faculty residences, gardens, toilets, etc. is a matter of great concern.

In hostels, about 55.61% in 2010-11 and 51.20% in 2011-12 of students gave negative responses about the maintenance of hostel rooms, common rooms and dining halls. With regard to maintenance of staff and faculty residences, around 68.18% (2010-11) and 69.24% (2011-12) of non-teaching staff, and 69.23 %(2010-11) and 60.00 %(2011-12) of faculty gave negative feedback. Delay in the maintenance of the above properties of the Institute causes a heavy loss in their economic values besides creating inconvenience and posing a risk to the lives of the inmates occupying or using these properties.

3. Scarcity of Faculty Positions

On account of continuous increase in the intake of students without a proportionate increase in the number of regular faculty positions (sanctioned by the UP government), the teacher-student ratio has decreased considerably as compared to AICTE norms. As a temporary measure, contractual faculties are appointed at the beginning of each semester. Despite this, every teacher from each department is overburdened with higher than prescribed teaching load.

According to faculty feedback results, on an average, a regular faculty(including AP & P) has teaching load of 8.5 theory classes and 7.8 practical classes (total =16.3 classes) per week in a semester. About 27.14% of the faculty members feel overburdened with teaching load. This implies that in some departments, there is greater shortage of faculty.

4. Limited Promotional Facility for Non-teaching Staff

According to feedback from non-teaching staff, about 72.73 % (2010-11) and 65.38 % (2010-11) of the staff did not get promotion. The limited avenues for promotion to non-teaching staff very often adversely affect their motivation to work hard. The administration should take up this issue on priority.

Remedial Measures

On the basis of findings of the feedback analysis, a few corrective measures are suggested as follows:

(1) The major weaknesses of the Institute are related to quality of hostel facilities to students, maintenance of Institute's main buildings and faculty and staff residences, faculty positions, and promotional opportunities to non-teaching staffs. The Institute should initiate appropriate measures to remove these weaknesses. Special attention should be accorded to creation and enhancement of hostel-space in order to accommodate all students demanding hostel facilities. Besides, the administration must take necessary steps for improvement of quality of food being served in messes, cleanliness and hygienic conditions in rooms, toilets, bathrooms, mess and dining halls of the hostels.

(2) In respect of the measure of quality of teaching-learning, students have given low positive response against the parameters-satisfaction with the quality of teaching in the classes, help and guidance to students by teachers, and faculties have given high positive response to students' tendency to resort to mass bunking from classes. The administration should take corrective steps to stop students' from bunking classes and improve the pedagogical skills and student-counseling ability of the faculties.

(3) Administrative steps are urgently required to keep all classrooms insulated from outside noise and also be facilitated with adequate light, fan, ventilation and cleanliness. Drinking water facility should also be provided near class-rooms. The students have given very low positive responses to the above parameters for evaluating the quality of class-rooms.

(4) Considering the low positive response of students towards certain parameters for evaluating quality, the laboratories are required to be well-equipped with modern machines, tools and equipments and the available resources in the labs need to be restored to working condition for use by the students. Especially, the equipments procured by the Institute from the World Bank grant under TEQIP-I should be allowed to be used by undergraduate students.

(5) The Central Library of the Institute must have e-journal and digital facility, adequate number of hard-copy journals and reference books, as per the requirement of the students, photocopying facility within the library, apart from drinking water and toilet facilities near the library.

(6) Under the head of students' extra-curricular activities, Institute's magazine should be regularly published and students given adequate opportunities to contribute articles in this magazine.

(7) In evaluating quality of campus placement, students have relatively lower positive response to the parameter-whether students are free of any skill deficiency while appearing in interviews. By this, we imply that a majority of students face skill deficiency in interviews. Of the students having deficiencies, about 60.34 % reported communication skill deficiency. The administration should properly address this problem of the students. The spoken English course and language lab should be emphasized in this regard.

(8) The campus medical facility for students, faculty and staff must be enriched and expanded.

Conclusion

The improvement of quality of education, as per changing economic and social requirements, is imperative all over the world. The most challenging task is to measure the quality of education which is reflected through teaching-learning process. Again, the quality of teaching-learning process is determined by the educational institutions' overall performance. Both teaching-learning and performance of educational institutions are interlinked. With the objective of raising the quality of teaching-learning, the educational institutions, starting from primary to higher, technical to non-technical, are required to adopt suitable methods for the evaluation of the quality of teaching, that pertain to them, and of their overall performance, in a continuous process. Through such process, they will be able to identify the weaknesses in their respective systems and devise appropriate measures to overcome them. Our proposed model in this paper focused on how simply an educational institution can evaluate a teacher's teaching performance in cardinal terms and assess its overall performance as related to the teaching-learning process. The methods adopted in the model are based on the notion of 'quality-rating' by students, faculties and other stakeholders. The application of the model is demonstrated through a case study of HBTI, Kanpur. The weaknesses and strengths of an educational institution can be easily identified and analyzed with the help of this model.

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Governance and Financial Management of Teacher Education Institutions in Haryana

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Abstract

This paper characterizes the nature of policy on teacher education in Haryana. The present paper focuses on the issues of governance, management and financial approaches. There are three types of institutions (i.e. Government, Government-Aided and Self-financing) of teacher education which are functioning in the State of Haryana. These institutions are subject to the same regulating agencies i.e. NCTE, State Government and Universities concerned. This paper tries to examine the issues related to regulatory mechanisms and suggest some remedial measures to overcome the problems of governance and funding of these institutions. Here, an attempt has been made for improving and strengthening the teacher education system in order to make the system fully relevant and efficient under present conditions and also to view the same in the future context of the nation.

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Introduction

In the post-Independence period, school education expanded rapidly. Teacher education also expanded during this period in response to the increasing requirement of teachers for school education. As a result, a large number of new colleges of education were established by both the state and private management bodies. With the aim of improving the condition of teacher education in the country as a whole, the Government of India took many steps from time to time to bring teacher education under the control of a strong organization. Ultimately, this objective was realised with the creation of the NCTE Act. The NCTE was established in May 1973 by a Government resolution to advise the Central and State Governments on all matters pertaining to teacher education.

The NCTE's status and role till 1993 had been advisory and it did not have statutory powers to enforce its guidelines. As per the provision laid down in the NPE 1986 and the programme of Action for its implementation, the NCTE has been conferred statutory status as per the NCTE Act No. 73 of 1993, passed by the Parliament of India. It came into existence with effect from 17th May 1995. The Act aims at achieving planned and coordinated development of teacher education system throughout the country, regulation and proper maintenance of norms and standards in the teacher education programme. The NCTE performs functions that are of a regulatory nature and is also concerned with academic development of teacher education.

Growth and Role of Private Sector

The private sector has been a partner with the state in the development of modern education system in India at all levels. The rapid increase in the demand for professional education and the inability of the state to meet this demand because of financial constraints has seen the emergence of the Self-Financing colleges catering to professional disciplines in fields that can provide gainful employment. Accepting the fact that there is a need to provide education that would lead to employment, some states permitted the starting of Self-Financing colleges in professional disciplines such as engineering, medical science, management and teacher education.

The private sector is the fastest growing segment in the field of teacher education institutions. The increasing demand for teachers at elementary and secondary levels has given rise to the huge demand for seats in the institutes of teacher education. In the beginning, the demand for teachers was more than the seats available in the Government and Aided institutions in Haryana. The Government found it difficult to set up new colleges due to financial crunch. Even the existing universities and colleges were encouraged to generate their own resources to become self-sufficient. As a result, there has emerged a surfeit of such institutions in Haryana with varying sources of finance. On the basis of financial resources, institutions of teacher education in Haryana comprise both the institutions established and run by the Government and the private parties. The private institutions include both those that are receiving grant-in-aid and those that are totally unaided.

TABLE 1

Growth of Teacher Education Institutions (B.Ed) in Haryana

Years	*Govt.*	*Govt. Aided*	*Self-Finance*	*Total*
2001-02	2	15	4	21
2003-04	2	15	8	25
2005-06	2	15	29	46
2007-08	2	15	122	139
2008-09	2	15	305	322
2009-10	2	15	438	455

Source: Statistical Abstracts of Haryana, Relevant Years.

A Brief Review of Related Studies

Inspite of the crucial role of financial inputs in educational development, very few researches have probed into the issue of educational governance and finance in India. Dutt (1969) estimated the unit cost of education in colleges of Haryana. The investigator computed that the cost per student was lower in private colleges rather than those of Government. Tilak (1995) & Tilak (1998) examined the long term trends in financing higher education, and critically analyzed various proposals being put for mobilization of resources, reflecting upon the compression in financing higher education. Singhal and Azad (2003) analysed the financing of secondary school education in India. Bhushan (2007) analysed financial requirements in higher education during XI Plan 2007-12. Qamar (2008) conducted a study on financing pattern and cost structure in Government, Aided and Unaided secondary schools of Delhi.

The short review of earlier studies suggests that most of the studies deal with the issue of financing higher and secondary education at macro level. The financial behaviour of institutions of teacher education has not been subjected to a critical review. This study should, therefore, provide some deeper insights into the various aspects of structure of Governance and financial management in this crucial sector of education.

Scope and Importance of Study

The teacher education system of Haryana is the focus of this study. The nature and extent of colleges of teacher education have been analysed on the basis of their structure of governance and financial management. The present investigation has been devoted to examine the existing policy of teacher education regarding the governance and financing of Government, Aided and Self-Financing Colleges of Education of Haryana along with reflection of the present realities. This study also suggests mechanisms to improve the system of teacher education.

Objectives of the Study

1. To examine the structure of governance of the teacher education institutions in Haryana.
2. To analyse the sources of income and pattern of expenditure in Government, Aided and Self-Financing institutions of teacher education in Haryana.

3. To analyse the problems related to governance and financial management and to suggest some remedial measures to ensure quality education in the institutions of teacher education in Haryana.

Methodology

The present study was carried out to analyse the governance and financial management of the institutions of teacher education in Haryana.

This study is descriptive type. It is based on the survey of status of different types of educational institutions in teacher education. A total of 10 colleges of education (Government 2, Aided-4, Self-Financing-4) formed the sample of the study. The data was collected through a comprehensive data schedule constructed by the investigator.

An attempt has been made in this study to analyse the financial data for the period 2005-06 to 2009-10 mainly in terms of relevant ratios and percentages. The relevant comparisons of sources of finance and pattern of allocation of funds among different types of institutions of teacher education have been made.

Research Outcomes

(A) Nature and Structure of Governance

The nature and structure of governance of any educational institution covers those aspects of the institutional functioning which provide support for its existence and growth. The most important components in governance are; the hierarchy of personnel, organisational structure, management of resources and developmental projects.

The Governance of teacher education in Haryana is under the control of Minister of Education of the State and is carried out through the Commissioner Higher Education, Haryana. NCTE and the State Universities have the regulatory powers to implement the programme and to maintain standards under the norms of UGC. The following three categories of the institutions of teacher education are maintained by the state. The governance of these colleges is discussed under three types of organizational structures.

(i) Government Colleges

These institutions are established and run by the State Government of Haryana. These are the public institutions which are funded by the State Government of Haryana. The State Government provides recurring grants to the colleges in respect of salaries of teaching and non-teaching staff. Some grants to these colleges for their development and maintenance is also given by the state. These institutions follow the norms of State Government regarding the recruitment of teaching and non-teaching staff.

The internal governance is carried out by the faculty, students and non-teaching staff under the leadership of Principal/Incharge. It focuses its attention on various activities like classroom teaching, practice teaching and related practical work and working with community.

(ii) Aided Colleges

These colleges are established and run by the an Educational Trust or a Managing Committee which is registered under the Societies Registration Act, 1860. These institutions receive salary of the staff and maintenance grants from the State Government according to Grant in Aid Code. These colleges of education follow the norms of State Government and UGC for the recruitment of regular teaching and non-teaching staff with the co-ordination of the Managing Committee of the college. The internal governance is carried out by the faculty, students and non-teaching staff under the leadership of Principal/Incharge. It focuses its attention on various activities like classroom teaching, practice teaching and related practical work and working with community.

(iii) Self-Financing Colleges

These institutions are established, managed and financially supported by non-Governmental bodies like society, trust, organisation. These colleges of education follow the norms of NCTE and of universities concerned regarding the recruitment of teaching staff and infrastructural facilities. In this case, the role of the Managing Committee or the owner of the institution is important. The main source of income of these colleges, is fees and other funds charged from the students. The physical facilities, faculty development programmes and research opportunities for teacher are rather limited in such colleges. Academic programmes and co-curricular activities in these colleges are also limited. There is more turnout of the faculty with regard to their long-term stay in the college which affects the quality of instructions. There has been a tendency in these colleges of many students not attending the classes regularly.

In order to realize the objectives of the study, the following common and distinctive features of three types of colleges are stated:

Common	*Distinctive*
- Admission pattern	- Sources of funding
- Course structure	- Level of autonomy
- Examination Pattern	- Nature of leadership
- Regulatory framework and pre-requisite conditions for the functioning of teacher education.	- Recruitment of faculty and non-teaching staff.

(B) Financial Management of Educational Institutions

Financial Management of an educational institution is related to generating income from different sources for the institution and utilizing the same in a purposeful manner. It is referred to in the analysis of the income and expenditure in Government, Aided and Self-Financing institutions of teacher education in the present study.

1. Sources of Income in Government Colleges of Education

(i) *Grants from State Government:* The State Government provides recurring grants to the colleges for salary of teaching and non-teaching staff. Some grants are given to these colleges for their development and maintenance.

(ii) *Fees from the Students:* Admission fees and funds, registration fees, tuition fees, library fees etc. are received from the students.

(iii) *Other Sources:* The other source of income in these colleges is the grants received from the UGC. UGC has been giving grants to the colleges for the purpose of development and upgrading of library and labs.

TABLE 2

Sources of Income in Colleges of Education

(Percentage)

Year	*Fees from Students*	*State Govt. Grant*	*Other Sources*	*Total*
Government College				
2005-06	25.83	70.28	3.89	100.00
2006-07	16.65	79.18	4.16	100.00
2007-08	14.25	81.99	3.76	100.00
2008-09	13.35	83.85	2.80	100.00
2009-10	12.88	83.74	3.38	100.00
AAGR	-6.84	11.43	2.91	6.38
Aided Colleges				
2005-06	43.06	51.59	5.35	100.00
2006-07	31.40	62.85	5.75	100.00
2007-08	24.05	68.06	7.89	100.00
2008-09	25.15	66.49	8.36	100.00
2009-10	24.50	67.57	7.93	100.00
AAGR	-1.73	22.05	27.57	12.11
Self-Financing Colleges				
2005-06	97.36	–	2.64	100.00
2006-07	97.32	–	2.68	100.00
2007-08	97.22	–	2.78	100.00
2008-09	97.19	–	2.81	100.00
2009-10	97.22	–	2.78	100.00
AAGR	5.32	–	6.63	5.35

It is evident from the above Table 2 that the income in Government colleges of education increased with 6.38 % average annual growth rate. A close examination of Table 2 reveals that the major source of income in government colleges is the grant, received from the state government, as compared to that of fees from the students and other sources.

2. Sources of Income in Aided Colleges of Education

(i) *Grants from State Government:* The main source of the income was Government grants. These institutions have been receiving substantial financial support from the State Government for the salary and maintenance of the institution.

(ii) *Fees from Students:* This income is from admission fee, registration fee, tuition fee, library fee etc. from the students.

(iii) *Other Sources:* The other source of income in these colleges is the grants from the UGC and the assistance from the Managing Committees.

It is evident from the above Table 2 that the income in Aided colleges of education increased with 12.11 % average annual growth rate and the major source of income in Aided colleges has been the grant received from the state government.

3. Sources of Income in Self-Financing Colleges of Education

(i) Fees from the students: The main source of income is from the admission fee and other charges received from the students.

(ii) Other Sources: Other source of income in these colleges is the assistance from the managing committee or the owners of the institutions.

It is evident from the above Table 2 that the income in Self-Financing colleges of education increased with 5.35% average annual growth rate and the major source of income in these colleges is fees received from the students.

Comparative Analysis of Income in Government, Aided and Self-Financing Colleges of Education

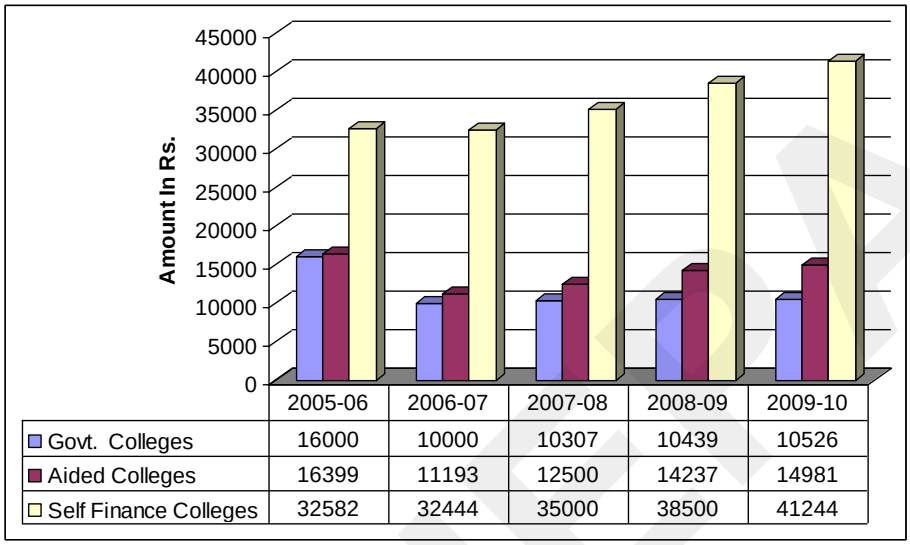
Given the variation in the number of selected institutions and also the enrolment disparity in different types of institutions, necessitates the computation of per student recurring income from different sources in different types of institutions in order to have a better understanding of an institution's ability to generate income.

It is evident from the above Figure 1 that the Government and Aided colleges received equal fees per student. On the other hand, Self-Financing colleges received about more than double fees per student during the period of five years from 2005-06 to 2009-2010.

It is also evident from the Figure 2 relating to income from Government grants, that Aided colleges received more grants from the Government as compared to Government colleges. On the other hand, Self-Financing Colleges did not receive any grant from the Government during the five years' period from 2005-06 to 2009-2010.

FIGURE 1

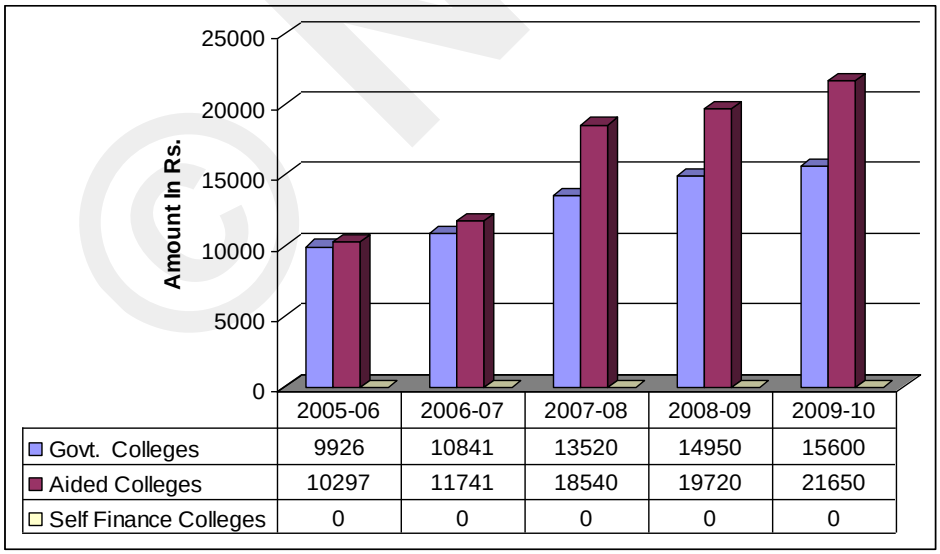
Income from Fee



	2005-06	2006-07	2007-08	2008-09	2009-10
Govt. Colleges	16000	10000	10307	10439	10526
Aided Colleges	16399	11193	12500	14237	14981
Self Finance Colleges	32582	32444	35000	38500	41244

FIGURE 2

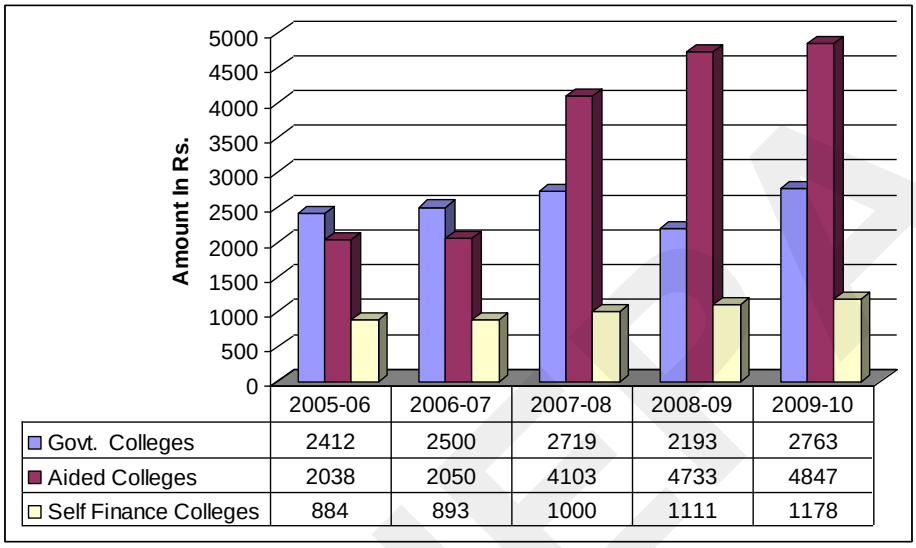
Income from Government Grants



	2005-06	2006-07	2007-08	2008-09	2009-10
Govt. Colleges	9926	10841	13520	14950	15600
Aided Colleges	10297	11741	18540	19720	21650
Self Finance Colleges	0	0	0	0	0

FIGURE 3

Income from Other Sources



	2005-06	2006-07	2007-08	2008-09	2009-10
Govt. Colleges	2412	2500	2719	2193	2763
Aided Colleges	2038	2050	4103	4733	4847
Self Finance Colleges	884	893	1000	1111	1178

Aided colleges received the highest income from other sources. Self-Financing colleges received very little amount from other sources as compared to that of Government and Aided colleges during the period of five years from 2005-06 to 2009-2010.

It is evident from the graphical representation that there is quite a wide variation in sources of income in Government, Aided and Self-Financing colleges of education. Comparative analysis of the financial support from different sources to the over-all recurring income, reveals that the State Government contribution has been decreasing in Government colleges as compared to that of Aided colleges. These results indicate that Government has not paid serious attention to the development of Government colleges of education in comparison to Aided colleges. It is also evident that among the different types of colleges of education, Self-Financing colleges of education have higher income from fees itself as compared to Government and Aided colleges.

Expenditure Analysis

All the three types of colleges of education have since been providing the same course to the prospective teachers of secondary schools. These colleges have similar expenditure items in the form of salary of teaching and non-teaching staff, maintenance of labs and equipment, maintenance of furniture, stationary, upgrading of library, co-curricular activities, and miscellaneous items (including electricity, telecommunication, sanitation and security, etc.).

Keeping in view the importance of financial management, the expenditure analysis of the Government, Aided and Self-Financing colleges of education have been shown from 2005-06 to 2009-10.

TABLE 3

Item-Wise Expenditure of Government Colleges of Education

(Percentage)

Item-wise Expenditure	*Years*					*AAGR*
	2005-06	*2006-07*	*2007-08*	*2008-09*	*2009-10*	
Salary of Teaching Staff	65.20	65.76	61.38	60.69	60.58	5.18
Salary of Non-Teaching Staff	25.56	26.83	30.91	31.59	31.36	8.78
Maintenance of Labs & Equipments	2.24	2.17	1.97	1.80	1.90	3.75
Maintenance of Furniture	0.93	0.72	0.85	0.76	0.85	4.86
Upgrading of Library	0.95	0.74	0.72	0.79	0.87	4.91
Stationery	0.68	0.48	0.58	0.60	0.55	3.14
Co-curricular Activities	1.89	1.22	1.61	1.67	1.66	4.38
Misc.	2.54	2.08	1.97	2.09	2.22	4.21
Total	100.00	100.00	100.00	100.00	100.00	6.23

It is apparent from the above Table 3 that in the case of Government colleges, the total expenditure has been on the rise and the annual growth rate of the expenditure has been 6.23% during the period of five years. It is also evident from the above Table that high percentage of their total expenditure occurred under the heads of salary of teaching and non-teaching staff. The share of salary of teaching staff during the period under study was more than 60% in the case of Government colleges.

TABLE 4

Item-Wise Expenditure of Aided Colleges of Education

(Percentage)

Item-wise Expenditure	*Years*					*AAGR*
	2005-06	*2006-07*	*2007-08*	*2008-09*	*2009-10*	
Salary of Teaching Staff	66.44	63.29	68.75	69.49	70.18	8.73
Salary of Non-Teaching Staff	18.90	23.56	19.95	19.75	19.03	8.18
Maintenance of Labs & Equipments	3.44	3.21	3.16	2.39	2.46	3.34
Maintenance of Furniture	2.63	1.12	1.17	1.44	1.13	-7.59
Updating of Library	1.89	1.92	1.47	1.42	1.65	6.42
Stationery	0.76	0.77	0.59	0.58	0.62	5.38
Co-curricular Activities	2.39	2.45	2.10	2.14	2.15	6.79
Misc.	3.55	3.68	2.81	2.80	2.77	4.75
Total	100.00	100.00	100.00	100.00	100.00	8.10

It is apparent from the above Table 4 that in the case of Aided colleges, the total expenditure has been on the rise and the annual growth rate of the expenditure has been 8.10% during the period of five years. It is also evident from the above Table that high percentage of their total expenditure occurred under the heads of salary of teaching and non-teaching staff. The share of salary of teaching staff during the period under study was more than 68% in case of Aided colleges.

TABLE 5

Item-Wise Expenditure of Self-Financing Colleges of Education

(Percentage)

Item-wise Expenditure	Years					AAGR
	2005-06	2006-07	2007-08	2008-09	2009-10	
Salary of Teaching Staff	65.14	64.74	64.61	65.33	64.37	6.12
Salary of Non-Teaching Staff	22.64	24.24	23.47	23.19	23.01	6.51
Maintenance of Labs & Equipments	2.47	2.24	2.38	2.63	2.83	8.05
Maintenance of Furniture	2.03	1.48	2.09	2.26	2.50	8.85
Updating of Library	1.25	1.19	1.19	1.10	1.21	5.93
Stationery	0.94	0.89	0.89	0.90	1.00	7.07
Co-curricular Activities	1.63	1.48	1.56	0.90	1.00	-2.40
Misc.	3.90	3.74	3.80	3.68	4.07	6.85
Total	100.00	100.00	100.00	100.00	100.00	6.29

It is apparent from the above Table 5 that in the case of Self-Financing colleges, the total expenditure has been on the rise and the annual growth rate of the expenditure has been 6.29% during the period of five years. It is also evident from the above Table that high percentage of their total expenditure occurred under the heads of salary of teaching and non-teaching staff. The share of salary of teaching staff during the period under study was more than 65% in case of Self-Financing colleges.

Comparative Analysis of Expenditure in Government, Aided and Self-Financing Colleges

Given the variations in selected number of colleges and again in the enrolment size in different types of colleges, it is pertinent to compute per student expenditure of different types of colleges for better understanding of the services, facilities and quality of education provided by the different types of colleges. Comparative analysis of different components of expenditure (per student) has been presented in following figures.

TABLE 6

Variations in per student expenditure (five years together) in Government, Aided and Self-Financing colleges of Education

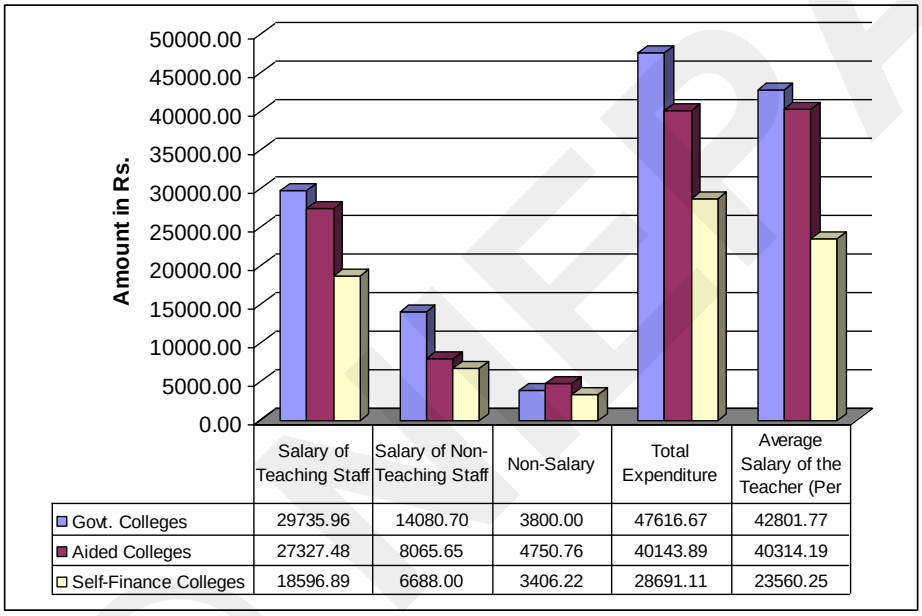
*(Amount in Rs.) **(Percentage)

Items	*Govt. Colleges*	*Aided Colleges*	*Self-Finance Colleges*	*All Colleges*
Number of Colleges	2	4	4	10
Total Enrolment	1140	2620	2250	6010
Student- Teacher Ratio	17.27	17.7	15.2	16.6
Per Student Expenditure*	47616.67	40143.89	28691.11	37273.71
Per Student Teacher Expenditure*	29735.96	27327.48	18596.89	24515.81
Per student non- salary expenditure*	3800.00	4750.76	3406.22	11956.98
Average Salary of the Teacher (Per Month)*	42801.77	40314.19	23560.25	33918.05
Expenditure Shared by the Students**	24.06	34.53	125.31	58.15

The above representation indicates that per student expenditure was the highest in case of Government colleges of Education at Rs. 47616.67, followed by Aided colleges, with per student expenditure of Rs. 40143.89, while the Self-Financing colleges had the lowest at Rs. 28691.11. It is also evident from Table 6 that per student teacher expenditure has been the highest the case of Govt. Colleges at Rs. 29735.96. Next in order were Aided Colleges with Rs. 27327.48 and, thereafter, Self-Financing colleges with Rs. 18596.89.

FIGURE 4

Per Student Expenditure



	Salary of Teaching Staff	Salary of Non-Teaching Staff	Non-Salary	Total Expenditure	Average Salary of the Teacher (Per
Govt. Colleges	29735.96	14080.70	3800.00	47616.67	42801.77
Aided Colleges	27327.48	8065.65	4750.76	40143.89	40314.19
Self-Finance Colleges	18596.89	6688.00	3406.22	28691.11	23560.25

A close examination of the Table reveals that the average salary of the teachers (per month) was the highest in Government colleges, followed by Aided and was the lowest in case of Self-Financing colleges with the respective amounts being Rs. 42801.77, 40314.19 and 23560.25.

A noteworthy aspect observed has been that sharing of institutional expenditure is with the students. Per student expenditure shared in the form of fees paid to the Government colleges was 24.06% and 34.53% in case of Aided colleges. On the other hand, in case of Self-Financing colleges it has been 125.31% while taking all the five years together.

Human resource is considered to be the most important asset in all types of Colleges of education. Comparative analysis of expenditure on salary of teaching staff in different types of colleges of education indicates that the Self-Financing colleges spent the lowest amount on salary of teaching staff and even had the highest student-teacher ratio.

A number of regular positions of teaching staff in Government and Aided colleges remained unfilled as the result of procedural delays. Comparative analysis across different types of colleges indicates that the Aided and Self-Financing colleges spent less amount on the salary of non-teaching staff than Government colleges. This indicates the low salary

status of non-teaching staff in Self-Financing colleges and lack of regular recruitment in Aided colleges of education.

Labs and equipments, furniture, library, co-curricular activities and miscellaneous items indicate the quality of education in a college of education. Comparative analysis of expenditure on these items in different types of colleges indicates that Self-Financing colleges spend the least amount on all these items. This indicates the low quality of education in Self-Financing colleges as compared to that of Government and Aided colleges.

Problems and Suggestions

Though all the three types of colleges of education have shown surplus budgets during the period under study but the utilization of available financial resources was not upto the optimum level. The study showed that inspite of the sound financial base, all the three types of colleges faced some problems related to the structure of governance and financial management.

Problems in Government Colleges of Education

- The Government colleges of education have inadequate infrastructural facilities.
- There has been a perennial lack of teaching staff and inspite of good financial position, the principals concerned do not have the power to appoint teachers at the institutional level as per the requirements.
- The financial inputs for the growth and functioning of Government colleges were not provided by the Government in time.
- There is no place for implementing innovative ideas related to creative teaching and other academic activities with the principals and teachers in the institutions because of lack of financial powers to the teachers and principals.
- The process for getting financial approvals for the development of the institutions has been time-consuming.

Suggestions

To overcome the above stated problems, some suggestions have been offered by the Principals of Government colleges of education: availability of adequate finances, ensuring physical facilities and commitment and dedication of teachers. If these suggestions are implemented many of the financial constraints in Government sector can be reduced. Financial inputs required for the smooth functioning of Government colleges of education need to be provided without much delay.

Problems in Aided College of Education

- The grant-in-aid to Aided colleges is processed first by the managing committees and then put up to Commissioner Higher Education (CHE) from where it is forwarded to the department of finance of the state. This lengthy procedure causes delay in receiving of the grants.

- Financial Assistance is only provided for the salary of regular teaching and non-teaching staff by the state Government and other items do not receive the attention of the Government.
- There have been long time gaps between the posts falling vacant and the recruitment of teachers for the same.
- The grant-in-aid rules do not provide adequate freedom to the colleges for experimenting with new ideas, and innovations, introduction of new courses of study, equal workload for teachers and new recruitment of teachers, establishment of labs and improving physical facilities.

Suggestions

- Recruitment of faculty, according to the requirement of the institutions, should be done.
- Funds should be made available in the beginning of the financial year.
- The inordinate delay caused by unnecessary correspondence should be avoided.
- State Government should provide necessary equipment and apparatus to the colleges of education for ensuring their effective functioning.
- Provision should be made for the faculty development programmes and increasing library funds for purchase of books and journals.
- In order to avoid delay in giving financial assistance to colleges of education, salary of the teaching and non-teaching staff should be directly released by the State Government.

Problems in Self-Financing Colleges of Education

- Weakness in the structure of the system of Self-Financing colleges is an important problem. There is no proper control of the regulating agencies over the managing committees with regard to improvement of physical infrastructure of the institution and other requirements.
- Invariably the attitude of the managing committee is to earn profit. It is because the owners of such colleges are mostly business- oriented persons and they fail to realize the social good in providing quality education in the colleges of education. They engage in the practice of appointing low qualified teachers at low salary so as to save more money and enhance profits.
- Lack of the financial powers in the hands of the Principals recruited by the Managing Committees of the Institutions.

Suggestions

- Regulatory bodies like UGC, NCTE, NAAC, Universities concerned and State Government should enforce the norms and standards rigorously while giving affiliation to the Self-Financing colleges of education. They should exercise strict control over the standards of these private institutions through accreditation and its follow-up.
- These bodies should act as facilitators and should supervise the proper conformity to standards in respect of admission, teaching and examination of Self-Financing colleges of education.

- NCTE may get a clear picture about the institution by setting up a panel of teachers for visiting the colleges concerned and submitting reports periodically about their functioning instead of simply reporting about their physical resources.

Recommendations

- The regulating agencies like NCTE and NAAC and universities concerned need to work in co-ordination with each other for qualitative improvement of the colleges of education in respect of the following : increase in number of seats, number of teaching and non-teaching staff, infrastructural facilities, research in the field of teacher education, production of educational literature, curricular development programmes for students and faculty development programmes for teacher educators. Researches should be encouraged to solve various educational problems, both at the secondary school stage and colleges of education.
- The state funding must continue to be an essential and mandatory requirement to support colleges of education with a view that such colleges are not only a part of higher education but also a part of secondary and elementary education as they prepare teachers for secondary and elementary schools.
- Government should prescribe a 'fee-policy' after studying the unit cost of education in institutions of teacher education. The surplus budget of the institution might be used as a subsidy for poor students or for investing on other items for enhancing the quality of education.
- The number of seats can be increased in well established Govt., Aided and Self-Financing colleges of education instead of opening of new colleges to obviate burden on the state.

The present study has made an attempt to analyse the structure of governance and management of financial resources in different types of colleges of education. It is an attempt to indicate that the differences in revenue and expenditure need to be managed through a proper management system and strategy. Ways and means must be found to cover the mismatch so that inclusive growth is addressed. In brief, this investigation draws ones attention to the governance and management of financial resources in Government, Aided and Self-Financing Colleges of Education with a view to enhance inclusive growth and quality in teacher education.

Policy Implications

The present study has its implications for the educational planners, policy-makers, administrators, principals', teachers and students. The present investigation has emphasised the need for quality education in all the three types of teacher education institutions, i.e. Government, Aided and Self-Financing. These institutions significantly contribute in sustaining and enhancing the quality of elementary, secondary and higher education, which further leads to national development.

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Women in Higher Education Today

— Structure and Agency from a Gender Perspective

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Abstract

The growing inclusion of women as students in institutions of higher education in many parts of the world stands in stark contrast to their weak and disadvantaged position as academics. Why does this occur? In an effort to understand more fully the process of change and resistance in relations of gender, this article explores the dynamic interrelation between structure and agency, two core sociological concepts. Structure functions through predetermined and macro-level constraints to the adoption of new ideas and practices; these constraints are examined through two key arenas: the household and the university as an institution. Agency at the individual level is expressed when women seek access to higher education, though dominant gender norms frequently prevail in their choice of study and career fields. However, neither structure nor agency is static. Universities do change over time, through the adoption of anti-discriminatory policies, measures to include more gender-sensitive tenure procedures, and the creation of women's commissions to review the condition of women students and academics. Exogenous forces such as developments in information and technology affecting reproduction and domestic tasks shape women's individual and collective agency. The confluence of these factors opens the possibility for the creation of alternative ways to respond to one's social system, thereby affecting structure itself. The process of change is not linear but is kept alive through multiple parallel developments. The paper ends with a call for more collective action by women academics.

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Introduction

Many individuals, institutions, and national governments readily subscribe today to the notion that women are fundamental social actors and that they should be integrated fairly into all aspects of society. Efforts to achieve gender equality in multiple arenas represent some of the most progressive steps in contemporary society, yet these efforts are still few and many of them are weak. Despite the paucity of public policies promoting participation of women in higher education, women have been gaining a presence in such institutions across the world. While this has been occurring largely as a byproduct of the mass expansion of universities—which has been greatly aided by a growing private sector—the enrollment of women in post-secondary education has grown almost twice as fast as that of men (UIS, 2010).Today, women represent the majority of university enrollments in four of eight world regions and their presence is particularly noticeable in Europe and the Americas. In European countries, 60% of higher education degrees are earned by women, including 50% of the Ph.D. degrees (OECD, 2010). A similar pattern occurs in the U.S., where women have earned the majority of the associate's degrees since 1977, the majority of bachelor's since 1981, the majority of master's since 1980, and the majority of doctoral degrees since 2006 (NCES, 2011). As faculty members and high-level administrators, however, the representation of women is still deficient.[1]

Across the world, the greatly increased number of women graduates has not resulted in similar gains in their academic positions. In the U.S., more men than women enjoy tenured and tenure-track positions while women are over-represented in non-tenure positions (AAUP, 2011). Women represent about one-fourth of the full professors (Curtis, 2011)—a figure that has been slowly improving over time—and the majority of instructors and lecturers, positions that offer very limited prospects for promotion and, for those in part-time employment, high job instability with no health or pension benefits.

Institutions of higher education have been changing enormously in recent decades, moving into more part-time positions and fewer permanent appointments (Black, 2005); indeed, some consider that the professoriate has been the occupation experiencing the most drastic change in contemporary society. In the U.S., between 1976 and 1995, a time span of only 20 years, part-time positions increased by 91% while full time increased by only 27% (Dugger, 2001). By 2011, 51% of the faculty worked part-time (AAUP, 2013). Tenure, long a distinctive feature of academic work, has become scarce, representing at present only 30% of the faculty positions; further, 19% of the full-time positions are now non-tenure track (AAUP, 2013). According to the American Association of University Professors (2011), women comprise 63% of the non-tenure track faculty—positions are generally part-time and subject to short-term contracts. Unsurprisingly, US women academics earn less than men at each of the professorial ranks and at any type of higher education institutions. Part-time and low-paid positions among women have also been detected in countries such as the

[1] I am fully aware that "women" is not a universal category as it intersects with socio-economic status, race, ethnicity, and age, among others. This intersectionality is not the focus of this paper. However, it should be stated that women from upper social classes are benefiting more than those from low-income families. For instance, in the U.S., more women than men graduate from college among families in the top 25% of the earning distribution; in contrast, there is almost no women's advantage among the poorest families (Coontz, 2012).

UK, Canada, Australia, and New Zealand. Among women faculty who work full time, it is not uncommon to be assigned heavy teaching, mentoring, and service loads, a practice that faculty of color (i.e., primarily African American and Hispanic) experience in particularly increasing ways. The latter phenomenon has been attributed to racist practices in the U.S. academy (Fries-Britt, Rowan-Kenyon, Perna, Milem & Howard, 2011).

Another important change affecting higher education institutions has been the increase of annual mechanisms to monitor the work of faculty members and to appraise programs and institutions (Black, 2005)—processes that consume considerable time and that reframe intellectual activities along the line of research production, revenue-generating projects, and individual promotion rather than issues related to social justice, an area that would open discussion on the conditions of disadvantaged groups in society. Because of these new practices, reaction to changes in the nature of the professoriate has been timid and sporadic.

In this paper, I seek to explore the tension between permanence and change in gender at the university level by invoking the interaction between structure and agency—two core concepts in sociology. My aim is to contrast spaces and possibilities for reproduction and transformation of gender relations. The paper is organized in two broad sections. The first puts emphasis on current situations characterizing the presence of women as faculty members at their place of work as well as their private domain (the household). The second part explores the various societal and institutional forces that enable structural change and individual action to emerge. I use a gender lens to bring attention to both material factors (salary, ranking of academic women) and symbolic factors (access and choice of fields of study). In attempting to account for both permanence and change in gender relations, this paper takes a holistic approach, incorporating elements such as public policies, institutional procedures, household relations, individual responses, and collective efforts to advance women's conditions. Most of my evidence focuses on the U.S. experience, exploring its institutions and policies toward gender and education as well as faculty responses to changing social contexts. At times, I draw on research findings from other countries to establish noteworthy parallels. I do not seek to generalize but rather to provide a concrete application of the concepts of structure and agency, using a country about which relatively abundant data exist.

Accounting for persistent gender differences

Structure

Structure can be defined as the set of principles that shape social practices as well as the set of the institutions that officially sanction and enforce those practices. Structures create rules, with different levels of adherence and penalty for failure to follow them, and these rules operate configuratively rather than separately (Ostrom, 1986). As historical, embedded, and embodied beings, people constantly experience social and institutional practices that influence their identity and sense of autonomy. Social institutions acquire and deploy power through both the rules they create and the resources they command. Structures function at macro, meso, and micro levels, thus ranging from social institutions and social networks to internalized social norms at individual levels (Sewell, 1992).The concept of structure at first sight implies determinism in social life because it assumes that

institutions are powerful forces in society, shaping communal life in stable and predictable ways.

From a sociological perspective, structures and ideologies are connected (as remarked by Gramsci, writing in the 1920s and 1930s [Gramsci, 1971] and by Marcuse, 1964); ideologies justify existing social conditions and relations, and normalize them. In the case of gender rules and norms, these are influenced by both patriarchal structures and ideologies. Patriarchy is an ideology deeply embedded in social institutions (family, religion, law, the economy, education, among others) and many such institutions, despite the fact that they are not static, are implicated in the continuing disempowerment of women (England, 2000; Morley, 2003).

Through such multiple venues, patriarchal ideologies link women to motherhood, caring, and personal service, while men are cast in the position of being assertive, aggressive, and protective of their families and, thus, responsible for their economic well-being (Ridgeway, 2011). Patriarchal ideology is stronger in some countries than in others and is significantly mediated by additional social markers such as ethnicity, "race," socio-economic class, age, and religion. At the same time, gender is a construct that presents variation according to location and context. For instance, gender boundaries have become more flexible in industrialized Western countries, while they have become increasingly constricted in several Arab countries and in Iran in recent years (Connell, 2008; Read & Oselin, 2008; Findlow, 2013).

As Sewell (1992) observes, structures are constituted by mutually sustaining cultural schemas, i.e., rules and sets of resources that both empower and constrain social action, which, in turn, tend to reinforce those structures. Regarding gender, this process of mutual reinforcement, with its penetration of social institutions and concomitant beliefs, naturalizes gender ideology and creates considerable constraints to change. Two institutions fundamental to the conforming of gender ideologies are the home and the educational system.

The Home. Whether closely-knit or loosely organized, households are not merely physical settings where individuals reside but also the center for our cultural understandings of gender (Ridgeway, 2011). Within the household, three key processes take place: a domestic division of labor drawn along gender lines that maintains persistent notions of femininity/masculinity; control over rules and resources vis-à-vis minors in the household; and constant socialization practices in which the questioning of everyday activities is weak and temporal (often reduced to a few adolescent and early adult years).

While women have increased their participation in the labor force, men have not undergone comparable increases in domestic responsibilities; as Connell notes, the gender division of labor in the household "remains intransigent" (2006, p. 448).Home environments generally do not challenge the prevailing stereotypes of gendered family responsibilities or the assumption that men should be more active in the public sphere and women more committed to the private realm of home, family, and relatives. Persistent gender inequalities in home responsibilities foster gender inequalities in access to money and power outside the home (Ridgeway, 2011). Because women are usually responsible for home management and childcare, they are less mobile than men and, thus, accept positions men would not (Dugger, 2001, citing Benjamin).And because all these processes are perceived as "normal," the home is one of the social institutions most resistant to change.

Recent studies of the amount of housework done by U.S. university professors indicate that women spend much more time in domestic work than men. Women professors with children have been found to devote 31.6 hours per week to childcare while men professors with children devote 17.4 hours (MLA, 2009). A survey of professors in the natural sciences in heterosexual relationships found that women performed an average of 19.3 hours per week of domestic work compared to an average of 4.7 hours per week for their male partners (Schiebinger & Gilmartin, 2010). An earlier nationwide survey of faculty with doctorate degrees reported that women faculty with children provided more than 30 hours per week in the provision of care for others, and they provided this support up to age 50, so it was a practice throughout most of their peak academic years. Not surprisingly, for faculty women with Ph.D.s, the combination of marriage and childrearing also decreases the likelihood of entering a tenure-track position (Goulden, Mason, & Wolfinger, 2005).

For a married student or married faculty member, a part-time position is certainly more compatible for women with young families than a full-time position. However, part-time work entails dedication mostly to teaching and generally to large classes. Research requires large blocks of uninterrupted time and cannot be conducted when one's time is fragmented into multiple tasks, including those pertaining to household management. It should be noted that the domestic division of labor is stubborn to change. In Canada, for instance, despite improvement to parental leave policies during the 1970s, women and men asserted about a decade later that parenthood greatly affected women's careers (Baker, 2012).

Barriers to women's full careers vary in intensity across countries but they are similar nonetheless. The combination of forces linked to marriage, housework, and childcare brings to the fore deep ideologies regarding femininity and masculinity that demand women's and men's time and energy in drastically differentiated ways. Leonard and Malina capture it well when they remark: "Being a mother in academic life is a predominantly silent experience. The facts of this motherhood—the personal individual struggles, compromises and solutions to daily problem of attempting to combine being a good mother and a competent, productive academic [are] largely unvoiced at work" (cited in Marchbank, 2005, p. 145).

The University. Centers of learning are first and foremost social institutions and thus not exempt from being gendered institutions; in fact, one of the main functions of formal education is to ensure the integration of young generations into prevailing social norms and expectations. The context of schooling—its cognitive focus, the top-down nature of most of its institutional relations, the enormous mutual influence of peer groups—does little to challenge the stereotypes of wider society (Connell, 1996; Mohammed, 2009). At the university level, the dynamics are very similar.

Although operating at a higher level of intellectual engagement and reasoning than many other organizations, universities are clearly gendered (Brooks, 1997; Blackmore, 2000; Brooks & Mackinnon, 2001; Acker & Armente, 2004; Allen, 2011), as manifested in the dominance of males in authority positions, the strong ethos of competition to the detriment of solidarity, the segregation by fields of study, the growing distinction between research and teaching (with the accompanying belief that teaching is more feminine and research more masculine), and the unquestioned influence of peers in the formation of gender identities. A large number of institutional case studies conducted in the U.S. provides evidence that women-unfriendly academic climates continue to exist, particularly in the fields of science and technology (e.g., Johnsrud & Des Jarlais, 1994; Cronin & Roger, 1999; CWSEM, 2006; Mason, Goulden, & Frasch,, 2009; Moss-Racusin, Dovidio, Brescoll, Graham, &

Handelsman, 2012; Duch, Zeng, Sales-Pardo, Radicchi, Otis, Woodruff, & Lunes, 2012). This is aggravated by the fact that women (again due primarily to multiple demands on their time) participate less than men in professional networks, accumulate less publications, and tend to receive less mentoring than men(Chesterman, Ross-Smith, Peters, 2005). While both women and men academics have considerable control over their schedules, women face inflexible service conditions since they are expected to meet similar levels of research productivity and, increasingly, similar levels of grant procurement and entrepreneurship.

In the U.S., there has been a positive response toward women in education by the state through the use of anti-discrimination legislation such as Title IX, which eliminated admission quotas against women that existed for certain fields such as medicine and law, encouraged affirmative action measures, and punished sexual harassment (Stromquist, 2013a). While anti-discrimination policies continue in place, affirmative action has been successfully challenged in the courts, even though such measures were taken much more often regarding Afro-American and Latino minorities than regarding women. Significant gender disparities in rank, salaries, and promotion are visible. In addition, it is more difficult for women to achieve tenure and promotion, equal pay opportunities, research funding, and infrastructural support (Morrison, Bourke, & Kelley, 2005). There also exist an unwelcoming climate, exclusionary practices, and sexual harassment toward women in institutions of higher education (Dugger, 2001; Cotterill & Letherby, 2005; Bozal, 2010; Allan, 2011). The chilly climate, first detected in the early 1980s, refers to small but frequent inequalities, either not noticed or not contested, that cumulatively lower women's self-esteem, confidence, aspirations, and participation (Hall & Sandler, 1982).

Agency

This concept refers to action taken by individuals in response to their environment. Agency is often conceptualized as part of social action theory and defined as the value-motivated action of individuals; this definition recognizes the importance of subjective meaning attached to a situation by an individual actor (Theodorson & Theodorson, 1969). Individual agency can involve *accommodation* to existing rules and norms but it is especially promising when it involve forms of *resistance* to established structures. Agency can also refer to collective action, in which case it often takes place outside traditional institutions and generally in opposition to them.

Gender is activated by deeply ingrained understandings of what masculinity and femininity are supposed to be. In the case of higher education, women exercise individual agency by seeking admission to university, selecting given fields of study, and completing their studies. Whether women are conscious of this or not, many seek to position themselves better in the labor market (Yates, 1997). This instance of agency is clearly affected by other social markers, notably ethnicity, race, and socio-economic status. The career choices women and men make are influenced by gender ideology, which affects their assessment of self-efficacy as well as their career aspirations (Burstyn, 1993; Bradley, 2000; Ridgeway, 2011). Since career "choices" are further shaped by social expectations of appropriate gender roles and functions, in many ways these *individual choices* are in fact *social products*. Because many social factors affect men and women differentially, in the end, women pay an education premium to compete equally with men in terms of salaries. Sociologist Connell (1996) refers to men's advantage over women as the "patriarchal dividend." The fact that

women need more years of education to compete for salaries similar to those of men could conversely be called the "patriarchal penalty." The lower salaries earned by women, in turn, are taken as indicators of the low contribution of women's careers to society—a perception that creates a vicious circle for women.

Higher education certainly helps women to compete in the labor market and to make better life choices through increased understanding of their surrounding world. Nonetheless, in the U.S., there are significant differences in financial returns to education between women and men with similar levels of education. As Table 1 shows, women with some college education earn less than a man with a high school diploma, women with a bachelor's degree earn almost as much as a man with an associate degree, and women with a master's or more earn the same as men with a bachelor's degree (NCES, 2010); on average, women need at least two more years of education to achieve salary parity with men. In part, this is due to women's predominance in low-wage fields, as they comprise 87% of those in the childcare industry and 86% of those in the health aide industries (Perry & David, 2011). But gender pay inequalities can be found within the same occupations and positions between men and women with higher education (Alkadry & Tower, 2006).

TABLE 1

Median Earnings of Full time, Full-Year Wage and Salary Workers, Age 25-34 by Educational Attainment and Sex, US Dollars, 2010

Level of Education	*Men*	*Women*	*GPI**
Less than high school completion	24,000	17,800	.74
High school diploma or equivalent	32,800	25,000	.76
Some college	37,900	29,500	.78
Associate degree	39,900	34,700	.87
Bachelor's degree	49,800	40,000	.80
Master's or above	64,200	49,800	.77

Source: National Center for Education Statistics, 2010. Adapted from Figure 49-2.

* Gender Parity Index. This index is computed by calculating the proportion of women's salary in a given category compared to the salary of men in the same category.

Overtime, the wage gender gap has been decreasing. In 1979, the average woman earned $0.62 cents for every dollar the average man earned; by 2010, she earned $0.80 cents compared to her male counterpart (U.S. Department of Labor and U.S. Labor Statistics, 2011). Still, women in the U.S. earn approximately 30% less than men at similar education levels (Black, 2005). Some occupations have become more female-dominated than in the past. In 1980, women represented 75% of primary school teachers and 68% of social workers; by 2012, they were 80% of primary school teachers as well as 80% of social workers (Coontz, 2012).

The college major has a significant role in the gender wage gap, for example, when comparing engineering vs. education. But it is also the case that within similar professions, women earn less than men. For instance, women today comprise 40% of all full-time managers, but their median salary is 73% of male managers (Coontz, 2012). Moreover, women tend not to be present in two fields central to their empowerment: economics and political science. In the U.S., men are three times more likely than women to major in

economics (Dynan & Rouse, 1995); slightly more men than women get degrees in political science but only one-fourth of the full-time faculty in this discipline are women (APSA, 2004).It has also been observed that in society at large, American women continue having lower aspirations for political office.

As academics, women tend to concentrate on a few fields, notably the humanities, the social sciences, and education, which has resulted in salaries lower than those of men. Women earn less than men at each of the professorial ranks and at each institutional category (providing doctoral, master's, baccalaureate, or associate degrees). Table 2 shows the salary differential between women and men professors. While multiple factors operate to create the gap, the key point here is that gaps exist even at high levels of education and within similar professorial ranks. Combining all rankings and types of institutions, the gender gap is 19.6 percentage points, although the gap among tenured or tenure-track professors is less and oscillates between 7.1 and 12.7 percentage points (AAUP, 2014). The situation seems to be improving slowly as a 9% gender gap in salaries was detected several years ago among recently hired faculty members at research-intensive universities (Porter, Toutkoushian, & Moore, 2008).

TABLE 2

Average Salary in Dollars for Women and Men Faculty.US, 2011-12
All Categories of Institutions

	Men	*Women*	*GPI*
Professor	120,797	105,402	87.3
Associate Professor	82,628	76,797	92.9
Assistant Professor	70,781	65,321	92.3
Instructor	49,802	48,024	96.4
Lecturer	57,563	52,045	90.4
No Rank	68,880	60,141	87.3
All Combined	91,994	73,932	80.4

Source: AAUP, 2014, Table 5, based on 1,142 reporting institutions.

Accounting for social change

For those committed to social change, it is important to perceive structure not as opposed to agency but rather as requiring it. As Giddens (1976) argues, structures are not only those forces that place constraints on human agency but also those that enable it. He, as well as Bourdieu before him (1977, English translation), see structure as a process, not a static state; the processes set in motion by existing structures can themselves change. Further, though resources are unevenly distributed, some measure of human and non-human resources are controlled by all members of society. This opens the possibility for the empowerment of agents (Sewell, 1992).

Challenges to and modifications in structure

Attention to access as the key objective for women's education has distracted us from paying attention to the obstacles to women's inclusion and the use of potential mechanisms to change universities (Morley, 2005). While pervasive gender ideologies may be difficult to combat, several social institutions—including educational institutions—are overcoming the resistance of ingrained social constructs to change by moving beyond parity and increasingly committing themselves to the enactment of social justice. New norms and values emerging from various social arenas, such as the women's movements, government policies on equity such as Title IX in the U.S., and judicial decisions on equity and against discrimination and sexual harassment have compelled universities to allow access to a diverse set of people, which includes individuals from low-income families, ethnic minorities, and women. This has created a space for the incorporation of social actors whose stakes in a new social order are high, and has encouraged them to present demands for institutional change, from increased diversity in the composition of student and faculty members to specialized programs that recognize marginalized identities such as gender and ethnic studies. There have also been initiatives by the federal government to fund projects in several universities to engage in workshops to develop supportive networks among faculty of all ranks to increase their awareness of gender issues in their place of work and move with greater ease through processes of promotion and tenure. Such initiatives have generally been successful.[2]A development that has also been beneficial to women concerns the creation of women's commissions in universities. While some feminist academics have decried their existence as a way to defuse conflict, these commissions have given women a collective voice on campus and have brought to the fore key women's concerns (Allan, 2008). In the absence of systematic research, these commissions have illuminated the condition of women in their respective institutions. Women's commissions and legislation focusing on women are usually perceived as changes made at the structural level, yet many of these outcomes were really the result of active collective agency on the part of women, with the institution (or state) responding to their pressure.

In other spheres of society, crucial positive developments are challenging patriarchy. According to Castells (2004, p. 193), "informational, global economy, technological changes in the reproduction of human species, and the powerful surge of women's struggles" are influencing societies toward the end of patriarchal norms. He takes as indicators of progress the reductions in fertility rates and increases in the marriage age and in divorce rates, as well as increases in women's participation in the labor force. While it seems an exaggeration to declare patriarchy a dying order, important demographic and technological changes are occurring in many parts of the world.

As the number of female faculty increases, educational institutions have developed internal policies to promote equal employment opportunity and equal treatment. For women who seek academic careers, universities increasingly provide support through maternal and parental leave and "stopping the tenure clock"—a mechanism in U.S.

[2] This federal initiative, known as ADVANCE, provides "institutional transformation" grants that offer on average $4 million over a five-year period. To date, some 35 such grants have been distributed through competitive procedures. Considering that at least 200 research universities exist in the U.S., the possibility of institutional change even among those elite institutions is circumscribed to a few.

universities that allows pregnant professors at assistant and associate levels to take time off for a period following birth without compromising the time allotted to secure promotion.[3] Nonetheless, only 32% of U.S. research universities offer a paid modified duty option as one component of their family-friendly measures (Smith & Waltman, 2006).

A few policies have been in place to create a more gender-friendly space for women's work, including in post-secondary institutions. European countries lead the way in this respect by offering reasonable paid parental leaves, childcare facilities, and gender training of faculty members and administrative personnel (e.g., Husu, 2007, describing Finland; Sporn, 2007, describing Austria). Another positive example comes from Germany, which has institutionalized equity plans, introduced gender studies in all its universities, and created the position of gender equity coordinator. In practice, however, this position tends to be occupied by a graduate student who then has little weight in decision-making. On the other hand, the financing of public universities in Germany depends not only on advancement in research and teaching but also in implementing measures to ensure gender equity (Zapata, 2010). In contrast, in the U.S., such measures are very modest. Parental paid leaves are given in only one-third of universities, and mostly only to mothers. In a study of a major U.S. research-intensive university, while 72% of the mothers took parental leave, 82% of the fathers did not, mostly for fear of social stigma and negative repercussions such as delayed promotion (Lundquist & Misra, 2012). Some fields, particularly those in science, technology, engineering, and math (the so-called STEM fields) are described as having "child-free" department cultures. Childcare remains a major obstacle to women in the academy (as well as in other occupations); some estimates hold that childcare costs at present exceed the annual median cost of housing rent in 24 U.S. states (Durno, 2013). Kanter (1977a), who first detected the need for a work-family balance in our lives, warns us about thinking that institutional change can resolve this great problem that women in particular must endure. She says: "Important questions can be raised about the limits of change in any institution alone. Some people are members simultaneously of an occupational and a family system. Furthermore, some people carry over orientations and pressures from one into the other, in part because norms of the two may converge" (p. 78).

While the gender problem in education is by no means simply one of access to all levels or one of assuring the existence of a substantial "pipeline,"[4] governments and universities continue to reduce it to issues of parity, i.e., the need to achieve equal enrollment of men and women. And since women continue to be the minority in STEM fields, most efforts go into increasing the participation of women in those fields. Given the prevailing practices among universities of competing for high rankings, which are associated more with the natural sciences than the social sciences or the humanities, very limited institutional reflection takes place on the gendered nature of universities, which thus make practically no effort to

[3] On the other hand, a study of longitudinal effects of the decision to stop the "tenure clock" (Manchester et al., cited in Jaschik, 2012) found that this decision negatively affects women in terms of salary raises and creates a perception by others of women's "competing commitments" to their profession.

[4] A strong critique of the pipeline explanation argues that women's low-level positions in university hierarchies are not merely a consequence of their small numbers as potential candidates to higher office but rather the consequence of current discriminatory and unquestioned gender practices (Allen & Castleman, 2001).

dismantle the patriarchal ideology and practices that continue to mold institutional life. Not surprisingly, little is done to counter the effects of practices linked to the domestic division of labor; issues of childcare are still seen as strictly private concerns that need not require organizational consideration. Social definitions of academic disciplines and their fit into masculine and feminine conceptions of careers in those disciplines are not problematized and women's selection of fields of study are considered matters of personal choice for which the university assumes no responsibility other than to offer scholarships to reduce expenses for women in S&T careers or to offer limited mentoring.

Some regressive steps are also evident. One example is provided by UNESCO's actions in higher education. In preparation for the 1998 World Conference on Higher Education, UNESCO requested a paper on Higher Education and Women, in which 10 women professional organizations participated (UNESCO, 1998).This document identified several goals to be accomplished by 2010. These were: equal participation of women and men as chairs, professors and heads of department posts, an increase in the number of women rectors and vice-chancellors, and an equal participation of women and men in university senates. When the subsequent World Conference on Higher Education took place in 2009, the priorities for action of the meeting made no mention of the previous objectives in the Higher Education and Women document. The priorities were merely to encourage "women's access, participation and success in higher education" without further development of what this might entail (UNESCO, 2009). In a similar vein, a special study requested by UNESCO in preparation for the 2009 conference, entitled *Trends in Global Higher Education: Tracking an Academic Revolution* (Altbach, Reisberg, Rumbley, 2009), referred to women in passing, only to indicate that their numbers as students in higher education would probably continue to increase. The absence of a deeper treatment of gender by UNESCO, particularly regarding the crucial role of ideological factors in the construction of gender and gendered education institutions, reflects a weak understanding of key issues affecting women in the academy as well as limited interest to learn about them.

A crucial transformative action by the state should be the provision of subsidized childcare and the provision of incentives for a much greater sharing of rearing children and household work with men (England, 2000). This might be possible, but at this time, women are not demanding such cultural shifts or mobilizing for them.

Recognizing agency

Although in many instances universities foster working environments that create negative gender experiences, women are attending institutions of higher education in increasing numbers and seeking positions as academics. Their agency in seeking higher education can be attributed to several factors. Demographic reasons, such as delaying the age for marrying and having fewer children thanks to a greater use of birth-control devices among women, have been invoked. Relying less on marriage, women increasingly realize they need to position themselves as independent workers and to fare well in their search for future jobs. In the U.S., it is not only white women who are increasingly seeking university degrees, but also African American and Hispanic women. In both minority groups, women now have a 9% advantage over men in undergraduate completion rates (Mather & Adams, 2007); within those cultures, therefore, there have been gradual inroads toward making breadwinning a part of motherhood (Connell, 2008). Sociological forces, such as declining

discrimination in the labor market, greater possibilities for balancing family and professional life, reduction of discrimination within families in providing access to education to sons and daughters, are also at work. Economic explanations are valid as well: post-secondary education has become the main threshold for access to positive social mobility in the U.S. And even at that level, the competition is high as 30% of the adult population over 25 years now has a bachelor's degree or above (U.S. Census Bureau, 2011).

Today, women recognize that they need more education to compete with men for similar salaries or, as seems to be the case in Europe, they benefit from increasing rates of return to higher education (Vincent-Lancrin, 2008). Academic performance is also at work: girls have been attaining higher reading scores, comparable scores in math, and slightly lower scores than boys in science in all PISA test administrations thus far—a phenomenon observed throughout the world. Naturally, girls' high academic achievement nurtures aspirations for higher education, and higher levels of education dispel social notions of lower competence among women (Ridgeway, 2011), which, in turn, facilitates the incorporation of women into the labor force. Finally, changes in gender ideology are also at work. Changing attitudes and values regarding the roles and aspirations of women, in part due to feminist movements in the 1960s and 1970s, have been considerable. The wide dissemination of democratic norms—a social revolution facilitated by information and communication technologies as well as travel—is conveying the notion that women should strive for autonomous and egalitarian lives.

The subsequent pursuit of academic professions among women seems to be related to, among other factors, the excitement of intellectual life, the relative autonomy of the professoriate, and its high social status. Teaching in universities does have a component that is harmonious with conventional family schedules. But the research and service components of academic jobs are quite demanding and, if family responsibilities by gender continued unchanged, the research activities by women might not be performed at full capacity or may take longer to complete. Thus, women's participation in the academic world is growing but often in part-time positions, distant from high-level decision-making, and in institutions with lower prestige. In the U.S., academic women earn less than men in any field, even in those in which they are the majority, such as the education and health professions. This occurs in part because institutional and social discrimination is at work, as women encounter entrenched masculinist values and practices in the bureaucratic and disciplinary cultures of the university, as described above. But also accounting for salary differences between men and women is the much higher participation of men in better remunerated fields in the natural and physical sciences, math, and engineering, as well as differences in research productivity.

The creation of women's studies and gender studies programs can be taken as a powerful instance of collective agency by women in university institutions. Even though such programs are poorly funded, attract small numbers of students, and have been criticized for being Eurocentric and depoliticizing the understanding of gender (Shanani, 2003; Lind, 2003; Howie, 2007), they represent a new claim on intellectual life. In the U.S., however, these spaces have not been free from conflict. Multiple perspectives have recast women's issues away from material problems and framed them primarily along cultural, ethnic, and LGBTQ lines so that women scholars no longer speak with a unified voice (Glazer-Reymo, 2007).

Women academics exercise agency also in the production of their own research. Given the demands on their time, which are significantly different from those faced by their male counterparts, they engage in more modest levels of productivity. Consequently, women's research projects (as documented in the UK, Canada, and New Zealand) tend to be small in scale, applied or based on local research, and use qualitative research methods; also, few of the women academic projects build on international collaboration, as such requires participation in wide academic networks (Baker, 2012; Sugimoto, 2013). The remarkable point here is that women's agency, in trying to accommodate to mothering and caring duties, results in women occupying positions that reduce their competitiveness for future academic promotions.

Although in universities there is a lack of spaces where experiences may be shared, observers such as Brooks and MacKinnon, 2001, based on the experience of women academics in the UK and New Zealand, argue that women academics are gradually recognizing the gendered dimensions of practices such as leadership, productivity, promotion, workload, discrimination, sexual harassment, mentoring, among others (see also Brooks, 1997). This is facilitating women academics' participation in certain programs that open to them through institutional initiatives, as seen above in the case of the U.S. Women's groups through conferences, their own research, meeting with other like-minded organizations, frequent workshops transmit ideas about change, despite their lack of funding and even facilities (Alexander & Mohanty, 1997). Some of this, unquestionably, influences gender developments in higher education institutions.

On the other hand, women in the U.S. have not organized themselves as faculty of color have done. A number of minority professors have been working together in recent years to investigate processes of discrimination and everyday experiences in the research-intensive universities in which they work (Fries-Britt et al., 2011). Through their published findings, which reveal multiple practices of open and disguised discrimination, these faculty of color are leading some university administrators to correct prejudicial practices and develop specific policies to counter abuse or ill-treatment of minority professors. In contrast, academic women are divided by different perspectives in the conceptualization and theorizing of gender and the distance most of them keep from activists in the world outside universities (Cole &Luna, 2010). Consequently, women's agency is mostly expressed through individual than collective agency.

Structure validates ideology and creates constraints to change, as we stated before. But it is still possible to engage in strategic choices within established constraints. Higher education gives women an identity outside the family and this fuels the desire for control over their own lives and for greater career aspirations. Yet many decisions—i.e., agency by women—still take place under traditional, pre-established parameters. Consequently, women engage in numerous preemptive behaviors that will not create family-work conflicts. They prefer jobs with flexibility regarding family routines, bypassing those with demanding schedules; they prefer jobs that do not require performance in distant settings. So women continue to enter careers in education, nursing, the humanities, and the social sciences. But women have also been entering in substantial numbers some professional fields such as law, medicine, and business—fields that bring prestige and high income, even though they are not at the cutting edge of discovery, as fields in science and technology would be.

Obviously, education alone, even at the highest levels, does not create feelings of feminist resistance or even gender awareness. The evidence shows that highly educated

women, as women academics are, can engage in influential activities such as knowledge production and teaching and yet not be able to mobilize themselves as a collective force. A strong force that is discouraging agency—against either sexism or racism—within universities today is the increasing consolidation of an institutional culture that constantly deploys audits, quality assessments, and accountability procedures. Does this detract from questioning the institution and shaping professional identities in conformist ways? Morley (2003) would argue that these procedures have a profound impact on academics. Such being the case, the space left for oppositional behavior, including calls for changing gender relations within universities, seem to be very constrained.

Moreover, under the competitive climate that characterizes academic environments today, there is little time for exploration of shared career concerns with colleagues and the cultivation of collective responses. Seldom do women professors meet to address gender issues; prevailing social norms have succeeded in rendering such a concern subjective and thus a non-academic pursuit. More seriously, research indicates that academic women themselves "tend not to view problems in direct gender terms but as their individual choice, although most explanations given are indirectly gender-related" (Donovan, Hodgson, Scanion, & Whitelegg, 2005, p. 252).

Conclusions

Understanding the interrelations between structure and agency helps to see ways in which women have both advanced to higher levels of education and found limits to their success through education. One thing is clear: cultural norms are not totally shared by all and are, therefore, not impervious to change. DiMaggio (1997, p. 265) remarks that "cultures in which people are socialized leave much opportunity for choice and variation." Some areas remain protected and are deeply defended; others seem more flexible and distant from the watchful eye. DiMaggio is also very accurate when he observes that changes do not happen simultaneously and that structure comprises institutions that follow different logics: capitalism, state, democracy, family, religion, science.

Agency is made possible by self-reflexivity, which is an exercise no one can totally suppress. Acts of self-reflexivity lead to change, first by regarding more critically one's own experience and, later, by resisting the status quo. DiMaggio (1997, p. 282) believes that fostering reflexive efforts are events with an "emotional resonance" to people in their surrounding environment. This line of argument would suggest that social change is inexorable as there will always be events that invite introspection. While there is a constant interaction between structure and agency, it would appear that individual changes precede cultural changes. For example, many more women than in the past are working outside the home and still the model of the full-time housewife dominates, as women continue to conduct most of the domestic and caring responsibilities.

As we reviewed the various policies and practices affecting higher education, in several instances we could observe a clear interaction between structure and agency. Structure and agency affect each other constantly, as structures set boundaries to our perceptions and behaviors and, in turn, through our actions we influence and reshape, albeit gradually, the structures within which we live. In other words, we participate in both recreating and contesting the conditions of our oppression. This creates the ebbs and flows of social change. Much of what we call structural/institutional change has come into being as a result of

individual or group agency in which women (in the present case) have challenged oppressive conditions or acted proactively.

Education has given women greater potential and their drive for university access is a strong and widespread manifestation of individual agency. Education has not often fostered substantial gender awareness, however, nor has it enhanced women's desire for a faster and more comprehensive set of changes in the social relations of gender. At the structural level, given the state's safe preference for recognizing gender issues almost exclusively in terms of numerical parity, the increasing presence of women in universities is taken as a sign that previous policies in their favor have been entirely successful. And since there is a widespread belief that knowledge is neutral and that universities impart objective and scientific knowledge, the gendered nature of these institutions remains untouched. The notion that institutions of higher education are harmonic and driven solely by merit is one of the strongest social beliefs, and this deters researchers from examining unequal distributions of rewards and recognition and from questioning gender-socializing practices.

Within universities, education quality is currently being defined as that which leads to saleable products, which gives much more importance to the fields of science and technology. With globalization, universities are becoming lopsided institutions, with a few fields—those in science and technology, all dominated by men—occupying preeminent positions (Blackmore, 2000; Stromquist, 2012, 2013b). Under these conditions, it is difficult to foreground gender as an urgent matter as well as to engage in challenging acts of self-reflexivity. As Morley (2005, p. 215) remarks, based on her profound knowledge of higher education dynamics in the UK, "gender sensitization programs might not be enough to dismantle and challenge deeply entrenched patriarchal practice. We need a theory of male privilege rather than female disadvantage."

Women's agency in the university today is alive and visible but operating mostly at individual levels and within traditional parameters. Thus, the clustering of fields of study, according to gender, persists and the subsequent segregation in careers is reproduced. Agency is deployed for individual advancement—a legitimate concern. Yet, instances of collective agency—the source of substantial social change—are very few and mostly outside the academy.

To break down the gendered nature of higher education institutions, it is clear that structures must be the target of *collective* action, and that both institutional and *cultural* change must be promoted. The household must be brought into continuous examination and contestation for its central role in the reproduction of inequitable social relations. This will require examination and contestation of dominant notions of masculinity and femininity. The influence of the mass media, which thrives on a strongly dichotomous representation of feminine and masculine norms, needs to be met with a countervailing force. In addition, expanded provision of childcare services and medical and family leave is essential to produce a better balance of work and family. The curriculum, at all levels of schooling, should incorporate discussion of the domestic division of labor; waiting until women begin to choose non-traditional fields of study—e.g., STEM—is too little and rather late. Educational work should begin early in people's lives and should present more inclusive family models and egalitarian relations.

The provision of greater social services, a more even distribution of domestic and care work, and recognition of such work in social protection systems remain to be accomplished (UNRISD, 2010) in most countries. However, even in the few countries where substantial

childcare facilities and parental leave are provided, women continue to evince limited academic representation as full professors. In part, this might be due to the weak participation of women in political action. Not only are women consumed by domestic duties but they are also more reluctant than men to engage in politics; even in academic settings, they tend to be wary of positions of leadership and seldom engage in collective action to promote the examination of gender issues.

A purposeful process of change is possible but degree of transformation requires understanding of dynamic forces as well as individual and collective agency not only to accommodate pressing gendered demands but also to contest them. A fact that cries for attention is why academic women are not using their numerical advantage to penetrate interstices of power within the university and bring about new institutional cultures. What are women academics doing to advance their still marginal position? Obviously, education alone, even at the highest levels, does not create feelings of feminist resistance or even gender awareness. The evidence shows that highly educated women, as women academics are, can engage in influential activities such as knowledge production and teaching and yet not be able to mobilize themselves as a collective force. Now that more women are becoming professors, classrooms should be more utilized to explore gender issues and sensitize women and men about the functioning and consequences of gender regimes. Further, while it is usually deplored that so very few women are university presidents, women today comprise 50% of senior academic affairs in the central administration and 36% of the academic deans in U.S. universities (Curtis, 2011). Since women have a numerical majority in some influential fields such as education, there exist opportunities for them to develop their collective agency to bring career choices and aspirations under gender analysis. The power of numbers has brought about gender changes, albeit mild, in private corporations (Kanter, 1977b). Such a collective agency is needed to disrupt traditional ideas about men and women, masculinity and femininity, and ultimately to produce an altered social environment in institutions of higher learning. The numbers of women as academics is substantial. Why not use this resource to increase gender awareness and question gender relations among men and women students and among men and women academics?

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RESEARCH NOTES/COMMUNICATIONS/COMMENTARY

Meritocracy in Two Centralised University Admission Systems

— Same Principle, Different Outcomes

Chang Da Wan*

Abstract

The use of meritocratic principles in the university admission system is considered the 'gold standard' and commonly conforms to the concept of fairness. These principles also help in identifying the most talented individuals, based on the 'merits', to be admitted into university. However, meritocracy can be implemented in two different ways in a centralised university admission system using the same 'merit', and the ways of implementation lead to different outcomes, whereby not necessarily, the best applicants are admitted. Thus, the understanding of implementation and the different outcomes have important implications for policy-making as well as for applicants in highlighting the importance of information to strategise their application in order to stand a greater chance for admission into public universities through such a centralised system.

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Introduction

University admission based on meritocratic principles, in theory, seeks to select the most academically talented applicants without regard to their social status, gender, and ethnicity (Liu, 2013, Zimdars, 2007). The 'merits' within the meritocratic principle can be interpreted as educational qualifications (Bell, 1973) or intelligence with effort (Young, 1958). Meritocracy, a term coined by Michael Young (1958, 2001), has increasingly become the 'gold standard' in educational selection, including university admission. More importantly, meritocracy is, at times, understood as equivalent to fairness (Nahai, 2013). This impression is because social selection, based on meritocratic principles, gives confidence regarding the possibility of ranking individuals according to their 'merits'. Furthermore, selection in this manner also helps identify the most talented individuals academically and reward them with an opportunity for admission into university.

Regardless of the conceptual debates about meritocracy in university admission, this paper aims to unpick two possible ways in which meritocracy can be operationalised or programmed in a centralised university admission system. I would argue that the different ways in which the concept of meritocracy is operationalised can lead to different outcomes of the selection processes. Hence, these differences in outcomes, although based on the same principle of meritocracy, have important implications for policy and decision-making, which further suggest the need to re-think the concept of meritocracy and how meritocratic principles can and should be introduced into university admission processes in a centralised system.

Two Ways of Programming Meritocracy

In a centralised admission system, the process of admission into public universities is typically managed and decided by a centralised Admission Unit in the Ministry of Education. As public universities tend to be highly subsidised by the State and, at times, may be considered to be of better quality, they were, therefore, the main choice for most students, with entry into these institutions being extremely competitive. Often, the demand for places is far higher than what these universities can offer. However, to ensure fair access, it is common for the principles of meritocracy to be introduced into the admission system, whereby applicants are ranked in accordance with their academic abilities and the rank does not take into account gender, ethnicity, social status or family background.

However, although the principle of meritocracy is similarly understood, there can be more than one way in which this principle is operationalised in a centralised admission system for public universities. To show the differences, I shall use the example of two different countries[1] – Country Alpha and Country Omega – to illustrate the ways in which meritocracy can be operationalised.

[1] The countries are not hypothetical but to ensure anonymity and avoid political sensitivity, synonyms are used to represent these countries and details can only be described in a general manner to ensure that anonymity is not violated.

Country Alpha

In Country Alpha, public universities have to inform the Centralised Admission Unit about the number of students they can accommodate in each academic programme. At the same time, applicants, before sitting for the National University Entrance Examination, have to register their interest and provide five programmes of their choice, based on the list of programmes published by the centralised unit. After the result of the National University Entrance Examination is announced, the centralised unit in the Ministry ranks the applicants according to their results and allocates to the applicants their stated choice on one-by-one principle. This means that the applicant with the best result is allocated their first choice programme, followed by the second applicant and so on. If an applicant's first choice programme has been filled, the applicant is allocated the programme of his or her second choice.

Country Omega

Similarly, public universities in Country Omega also have to inform the Centralised Admission Unit about the number of students they can accommodate in each academic programme. Based on the list of programmes published by the centralised unit, applicants submit an application to the unit stating their academic performance in one of the pre-university programmes recognised by the Ministry of Education. The applicants have to indicate five programmes of their choice.

On receipt of the applications, the Centralised Admission Unit develops a main list for all applicants, as well as sub-lists for each programme, based on the first preference of the students. The sub-list for a given programme ranks the academic performance of the applicants who indicated the programme as their first choice. Decision is then made based on the number of places available in a programme and select applicants ranked in the sub-list. Applicants who fail to get a place in their first choice programme are reverted to the main list (known as the pool). After allocating the first choice of all applicants as per their academic performance, there remains a vacancy in a particular programme, the applicants in the pool listing the programme as their second choice will be ranked in the sub-list of the programme and selected based on the remaining slots available.

The Hypothetical Models

From the description, there were clear differences in the ways in which Country Alpha and Country Omega operationalised the principle of meritocracy and the ways of programming their respective university admission systems. In order to provide a clearer understanding of how the admission systems operate and to illustrate the differences, I shall construct two hypothetical models with the following criteria:

- There are 40 applicants ranked purely on the basis of their academic abilities as measured by examination result;
- There are only three academic programmes (A, B and C) and each academic programme can only accept 10 applicants; and
- The choices of programmes for each applicant are randomised and cannot be repeated (see Table 1).

In theory, out of the 40 applicants, 30 will be successful in their application, with 10 each being admitted into Programmes A, B and C respectively. In an ideal case, this also means that based on the principle of meritocracy, the same 30 applicants who have been ranked according to their academic performance will go into university regardless of whether they are in Country Alpha or Country Omega. However, because of the different ways in which these two countries operationalised the principle of meritocracy in their respective centralised university admission systems, it will not be the same 30 applicants who will be successful in their application.

TABLE 1

Forty Students and their Preference of Programmes

Student	*Student's Preference of Programme*			*Student*	*Student's Preference of Programme*		
	1st Choice	*2nd Choice*	*3rd Choice*		*1st Choice*	*2nd Choice*	*3rd Choice*
1	A	C	B	21	A	B	C
2	C	A	B	22	B	C	A
3	C	B	A	23	C	B	A
4	B	A	C	24	C	A	B
5	A	C	B	25	A	B	C
6	B	C	A	26	A	B	C
7	A	B	C	27	C	A	B
8	B	C	A	28	B	C	A
9	A	B	C	29	A	B	C
10	C	B	A	30	B	C	A
11	B	C	A	31	C	B	A
12	B	C	A	32	B	C	A
13	A	B	C	33	B	C	A
14	A	B	C	34	B	C	A
15	A	B	C	35	C	B	A
16	A	C	B	36	A	C	B
17	A	C	B	37	B	C	A
18	C	B	A	38	C	A	B
19	A	C	B	39	C	A	B
20	A	B	C	40	B	A	C

On the one hand, Country Omega ranks the applicants into a programme sub-list based on their preferences of the programmes (see Table 2). The first round of selection is to select the top 10 applicants for each programme. Applicants, who are unsuccessful in their first choice, will be returned to the pool, and from there, will be ranked again according to the programme of their second choice. The applicants in the pool will only be considered if there is still place that is not filled. However, in this hypothetical model, applicants, who are not successful in the first round and are put into the pool, do not stand a chance because all the 10 places in each programme have been filled by the end of the first round.

On the other hand, Country Alpha selects the applicants individually based on their position in the main list. In other words, the applicants are given priority according to their position in the main list as determined by their academic performance. The applicant is granted a place in the programme of his or her first choice if the same is available. If the first choice programme is full, the applicant will be allocated to his or her second choice. If even the second choice is full, the applicant will then be allocated to his or her third choice. This

process of allocating a place for the applicant continues till all the three programmes indicated by the applicant have been considered.

TABLE 2
Sub-Lists for Programme A, B and C in Country Omega

Programme A	*Programme B*	*Programme C*
Student No. 1	Student No. 4	Student No. 2
Student No. 5	Student No. 6	Student No. 3
Student No. 7	Student No. 8	Student No. 10
Student No. 9	Student No. 11	Student No. 18
Student No. 13	Student No. 12	Student No. 23
Student No. 14	Student No. 22	Student No. 24
Student No. 15	Student No. 28	Student No. 27
Student No. 16	Student No. 30	Student No. 31
Student No. 17	Student No. 32	Student No. 35
Student No. 19	Student No. 33	Student No. 38
Student No. 20	Student No. 34	Student No. 39
Student No. 21	Student No. 37	
Student No. 25	Student No. 40	
Student No. 26		
Student No. 29		
Student No. 36		

Table 3 presents the outcomes of the university admission systems of Country Alpha and Country Omega. It is important to note that despite both countries adopting the principle of meritocracy in their respective admission systems, it is not the same 30 applicants who are successful in the two countries. In Country Alpha, the top 30 applicants, who are ranked based on their academic performance are successful, but seven of these applicants (Students 20, 21, 25, 26, 28, 29 and 30) are only offered their second or third choice programme.

Conversely, in Country Omega, five of the top 30 applicants (Students 20, 21, 25, 26 and 29) in the main list fail to get a place in any of the three programmes. Instead, Students 31, 32, 33, 35 and 38, who are not among the top 30 most academically talented students in the application, are successful in their applications. The success of these five students (Students 31, 32, 33, 35 and 38 in Country Omega) can be attributed to the fact that they have selected less popular programmes as their first choice. Thus, they are considered for a place in these programmes ahead of their peers, who do better academically but opt for a more competitive programme as their first choice.

The Underlying Concepts and Values of the Two Systems

Although this paper is unable to provide empirical evidence to substantiate the differences between the two ways in which the principle of meritocracy have been programmed in the university admission systems, nonetheless through the hypothetical models, it has provided insights into the concepts and values underlying the use of meritocracy in each of the two systems, as also their pros and cons.

It is clear that the concepts underlying the two systems were different. On the one hand, is the way in which Country Alpha programmes its admission system to be more 'meritocratic' by prioritising access into university over choice of programme. All deserving

applicants are almost ensured a place in university, but not necessarily in the programme of their choice. In the hypothetical model, we observed that the top 30 applicants have secured a place in university, but those ranked lower in the list received a place in their second or third choice programme.

TABLE 3

The Outcome in Country Alpha and Country Omega

Student	*Student's Preference*			*Outcome*	
	1st Choice	*2nd Choice*	*3rd Choice*	*Alpha*	*Omega*
1	A	C	B	A	A
2	C	A	B	C	C
3	C	B	A	C	C
4	B	A	C	B	B
5	A	C	B	A	A
6	B	C	A	B	B
7	A	B	C	A	A
8	B	C	A	B	B
9	A	B	C	A	A
10	C	B	A	C	C
11	B	C	A	B	B
12	B	C	A	B	B
13	A	B	C	A	A
14	A	B	C	A	A
15	A	B	C	A	A
16	A	C	B	A	A
17	A	C	B	A	A
18	C	B	A	C	C
19	A	C	B	A	A
20	A	B	C	B	X
21	A	B	C	B	X
22	B	C	A	B	B
23	C	B	A	C	C
24	C	A	B	C	C
25	A	B	C	B	X
26	A	B	C	B	X
27	C	A	B	C	C
28	B	C	A	C	B
29	A	B	C	C	X
30	B	C	A	C	B
31	C	B	A	X	C
32	B	C	A	X	B
33	B	C	A	X	B
34	B	C	A	X	X
35	C	B	A	X	C
36	A	C	B	X	X
37	B	C	A	X	X
38	C	A	B	X	C
39	C	A	B	X	X
40	B	A	C	X	X

Note: X = fail to get a place

However, with regard to the practicality of the system in Country Alpha, there remain some shortcomings. While the hypothetical model illustrates a highly elitist model of only 40 applicants, this model of prioritising access over choice may not be feasible or effectively implemented in a centralised admission system that involves tens of thousands or even hundreds of thousands. What will happen when the five choices, indicated by an applicant, have been filled up? Will the applicant be randomly assigned a programme or will the system request the applicant to provide an additional five choices? Thus, the implementation of meritocracy that prioritises access over choice may have challenges in terms of its feasibility, particularly for an admission system that caters to a mass or universal higher education system.

On the other hand, the concept of meritocracy in Country Omega prioritises the choice of programme over access into university, where the declared interest of applicants in terms of the programme of their choice has an important bearing on determining their success in getting a place in the university. This system may seem to have discrepancies and malpractices that challenge the principle of meritocracy, whereby the top 30 most academically talented applicants might not be successful in getting a place in the programme at the university. The hypothetical model suggests that five of the top 30 applicants fail to get a place in university, with their applications being unsuccessful not due to their academic performances but rather their strategies in indicating their preference of programmes.

Given the importance of strategy in stating their preferences of programmes relative to their academic performance in the Country Omega system, this further highlights the importance of information in assisting applicants in submitting a strategic application. For particularly those applicants at the borderline of the cut-off point, the preferences and strategies have a significant influence on the success of getting into a programme in university. Without adequate information, such as the number of places available in each programme, their rank in the list and the total number of applicants, it is almost impossible for applicants to take an informed decision for submitting a strategic application based on their academic performance and preferences of programmes. Furthermore, historical information from previous years – for example, the average, minimum, maximum, mode and median of the results of applicants who have successfully secured admission into a programme – can be a helpful source of information for current applicants to estimate the competitiveness of the programme and their relative position in the sub-list of applicants.

The absence of such essential information to help applicants strategise their applications, may give rise to the impression that luck plays an important role in determining the success of getting into public university. Detrimentally, when luck is perceived to be a determining factor, meritocracy will lose its value as a credible principle to select the most academically talented people into university.

Conclusion

Country Alpha and Country Omega both practise meritocracy in their centralised admission systems into public universities. Although constrained by the lack of empirical evidence and limitations in providing more in-depth description of the two systems (to ensure anonymity), this paper provides an understanding of a subtle but crucial difference in the ways in which the principle of meritocracy is operationalised. With Country Alpha prioritising access into university over choice of programme, and Country Omega

prioritising choice over access, this difference in priorities and thereafter the way applicants are ranked according to merits, have led to different outcomes in terms of who succeeds in getting into public universities.

The understanding of this subtle yet crucial difference in the operationalisation of meritocracy has important policy implications. First, the differences in outcomes suggest that it is insufficient to adopt the principle of meritocracy as the 'gold standard' for university admission system. In a centralised system that encompasses many public universities and programmes, the concept and value underlying the principle of meritocracy, and how it is operationalised and programmed, would require more thorough understanding and clarification. Second, the understanding of the differences between admission systems, that claim to be based on the principle of meritocracy, can use the other system as a reflection to identify its own shortcomings, as well as pick up best practices from the other system in order to improve its own. Third, as admission to public universities typically involves the public and is considered as high-stake which plays a crucial role in determining the future of a cohort of young and talented citizens, the subtle differences in the ways in which meritocracy is carried out should be made public knowledge. Applicants should be made aware of the system and its operations, and provided with the essential information to enable them to make strategic applications, particularly in a more complicated system like the one in Country Omega.

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PH.D THESIS ABSTRACT

Trends and Determinants of Enrolment in Higher Education in India (1970-71 to 2009-10)

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Introduction

The role of education in facilitating social and economic progress is well recognised. It opens up opportunities leading to both individual and group entitlements. Education, in its broadest sense of development of youth, is the most crucial input for empowering people with skills and knowledge and giving them access to productive employment. Improvements in education are not only expected to enhance efficiency but also augment the overall quality of life. Thus, education is the prerequisite for the development of a rational attitude and plays a vital role in the process of development of human resources. However, in the initial stages, the focus is mainly on primary and secondary education but now it has shifted towards higher education. Higher education is the system in which the inputs are secondary school students and the outputs are the graduate and post-graduate students.

Thus, higher education is viewed as one of the most potent means of achieving sustainable development. Increasingly, higher education is seen as an instrument for getting a set of skills, attitudes and values for the youth to participate as productive agents in modern market economy based on technological progress achieved in recent times.

Objectives of the Study

The specific objectives of the study are:

- To examine the trends in the growth of higher education institutions in India as well as in Andhra Pradesh during the pre-reform and reform periods.
- To examine the trends in the programme-wise growth of higher education institutions in India as well as in Andhra Pradesh during the pre-reform and reform periods
- To examine the trends in the enrolment in higher education institutions in India as well as in Andhra Pradesh.
- To examine the determinants of enrolment in higher education institutions in India as well as in Andhra Pradesh.

Hypotheses

The following hypotheses are tested in accordance with the specific objectives of the study:

Hypothesis 1: There is significant growth in expansion of higher education institutions during reform period compared to pre-reform period.

Hypothesis 2: There is significant growth in enrolment in all the higher education programmes during reform period compared to pre-reform period.

Hypothesis 3: Gross enrolment in secondary school has positive and significant effect on gross enrolment in higher education institutions in India.

Hypothesis 4: Urbanisation has significant positive impact in determining gross enrolment in higher education institutions in India.

Hypothesis 5: Density of population has significant positive impact in determining gross enrolment in higher education institution in India.

Hypothesis 6: Real GDP per capita income has a significant positive impact on gross enrolment in higher education institutions in India.

Hypothesis 7: Higher education per capita expenditure has significant positive impact on gross enrolment in higher education institutions in India both in the long run and in the short run.

Hypothesis 8: Literacy rate has significant positive impact on gross enrolment in higher education institutions in Andhra Pradesh.

Hypothesis 9: Percentage of SC/ST population to total population has a significant positive impact on gross enrolment in higher education institutions in Andhra Pradesh.

Scope and Methodology

The present study is a macro level study that covers the higher education scenario in India and in Andhra Pradesh. The study covers a period of four decades i.e., from 1970-71 to 2009-10. The total period is divided into two sub-periods viz., Pre-reform period (1970-71 to 1989-90) and reform period (1990-91 to 2009-10). The analysis of trends in the growth of higher education in India and in Andhra Pradesh is carried out for these two periods. Further, in view of data limitations, the analysis of determinants of enrolment in higher education in India is carried out for the total study period whereas the same is carried out for the year 2011-12 in the case of Andhra Pradesh.

The present study has used appropriate statistical tools in the analysis of data. In order to identify the Long-run and Short-run determinants of enrolment in Higher education institutions, the study has employed Unit root test, Co-integration test, Lag length determination, the Long-run Static and the Short-run Error Correction models and used PcGive.10.02 software. However, in the analysis of determinants of gross enrolment ratio in higher education institutions in Andhra Pradesh, Multiple Regression technique is employed. Further, the present study has used SPSS software and M S Office Excel in the analysis of growth rates. Simple statistical tools such as Percentages, Bar Diagrams, Graphs etc., are also used in the study.

Major Findings of the Study

Today, India has the third largest Higher education System in the World (after China and the USA) in terms of institutions and enrolment. The system of Higher education in India has witnessed an impressive growth during Reform Period.

Growth rates in Higher education in India

The analysis of the average growth rate of Higher education institutions in the country for the past 40 years (i.e., from 1970-71 to 2009-10) reveals that Deemed-to-be-Universities has the highest growth (7.68 per cent) followed by Polytechnic Colleges (5.63 per cent), Arts, Commerce and Science Colleges (4.56 per cent), Engineering, Technology and Architecture Colleges (3.56 per cent), Universities (3.31 per cent) and Medical Colleges (3.28 per cent). However, it is pertinent to observe that the growth rate is found to be very low in the case of

Research Institutions (1.90 per cent) and Institutions of National Importance (1.59 per cent).

The analysis of the growth rate during the Pre-reform period (i.e., 1970-71 to 1989-90) reveals that the growth of Deemed-to-be-Universities is the highest (7.29 per cent) followed by Polytechnic Colleges (7.12 per cent), Medical Colleges (4.52 per cent), Arts, Commerce and Science Colleges (3.34 per cent) and Universities (3.12 per cent) in that order. However, the growth rate of Institutions of National Importance and Research Institutions is found to be very low, i.e., only 0.66 per cent and 0.11 per cent respectively. The findings of the study also show that the growth rate with regard to Engineering, Technology and Architecture Colleges is negative 6.51 per cent, indicating the very low attention given by the government.

The analysis of the growth rates in Higher education institutions during the Reform Period (i.e., 1990-91 to 2009-10 reveals that growth in Engineering and Technology Colleges is found to be the highest (13.39 per cent) followed by Deemed-to–be-Universities (8.37 per cent), Arts, Commerce and Science Colleges (5.72 per cent), Polytechnic Colleges (4.44 per cent), Research Institutions (3.75 per cent) and Universities (3.51 per cent) in that order. Nevertheless, the Institutions of National Importance and Medical Colleges accounted for the least growth at 2.49 per cent and 1.91 per cent respectively.

The results of the analysis of the growth of enrolment in different programmes in Higher education institutions in India during the last 40 years shows that enrolment in Ph.D/M.Phil programmes is found to be the highest (8.46 per cent) followed by M.Com programme (8.12 per cent), Polytechnic (7.20 per cent), B.A/B.A (Hons.) (7.01 per cent), B.Ed/BT (6.79 per cent), B.E/B.Tech (5.98 per cent), M.Sc. (5.87 per cent), B.Sc/B.Sc. (Hons) (5.84 per cent), B.Com/B.Com (Hons.) (5.29 per cent), M.A(5.23 per cent) and M.B.B.S (5.00 per cent) in that order.

However, a comparative analysis of growth rates in enrolment in Higher education during the Pre reform and Reform periods indicates that while M.Com programme accounted for the highest growth rate (8.48 per cent) during the Pre-reform period, the M.Sc Programme (8.22 per cent) accounted for the highest growth rate in the Reform period. Further, it is interesting to note that the enrolment in M.B.B.S course is found to be lowest during the Pre-reform Period compared to other programmes in the country. On the other hand, the enrolment in B.Com/B.Com (Hons) is found to be the lowest during the Reform period compared to other programmes.

Growth rates in Higher education in Andhra Pradesh

The analysis of the growth rates of Higher education Institutions in Andhra Pradesh reveals that different Higher educational institutions have accounted for different levels of growth during the last four decades (1970-71 to 2009-10). It is observed that Research Institutions accounted for the highest growth rate of 10.42 per cent closely followed by Engineering, Technology and Architecture Colleges (10.23 per cent), Medical Colleges (9.51 per cent), Polytechnic Colleges (6.53 per cent), Arts, Commerce and Science Colleges (6.28 per cent) and Universities (5.88 per cent) during the study period. The least growth rate is observed in the case of Deemed-to-be-Universities (3.02 per cent) during the last four decades.

The analysis further shows that there are wide variations between Pre-reform and Reform Periods with regard to the growth rates of different Higher educational institutions

in Andhra Pradesh. The growth rate in the case of Universities declined from 6.89 per cent in the Pre-reform period to 4.92 per cent in the Reform Period. Similarly, growth rate of Medical Colleges and Polytechnic Colleges declined from 13.68 per cent to 5.55 per cent and from 7.96 per cent to 5.17 per cent respectively during the corresponding periods. However, the rate of growth of Arts, Commerce and Science Colleges and Engineering, Technology and Architecture Colleges increased from 3.52 per cent to 8.90 per cent and from 9.12 per cent to 11.29 per cent respectively during the corresponding period. It is interesting to note that there is no growth in the case of Deemed-to-be-universities in Pre-reform era. However, its average growth is 12.92 per cent. On the other hand, the growth rate of Institutions of National Importance remained constant, both during the Pre-reform and Reform periods, in Andhra Pradesh. From this, it may be concluded that while the rate of growth is found to be significant with regard to Medical Colleges, Engineering, Technology and Architecture Colleges, Polytechnic Colleges and Universities during the Pre-reform Period, the growth rate is predominant in the case of Deemed-to-be-Universities, Engineering, Technology and Architecture Colleges and Research Institutions and Arts, Commerce and Science Colleges, during the Reform period in Andhra Pradesh.

The analysis for of the enrolment in Higher education in Andhra Pradesh during the last 40 years' period (1970-71 to 2009-10) shows that the growth rate is found to be the highest in the case of B.E/B.Tech programme (15.34 per cent) followed by Polytechnic (13.25 per cent) B.Ed./BT programme (13.01 per cent), M.Sc. programme (12.95 per cent), B.Sc./B.Sc. (Hons.) (9.05 per cent), Ph.D/M.Phil programme (8.39 per cent), M.B.B.S (7.74 per cent), B.A/B.A (Hons.) (6.49 per cent), M.Com programme (6.16 per cent 0, M.A (5.91 per cent) and B.Com/B.Com (Hons.) (4.82 per cent) in that order.

The comparative analysis between Pre-reform and Reform Periods with regard to the growth of enrolment in Higher education in Andhra Pradesh reveals that the rate of growth of enrolment in Polytechnic programme is found to be the highest (14.17 per cent) while growth rate in Ph.D./M.Phil programme (2.24 per cent) is found to be the lowest during the Pre-reform Period. Further, the rate of growth of enrolment B.A/B.A (Hons.) programme is found to be relatively high compared to other programmes during the Pre-reform Period. It is interesting to note that the rate of growth of enrolment in BE/B. Tech programme is found to be the highest (20.03 per cent) followed by Ph.D/M.Phil programme (16.56 per cent), M.Sc. (16.46 per cent), B.Ed/B.T. programme (14.89 per cent) B.Sc./B.Sc. (Hons.) (11.49 per cent) and B.A./B.A. (Hons) (6.04 per cent). However, a comparative analysis of growth of enrolment in Higher education in Andhra Pradesh between Pre-reform and Reform Periods revealed that barring B.A/B.A (Hons) programme, all other programmes accounted for higher growth in enrolment during the Reform Period in Andhra Pradesh.

Gross Enrolment Ratio (GER) in Higher education in India

The analysis of Gross Enrolment Ratio in select countries reveals that GER in higher education in India increased from a mere 1.0 per cent in 1950-51 to 11.0 per cent 1999-2000 and further to 13.8 per cent by 2009-10. On the other hand, GER in higher education in China increased from 1.0 per cent in 1950-51 to 7.0 per cent by 1999-2000 and, thereafter, rapidly increased to 25.9 per cent by 2009-10. With respect to a developed country like UK, the GER in higher education increased from 52.0 per cent in 1950-51 to 58.0 per cent in 1999-2000 and marginally declined to 52.0 per cent by 2009-10. Similar trends are observed in the case

of other developed countries like Australia, Canada and USA. Thus, it is clear from an analysis that among the select countries, China achieved a big jump in respect of GER in higher education during the Reform era compared to India.

A comparative analysis of the GER in higher education among different states in India reveals that it is not uniform across different states. It is observed that in terms of GER in higher education during the pre-reform period, Maharashtra topped among the states with 6.66 per cent, followed by Karnataka (6.59 per cent), Punjab (5.62 per cent), Gujarat (4.92 per cent), Kerala (4.52 per cent), West Bengal (4.49 per cent), Andhra Pradesh (4.36 per cent), Tamil Nadu (4.33 per cent), Madhya Pradesh (4.27 per cent) and Rajasthan (4.09 per cent) in that order. However, during the reform period, small states like Goa (28.3 per cent), Mizoram (26.5 per cent), Sikkim (24.8 per cent), Himachal Pradesh (23.9 per cent) accounted for higher GER ranks with the exceptions of Maharashtra (21.4 per cent) which notched the fifth rank, followed by Chhattisgarh (20.0 per cent), Haryana (19.1 per cent), Tamil Nadu (19.0 per cent), Jammu and Kashmir (18.2 per cent), Karnataka (18.1 per cent) in that order. It is found that in terms of GER in higher education, Andhra Pradesh slipped from seventh place during the pre-reform period to 11th place during the reform period.

The gender-wise analysis of the growth of GER in higher education reveals that GER for boys increased from 9.28 per cent in 2001-02 to 13.54 per cent in 2005-06 and further increased to 17.10 per cent by 2009-10. On the other hand, GER for Girls increased from 6.71 per cent in 2001-02 to 9.35 per cent in 2005-06 and further increased to 12.7 per cent by 2009-10. From this, it may be inferred that GER among boys is relatively higher than that of girls during the reform period.

Gross Enrolment Ratio (GER) in Higher education in Andhra Pradesh

A Comparative analysis of GER in higher education in Andhra Pradesh during the pre-reform and reform periods shows that while it increased from a mere 3.80 per cent in 1972-73 to 4.36 per cent in 1986-87 during the reform period, it increased from 9.66 per cent in 1990-91 to 9.19 per cent by 2000-01 and further to 16.90 per cent by 2009-10. Thus, it may be concluded that growth of GER in higher education in Andhra Pradesh is found to be comparatively high during the reform period than in the pre-reform period.

The gender-wise analysis of GER in higher education reveals that GER among boys is found to be relatively high compared to GER among girls during the reform period in Andhra Pradesh.

Determinants of Enrolment in Higher education institutions in India

The regression results indicates the rejection of the null hypothesis of no-co-integration in favor of the existence of co-integration among the variables included in the long-run Higher education gross enrolment model in India, implying the existence of long-run equilibrium relationship among the variables of the study.

The long-run OLS regression estimation reveals that secondary school enrolment has the effect of increasing enrolment in Higher education institutions in India. Nevertheless, the coefficient is neither robust nor significant with a one per cent rise in GSE leading to an

increase of about 0.14 per cent in the expansion of enrolment in higher education institutions. This is consistent with the argument that improvement in access to secondary schools will serve as an input for further enrolment increase in higher education institutions in the long run than in the short run. The analysis of the effect of an increase in the share of urban population to total population by one per cent leads to an increase in GHE by about 13.24 per cent and 16.91 per cent, respectively. Increase in density of population per square kilometer of land by one per cent results in the increase in gross enrolment in higher education institutions by 2.8 per cent. It is statistically significant and an increase in the real GDP per capita income of the population by one per cent will lead to an increase in gross enrolment in higher education institutions by about 0.88 per cent. The results also reveal that an increase in the per capita expenditure on higher education by one per cent will lead to an increase in enrolment in higher education institutions by about 0.03 per cent.

The results of the short-run dynamic model indicate that only the change in the share of urban population; real GDP per capita income and Higher education expenditure per capita have significant positive impact on enrolment in Higher education in India. From the comparison of the short-run effects of per capita income and expenditure per capita, it is clear that increase in the real GDP per capita income of Indian population, which has direct impact on saving and investment in human capital, has greater impact on Higher education enrolment than Higher education expenditure per capita. This implies that the variables included in the model explain more in the long-run than in the short-run. The overall significance, F-test, also established all variables are jointly significantly different from zero at 1 per cent significance level in India. Moreover, the multivariate system diagnostic tests of the residuals also indicate that both the static model and the VECM have the desirable property of OLS.

Determinants of enrolment ratio in Higher education institutions in Andhra Pradesh

The multiple regression model employed identify the determinants of enrolment ratio in higher education in Andhra Pradesh is found to be good fit as all explanatory variables included in the model explain about 78 per cent of variation in enrolment. However, the coefficient of GERS is statistically significant at one per cent level, while the coefficients of SUP, DP and PSC/ST are found to be statistically significant at five per cent level. At the same time, the coefficient of LTR is observed to be statistically significant at 10 per cent level. Further, the coefficients associated with all variables, except the coefficient of RDGPY, are observed to have expected signs. Though the sign of RGDPY is found to be negative, it is statistically not significant. Moreover, based on the value of F-statistic, it implies that the regression coefficients as well as coefficient of determination are statistically significant.

Further, the regression analysis implies that a one per cent increase in Gross Enrolment Ratio in Secondary School (GERS) will result in 0.25 per cent increase in the enrolment in higher education in Andhra Pradesh, while a one per cent increase in Share of Urban Population (SUP) will result in increase of enrolment by 0.23 per cent. Further, one per cent increase in the Density of Population (DP) will push the enrolment by 0.02 per cent. Similarly, a one per cent increase in Literacy Rate (LTR) will push the enrolment by 0.01 per

cent. However, one per cent increase in Percentage of SC/ST Population to Total Population (PSC/ST) will result in increase of enrolment by 0.32 per cent.

Comparative analysis of enrolment in Higher education institutions in India as well as in Andhra Pradesh

The analysis at all India level is attempted considering the time series data while the analysis for Andhra Pradesh is attempted considering cross-section data. Further, in view of the data limitations, certain variables viz., Literacy Rate and Percentage of SC/ST Population to Total Population are not included for the analysis at all India level. Similarly, the Higher Education Expenditure per capita (HEPY) variable is not included for Andhra Pradesh analysis. Though results of time series analysis may not be strictly comparable with cross section analysis, an attempt is made to compare the all India results with Andhra Pradesh results so as to arrive at a broad picture relating to the enrolment ratio in higher education.

Future Scope for Research

Though the present study makes a comprehensive approach to examine the determinants of enrolment in higher education in India as well as in Andhra Pradesh, the robustness of this study, however, is limited by the inter-play of other micro and macro level socio-economic factors that affect enrolment in higher education. Moreover, more light should also be shed on the comparative analysis of empirical results for the pre-reform and reform periods using quarterly data in order to draw lessons on how reform measures promote the growth of enrolment in higher education institutions in India as well as in Andhra Pradesh.

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Book Reviews

MEYER, Heniz-Dieter & AARON, BENAVOT (2013): ***PISA, Power and Policy: The Emergence of Global Educational Governance,*** Symposium Books, United Kingdom, ISBN: 978-1-873927-96-0 (Paperback), Pages: 335, Price: not mentioned.

The Programme for International Student Assessment (PISA) is a triennial project which evaluates education system worldwide through testing the skills and knowledge of 15-year-old students. Organised and administered by the Organisation for Economic Co-operation and Development (OECD), PISA has covered more than 70 nations in its assessments conducted triennially since 2000. PISA administers tests that are not directly linked to school curriculum. Instead, according to PISA, it focuses on testing how far the students can apply knowledge from compulsory education system in their real life situations. PISA tests reading, mathematics and science, with a focus on one subject in each year of assessment. The PISA findings have become a treasure vault of data for comparing educational standards of nations and has risen to strategic prominence in international education policy debates.

PISA has been viewed differently by the scholars. Those who support it argue that it is a great initiative toward global transparency in educational policy, advancement of knowledge about what works in education and as a great support for improving school performance. Critics of PISA suspect the validity and reliability of the tests and absurdity of culturally neutral educational platform in which the same test is used for countries with divergent socio-political and cultural backgrounds. There is strong criticism regarding the interests, objectives and abilities of OECD, which is a non-educational organization, for promoting global standard in education in the name of accountability. The book, under review, echoes all these concerns throughout. But the book is distinct in its focus on the role of PISA in advancing new mode of global education governance in which state sovereignty is replaced by OECD (and like organizations in future) in which the sole purpose of education is reduced to a project that supports the demands of the labour market.

The book is a collection of 14 scholarly articles edited by Meyer, Heniz-Dieter & Benavot, Aaron. The book comes under Oxford studies in comparative education which is edited by David Philips. The first article is an extensive review of 74 researches that thoroughly examine educational policy spanning 15 thematic categories. This article is followed by three articles that come under a common heading 'The Finland paradox'. According to the findings of PISA, the educational system of Finland is the most successful in the world. But ironically, Finland's education system distinctively deviates from OECD's standard reform package. By elaborating on and contextualizing the Finnish experience, Janne Varjo, Hannu Simola and Risto Rinne observe that global reform discourse has achieved a hegemonic position in Finland's national educational rhetoric, whereas in the process of implementation at the local level, there remains certain antipathy against previous normative control mechanisms and equally against the present idea of ranking lists. While looking at the pedagogic quality and teacher training, Tiina Silander and Jouni Valijarvi point out that teacher education system in Finland was loosely regulated and monitored over years. It rejected the Anglo-

Saxon accountability movement which proposed that schools and school teachers are accountable for student performance. As an extension in the next article, Paul Andrews, based on his empirical study by comparing two most successful educational systems in Europe-Finland and Flanders-concludes that Performance on international assessments tests, like PISA, may not be necessarily emanated from pedagogic quality, but rather is a consequence of typically hidden cultural factors, which often extend substantially beyond the classroom.

The growing command of OECD (and, of course, such powerful international agencies) through its instruments like PISA has a tacit effect of dwindling sovereignty of states. This may lead to a paradox of strong International organizations and weaker states. Four articles explore the various dimensions of this paradox. The first one is authored by David H. Kames who exposes the 'horse race' mentality regarding educational progress and call for uniform standards across the world. Kames argues that the glaring success of PISA is an offshoot of the general 'audit explosion' in all spheres of social life. The agencies that propose and execute the uniform standard and audit culture, as a matter of fact, must be politically and ideologically neutral. But PISA and its source OECD, unfortunately, lack these most essential criteria. This point is the crux of the article by Daniel Trohler. He furthers his criticism by exposing the ideological and methodological roots of PISA in the course of the cold war. Marlaine Lockheed explores the reasons and effects of participation of developing countries in large scale international assessments like PISA. She argues that the intellectuals of such developing countries have a mindset that participation in such international assessment is important for reshaping their education systems, leading to the trajectory of social reformation. In another insightful article, Sam Seller and Bob Lingard observe the expanding role of OECD to new areas like the assessment of a nation's work force skills and higher education system. Through data collected from more than 30 Policy actors located at the OECD and within the national education systems of England and Australia, Sam Seller and Bob Lingard argue that OECD has opened up a new mode of global governance in education.

Another five scholarly articles are included for discussing the non-educational influences on PISA outcomes. In the first article, Heniz-Dieter Meyer & Kathryn Schiller argue that "it is not warranted to attribute without qualification, high scores on PISA to excellent schools and poor performance to weak schools". In their article, Xin Ma, Cindy Jong and Jing Yuan, through an empirical attempt, argue that the role of the student in learning (especially their learning strategies and Meta cognitive skills) and school disciplinary climate has tremendous impact on student success. Highlighting the importance of 'context' in the educational process and assessment, they argue that these factors are often overlooked by international assessments. Adding to the significance of contextual factors, Jaap Dronkers and Manon de Heus argue that compositional differences (like origin of students and their destination countries etc.) alone, as it is done in PISA, cannot successfully explain differences in scientific performance of migrant children living in traditional immigration countries. The authors attribute the crucial role of origin of countries and destination countries and communities of the students in educational performance of the students. Pointing out another important lacuna of PISA, Yong Zaho and Heinz-Dieter expose its inability in assessing the entrepreneurialism of students, which is one of the critical factor for successful life in modern society. They observe that high scores on PISA tests may reflect docility, obedience and conventional role of school as a disciplinary mechanism. Furthering the criticism, Stephen Hayneman, in another chapter, points out that PISA ignores important

functions of schooling, such as civic responsibility and cohesion. Heyneman argues, illustrating the case of America's law position in international assessment, that American system of education is not uniformly poor and in-efficient. The nations that top in the international assessments like PISA is mainly due to the reason that they make their school students spend the lion's share of their educational time for cramming, learning drills and low level academic activities. Not hiding the pride for his nation's education system, Heyenman warns Americans to be careful not to import the 'terror' of a shadow education adolescent typical to Asia that score high in international tests.

In the concluding chapter, Alexander W. Wiseman looks into the policy responses to PISA among different nations. He argues that Policy changes implemented by many nations, in response to PISA's findings, have demonstrated remarkable alignment within economic and political sub-groups. He argues that "in some countries, PISA deficits have been associated with a push towards more centralized control, while others have responded with much more focused reforms". By looking into the variety of policy response patterns across countries, Wiseman points out significant factors that have influenced the policy responses.

The book is a harbinger of a serious change tacit in the international assessment of student performance. One who reads the book will definitely sense the imminence of global educational governance which has serious consequences for the sovereignty of nations. The book warns that "nothing is extinguished" (Pablo Neruda in 'If you forget me') and nothing must be forgotten about colonial forces and their interests in the contemporary society. The book questions many taken-for-granted assumptions and beliefs of PISA leading to standardization of educational performance of school students across the world. OECD will find it difficult to defend many critical points raised by this book. After reading the whole book, what remains in the mind of the reader is a handful of questions that warns the educationalists, administrators and policy-makers while responding to the international assessments of educational performance. In that way, the book is a must read for those who are an educator by profession, a staunch supporter of freedom, democracy and sovereignty of state.

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DAS, Ashima, Shankar DAS and Ruth KATTUMURI (2013): ***Inclusive Education: A Contextual Working Model,*** Concept Publishing House, New Delhi, ISBN: 978-81-8069-932-0 (HB) Pages: 198, Price: ₹ 700

UNICEF's Report on the Status of Disability in India, 2000 states that there are around 30 million children in India suffering from some form of disability. While the national average for gross enrolment in school is over 90 per cent, less than five per cent of children with disabilities are in school. Large numbers of children who struggle daily with additional hardships are not getting the chance to improve their lives through education. They are caught in a spiral of low expectation, low esteem and low income. The minority of children with disability that do get place in schools are often isolated because of a sense that they need to be treated differently. Globally, it is estimated that 70 per cent of children with disabilities, including those with mild mental retardation, can attend regular schools

provided the environment is designed to be accessible and the institution is willing to accommodate them.

In this context, the book brings out the critical issues in mainstreaming the children with special needs into regular schools. While in terms of policies, we have moved from special education to inclusive education, how far the social, emotional and educational requirements of children with special needs are addressed forms the centrality of the discussions supported with narratives of children in inclusive schools. It clarifies concepts, elucidates contextual realities and builds a working model for inclusive education in India. The book surfaces a myriad of issues that affect the culture, policy and practice of school and recommends a way forward. It is basically an outcome of the qualitative study, analyzing the process of educating children with disabilities in private inclusive schools in Mumbai. It explored the process of inclusive education, identified factors that hamper and those that support and suggested contextual working models.

The book is divided into five sections; Section one and two build the concept and draw the theoretical framework. Disability, meaning and concept, inclusion, characteristics, evolution from one concept to another, critical dimensions of inclusive schools, teacher preparation, process, resource models, evaluative practices and the Constitutional and legal framework have been discussed in greater detail. The author formulates a good theoretical framework to build the ground for the research and each topic and sub-topic flows from the other. Rich in-text references have been used for developing these sections. The status of, and emphasis on inclusive education globally, across developing and developed countries, have been mentioned, generating the need for the study and its importance in the Indian context. The policy and programmes that were developed and implemented to fulfil the Constitutional and legal obligations are also mentioned.

Section three describes the methodology for the research and diagrammatically represents the conceptual framework and the process of research. There could be questions on the sample selection looking at the range of schools in Mumbai. More comprehensive understanding about inclusion could emerge if schools from different managements and contexts were taken as sample for the study. However, an attempt to justify the basic purpose of the research is aptly being made.

Although the Government of India has attempted to create policies that are inclusive for people with disabilities, implementation efforts have not resulted in an inclusive system of education, nor have they reached their goal of "education for all" across the country.

Section four discusses the outcomes of the study, highlighting the gap in the conceptualization of policies and programmes at the national level and its implementation at the grass roots' level. Four major areas – the support system, challenges, processes and outcomes of children in inclusive schools has been discussed in this section. It raises some pertinent issues on the nature of inclusion in Indian schools. The empirical findings with regard to the culture in inclusive schools raises doubt on the very understanding of inclusive schools. It questions the very selection criteria for inclusive schools where availability of infrastructural support, a resource teacher and enrolment of few children with special needs is considered as base for sample selection. While the research attempts to study the culture, policies and practices in schools, findings question whether formulation of policies can ensure correct implementation. The role of school principal is highlighted; however the role and responsibility of each key stakeholder like class teacher, peers, parents, school authority is important in the implementation of a policy framework seeks to be discussed. The author

uses primary sources and presents cases depicting the challenges faced by parents, children and even the resource teachers in facilitating the learning of children with special needs. While culture is discussed in terms of the beliefs and values; the interaction of family, societal and school values and the role it plays in developing an inclusive and welcoming environment for all needs a mention. The practices are studied in terms of the pedagogical inputs and strategies used by the teachers, especially the resource teachers, not as contextualisation of curriculum to meet the needs of differential learners. This leaves the readers slightly confused as to whether the schools actually were inclusive or integrated. While weighing the outcomes, a tilt towards positivity is shown; however the discussion and cases depict that there is hardly much change seen in the behaviour and attitude of the regular teachers, peers and even authorities. The agony of the parents and children brings out the social stigma still prevalent in society, schools and even amongst children, leaving the children–with-special-needs isolated and low in self-esteem, forcing them to compare themselves with other children in class.

Section five presents a working model on inclusion and gives a brief summary along with conclusion drawn from the study. This chapter includes implications for practice and research which largely reinforce the fact that teacher education remains a very weak link with respect to equipping teachers to be prepared for an inclusive classroom environment. While teacher education diplomas and degrees offer "Special Education" as an optional subject, it hardly provides the practical skills required for identifying, diagnosing and supporting children with disability. Although, it is ultimately teacher treatment of students in the classroom, rather than the training per se, that would reinforce this difference. The findings reveal the attitude of the peers, regular teachers and, in some cases, even the principal, where children are used for seeking media publicity. This insensitivity is disheartening and necessitates immediate attention of social scientists and policy-makers. The thesis hardly approaches such issues of insensitivity in the society, amongst teachers and students holistically.

The model proposed for inclusive education in this section is based on the IPO framework. Nevertheless this framework is inherently flawed in its approach in seeing input-process and output as boxes or compartments. This framework, as explained by Armstrong and Harris and Taylor, does not see change as organic and function of multiple interactions than an attribute of a strategy or the mechanism.

The book may disappoint those looking for a novel idea or new knowledge in the field; it, however, is a good compilation of the existing literature on inclusion. It is, therefore, a good read for researchers working in the area of inclusive education since it discusses all related concepts under one umbrella. It gives a glimpse of the different programmes, policies, challenges, support system or, in effect, a status of inclusive education. The presentation of conceptual framework, methodology, discussion and findings, the referencing, annexures etc provide a good learning for beginner researchers. Operationalization of few terms used in the objectives would give more clarity on understanding the research findings.

The title indicates that the book would present a contextual working model for inclusive education. While the last chapter presents a model, it is too generic in nature; it would have been desirable if the idea could have been dealt with in detail, exploring how inclusive education could impact the lives of children with special needs. Beyond this, the author writes in a formal style to meet the research needs of the audience. The book is basically written for researchers and professionals in the field of teacher education. The concern

shared by the authors regarding the insensitivity towards children with special needs deserves immediate attention of researchers and policy-makers. It is important to remember that Inclusive education is still at a very early stage of conceptualization and implementation in India. The fact that it is being discussed, debated, implemented and assessed in some places, albeit falteringly, demonstrates a willingness to engage with elements of a new concept that has the potential to be developed in the future in a positive manner. The authors deserve recognition for bringing together the contextual realities, the experience of children with disabilities within inclusive school settings and the school's response to the varied student needs. It aptly portrays the challenges for making inclusive education a reality and could serve the interests of researchers, practitioners and policy- makers in education.

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CORNELL University, INSEAD, and WIPO (2014): ***The Global Innovation Index 2014: The Human Factor in Innovation,*** Pages: 400; Price: Available Online; ISBN: 978-2-9522210-6-1.

Socio-economic changes, such as globalization, exert a lot of pressure on the sub-systems of any society. Public sub-systems are more prone to these pressures and are often labelled as systems that are resistant to change and innovation. Education is one such sub-system and is considered to be an important element for ushering social change. Evidence suggests that innovations play a major role in enhancing adaptive capacities of public systems such as education, to deal with the rapid socio-economic changes. In fact, a latest report — Global Innovation Index (GII) Report 2014 titled "The Human Factor in Innovation"—reminds that innovation in education can improve the learning outcomes and bring efficiency in the system, besides enhancing equity in the access to and use of education. It also explores the vital role played by education in developing human capital in order to respond to rapid changes in society.

The report contributes in the current discourse on enhancing capacities of human capital, nonetheless from a very different angle. It creates a canvas as to why developing an innovative culture in any society is important. It then goes on to highlighting the role of education and other systems of a country that leads to this culture. Typically high-income economies are successful because they provide conducive ecosystem for talent attraction, development and retention. This results in brain drain in lower-income economies and impacts their progress significantly. In effect, international movement of highly skilled people is a cause of concern for many lower-income countries. This hinders the innovation environment in the country. The first chapter *Nurturing New Sources of Growth by Developing the Human Factor in Innovation* aptly highlight this. The authors stress that human capital is an important factor for success in higher-income economies than in lower-income economies. It mentions that better educated individuals can leverage the context for driving innovation in higher income economies. The subsequent chapters provide lessons drawn from various countries on the role of human capital and other factors in fostering an innovative culture in a succinct manner. The chapter also provides comparative data of

various regions to illustrate a strong linkage among gross enrolment ratio, number of researchers and innovations.

The report raises an interesting but important question — does lack of skills lead to poor development, or does poor development lead to less-skilled population? Though these discussions may look familiar to scholars, the highpoint of this report is that it covers initiatives taken up in various countries to foster innovations in schools. These initiatives provide useful insights to the readers. There is ample scope of learning for other countries on building a holistic ecosystem for innovations in a country. For instance, it presents a case of Russian government's initiative to promote innovative culture in the society that included focuses on reforming education so as to support the process of developing knowledge, innovative skills and personal qualities since early childhood.

One of the key drivers required for promoting a successful innovative culture in a country is to concentrate on promoting a high quality research culture in the educational institutions. Alienating universities from the public research by opening autonomous research institutions has created another long-term problem with the higher education system in countries like India. The chapter, *Higher Education in India: Growth with Challenges*, focuses on the issues related to ensuring quality, building graduate education and research universities, providing equity of access, and building world-class full service universities. It highlights the fact that the focus on quantity has contributed to the present issues related to quality. The author aptly draws attention to gross neglect of the social sciences and humanities disciplines, but lacks clarity in establishing the relevance with other parts in this chapter.

The report presents a framework — three pillars of the innovation ecosystem — human capital, financial capital, and technological capital. Citing an example of United Arab Emirates (UAE's) innovation ecosystem, Chapter 6, *The United Arab Emirates: Fostering a Unique Innovation Ecosystem for a Knowledge-Based Economy*, delves deeper into how a small country like UAE has been advancing its education system at all the levels (including 20% of the budget allocation to education). Perhaps because of this, UAE has become one of the most advanced education systems in the Middle East and North Africa region.

The report also offers lessons as to how fostering partnership and collaborations among various stakeholders such as government, educational institutions, entrepreneurial organisations, corporations, and the media lead to innovative culture. This includes inviting diverse talents and providing them with safe and accessible environment to innovate. The report emphasizes this by highlighting the example of UAE, where people from 200 nationalities, are contributing to make the country a fertile ground for innovation. Such insights are useful for the policy-makers and others who would like to promote a culture of innovation in their countries. For educators, this report certainly sets directions and reiterates the focus on improving or changing the education system.

One of the key aspects of the GII report is on how innovation has become an important catalyst for growth of economies across the world. This is evident in the fact that countries like UAE have improved their rankings by investing more into education, vocational trainings and improving necessary infrastructure for innovations. It underlines the importance of developing human capital to promote innovative culture in the countries. The development of human capital for innovations depends mainly on two things: (a) education, which helps in developing necessary knowledge and skills for innovation, and (b) supportive environment, which promotes the culture of innovation, making available necessary

resources, facilities and infrastructure for innovation. This further helps in retaining top talents, who act as stimulus for innovation in any country. Clustering of innovators in developed countries is one such example that proves the importance and availability of both education and environment for innovation in the country.

Overall, this report sets a tone for bringing about changes in the current education system for preparing and retaining human capital to compete with the advancements in the global society. Though in bits and pieces, this report has mentioned the significance of social factors. Future reports in this domain can focus more on the societal notions that shape the innovations culture in a country.

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SINGH, Madhu (2015): ***Global Perspectives on Recognising Non-formal and Informal Learning: Why recognition matters,*** UNESCO and UNESCO Institute for Lifelong Learning, Springer Open, ISBN: 978-3-319-15277-6 pp. 220 (hardbound) [e-book ISBN: 978-3-319-15278-3]

The recognition, validation and accreditation of non-formal and informal learning, or RVA for short, is at the nexus between current trends in "Learning for All" and the push to embrace lifelong learning in both developed and developing countries. Given its importance in individual country contexts, RVA provides opportunities for cooperation and learning between countries, and for the sharing of best practices. The main goal of Singh's *Global Perspectives on Recognising Non-formal and Informal Learning* is to serve as a guide on questions of RVA and the policy frameworks that surround it to a broad audience of academics, policy-makers and practitioners.

RVA is an extremely important and relevant tool in allowing for the acknowledgment of learning that occurs beyond formal educational settings such as schools and universities. Following the shift away from "Education for All" towards "Learning for All," beginning in the mid-1990s, RVA has become increasingly relevant in the context of the push for lifelong learning. This is because for many of the world's marginalized and excluded peoples, education and learning rarely take place in formal school settings. Therefore, the ability to recognize, validate and accredit the learning that is taking place outside of formal contexts is extremely important in developing educational structures that work alongside existing systems of learning. This makes the topic of Singh's volume extremely relevant and worthwhile.

One of the most exciting things about RVA is that it is just as relevant in developed country contexts as it is in the developing world. In developed countries, RVA is being used primarily to promote ongoing professional development and skills' augmentation for workers who tend to remain in the workplace for longer than ever before; in addition, it can be an important tool in embracing lifelong learning as an important aspect of personal growth and development, community and civic involvement, and democratic participation. In the developing world, RVA serves primarily to integrate informal and non-formal systems

of learning to formal education systems, thus achieving the inclusion of excluded groups and local systems of knowledge.

Within this context, Singh's volume is a comprehensive introduction to RVA and the policy issues that both developed and developing countries are grappling with in implementing RVA for different purposes. The book shares some of the best practices identified in working towards RVA in different UNESCO Member States, summarizing RVA policies and frameworks that are in place in 16 developed and eight developing Member States. The main argument underlying this work is that RVA has the potential to help disadvantaged individuals and countries enjoy more of the benefits of education and training through recognition of the expertise that they already carry. Recognition of these skills and knowledge can, according to the author, have "both a personal, individual impact and a social and economic effect upon the collective" (Singh, 2015, p. 2). As stated in the concluding chapter, the "exploration and implementation of RVA, particularly with respect to basic education and skills gained in the workplace and the informal economy, would clearly have significant potential to assist with educational mobility and social and economic development" (Singh, 2015, p. 190).

Madhu Singh is a Senior Program Specialist at UNESCO's Institute of Lifelong Learning (ILL) in Hamburg, Germany. As such, she has authored and edited books and reports on the subject of lifelong learning, and is extremely familiar with UNESCO's guidelines on the recognition, validation and accreditation of the outcomes of non-formal and informal learning, and the ways in which RVA fits into the broader goals of lifelong learning. This book represents part of the ILL's work on RVA and is, thus, aligned with UNESCO and the ILL's work to promote RVA as an important tool in achieving lifelong learning.

As Volume 21 of the Springer Book Series *Technical and Vocational Education and Training: Issues, Concerns and Prospects,* this book seeks to provide an "in-depth analysis of current developments" in an area that is considered "cutting edge," and is intended for a wide audience that includes "policymakers, administrators, planners, researchers, teachers, teacher educators, students and colleagues" who might be interested in technical and vocational education and training (Singh, 2015, p. vi).

The book is composed of seven chapters. Chapter one serves as an introduction to the volume and provides a definition of RVA and an overview of its importance in the context of sustainable development, lifelong learning goals and the development of learning societies. Chapter two is devoted to defining key concepts and finding a common language for RVA across contexts, since different terms are often used in different countries. This chapter deals with some difficult questions, such as the subtle line between non-formal and informal education, and what counts as knowledge. Chapter three describes the policy and legislative environment in different countries, examining the extent to which they have developed a legal framework for RVA. Chapter four examines the various purposes that RVA serves in different country settings, contrasting countries where social justice policies are in place to deal with issues of inequality with countries where equality in educational opportunity are dealt with more indirectly. This chapter describes the diversity of approaches and opportunities in RVA. Chapter five examines the cooperation between sectors and partnerships in the implementation of RVA. Among the types of partnerships highlighted are partnerships between governments and the private sector, which promote RVA as a way to cater to economic goals through adult learning and workforce development. The chapter also draws attention to the importance of cooperation between government and social

partners, which can provide opportunities to disseminate learning at the local level. Chapter six goes through the features of best practice in each of the countries selected for inclusion in the study, highlighting opportunities for learning and transfer of RVA aspects, ranging from standards and methods of assessment to delivery and quality assurance. Chapter seven, the concluding chapter, offers some thoughts on overarching patterns that emerge in best practices across countries, similarities and differences across contexts, and the current trends and future potential of RVA. The book ends on an optimistic note, with Singh's emphasis on recognition as being "about learner empowerment leading to personal development, employability and relevant qualifications in the building of a learning society" through the promotion of inclusiveness in RVA (Singh, 2015, p. 191).

Countries that met the selection criteria had to be UNESCO Member States and participated in studies or conferences promoted by UNESCO's Institute for Lifelong Learning. In addition, they had to have "well-developed policy and practice" for RVA and "distinct approaches" to their legislative environment, policy objectives, and RVA in the context of institutions in different sectors (Singh, 2015, p. 14). Research, for the book, made use of information available on government websites, in academic publications, and in publications by relevant international organizations. Information on each of the countries selected was then analyzed in terms of the three areas highlighted in the book: the strategic value of RVA, best practices and quality of processes, and challenges and future directions.

One of the books' greatest strengths lies in Singh's ability to concisely and effectively convey some of the central questions and challenges surrounding the implementation of RVA in different contexts. The first chapter for example, looks at the role of RVA in expanding definitions of what constitutes knowledge and in providing "cognitive justice" to indigenous and traditional forms of knowledge that are not always fully recognized (Singh, 2015, p. 4). This process of recognition is acknowledged to be the result of a "dialogue of knowledges" that occurs between generators of knowledge and the occupational culture that defines the desirable set of skills and expertise (Singh, 2015, p. 6). In chapter 2, Singh also grapples with the dangers that could arise if the idea of lifelong learning were to be trivialized and become synonymous with adult and continued education, thus downplaying RVA's potential as a force for social justice and educational mobility. Within this context, Singh argues for the importance of ensuring that RVA policies challenge not only the site of learning, but also ideas of what constitutes knowledge, in order for RVA to be a truly transformative enterprise. This ability to grapple with complexity and to acknowledge some of the potential policy pitfalls surrounding the implementation of RVA are at the core of what makes Singh's book truly thorough in its treatment of the topic.

In the light of this acknowledgement of complexity, the sixth chapter of the volume is rather disappointing in its presentation of different countries' policies and their tackling of RVA implementation. The summaries remain somewhat superficial, failing to go into the unique difficulties and challenges that RVA faces in different contexts. Here, Singh misses the opportunity to engage the reader with a more in-depth look at the ways in which countries are handling the uncertainties that she outlines in her earlier chapters. While she acknowledges that there is resistance to RVA on the part of schools and universities in New Zealand, for example, and that there are challenges in the inclusion of disadvantaged learners, people with inadequate literacy skills, and second language speakers in Australia, she fails to discuss what is being done in handling these challenges and what can be learned from these countries' experiences. Similarly, her discussion of RVA in developing country

contexts, where it is mostly used as a learning system that runs parallel to formal school systems, remains somewhat shallow. Singh fails to tackle the question of what is included in these parallel systems of learning and assessment, who dictates what is included, and what and who are being *excluded* from RVA in those contexts. These omissions make it difficult to draw conclusions regarding the effectiveness of the different RVA policies that are currently in place, and to truly engage in the "policy dialogue" that Singh proposes as a helpful exercise for the sharing of lessons (Singh, 2015, p. 3).

Furthermore, while Singh offers a comprehensive treatment of the topic on non-formal education and learning, and outlines the different forms of non-formal education in chapter 2, she does not put forward a similar in-depth treatment of the topic of informal learning. Non-formal education relies on structured curricula and can thus be more easily assessed against national qualification frameworks and learning outcomes; in contrast, informal learning is much more diffused in nature. At the end of chapter 2, for example, Singh discusses non-formal adult and community education frameworks that are in place in New Zealand, where learning areas as diverse as parenting skills, capacity building for community groups, and civil society development are in place for literacy and adult community development. In many other contexts, however, such areas of learning fall under the umbrella of informal learning. Singh could have discussed the importance of such areas of learning, not only in preparation for the workforce but also as a means to prepare individuals for social action, in places where such knowledge is transmitted on a purely informal basis. The role of women-led organizations and their work on women's empowerment, especially in developing country contexts, are an important example of informal learning that Singh fails to include and acknowledge.

Overall, despite its limitations, Singh's work is a commendable and highly informative introduction to RVA and to the ways in which RVA policies are being developed in different country contexts to address a variety of needs and issues. The book not only offers a comprehensive summary of some of the RVA policies that are in place in a variety of contexts, but also provides the reader with an idea of the potential challenges and pitfalls involved in building RVA policy initiatives that are truly inclusive and socially transformative. A wide range of audiences could benefit from reading this book, ranging from policy-makers and practitioners, to students and researchers in the field of international and comparative education.

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Roger KING, Simon MARGINSON and Rajani NAIDOO, eds., (2013): ***The Globalization of Higher Education,*** An Elgar Research Collection, Chelthenham, UK, Northampton, MA, USA. pp. xviii+762 (hardbound) price: £ 268. ISBN: 978-1-78100-169-1

Unlike the earlier phases of globalization of the economies, the current phase of globalization of higher education has become almost nearly global at a very rapid rate. The revolution in information technology, and fast increasing levels of living of people in middle and low income countries, which are also related to globalization, contributed to the pace

and spread of trends in globalization. In fact, communicative technology has so much improved and impacted globalisation all over the world that it is described as a phase of 'communicative globalization.' World university rankings and the invasion of MOOCs into the university systems revolutionised even the nature of globalisation in higher education. As a result of all this, as Marginson describes (p. xiv) the global phenomenon has passed from an external to an internal factor and has formed the heart of the universities everywhere, as they aim at competing with one another, improve their research performance, attract quality faculty and students from aboard, export their education, build partnerships with other universities, continuously endeavour to make strategic innovations and improve their global rankings. As Altbach (p.19) described, "in many ways, we are moving into a new era of globalisation in higher education;" and a new form a university 'neo-liberal university' is becoming a phenomenon of globalization (Ball 2015, p. 260).

While some scholars, broadly categorized as 'neo-liberals' welcome the various forms and trends in globalisation, some are highly critical of the very same phenomenon. For example, Carlos Alberto Torres (2015, p.262) characterizes globalization as "the top-down model of global hegemonic dominance, which rests on the power of èlites, multi-national corporations, bilateral and multilateral organisations, and the global and regional power of nations, which in turn, exercise control over people, commodities, territories, capital and resource of all kinds, including environment." Specifically in higher education, under globalisation, as Stephen Ball (2015, pp. 259-60) remarked, collective interests are replaced by competitive relations; collective professional values are displaced by individual commercial values; everyone finding it increasingly difficult to mobilise faculty members around issues of general significance; faculty members cease to be a community of scholars, and rather they relate to one another in a complex, overlapping set of competitions. Academics tend to be submitting 'tenders' for research tasks as required by the funders of the universities.

As globalization of higher education has been a very important phenomenon with a multitude of ramifications, obviously it is receiving the attention of many scholars; and new and not so new issues begin to emerge for deeper investigation, and some familiar old issues are re-emerging in different forms and intensities. The nearly 800-page volume containing 37 selected articles on globalization under review is indeed a rich collection of articles on globalisation and higher education, published in different journals/books between 1998 and 2011. The scholars whose articles figure in the volume include Philip Altbach, Peter Scott, Amratya Sen, Joseph Stieglitz, Ulrich Teichler, and several well known experts in the field of higher education, besides the three editors. As some of the books and even journals are not easily accessible to many scholars around the world, this volume comes as an extremely handy volume to students and teachers as well. s

The volume opens with an article on myths and realities on globalization and the universities in an unequal world by Philip Altbach. Altbach outlines the complexities and nuances of the modern global academic environment. In an elaborate account Rosemary Deem describes how universities are invaded by new managerial cultures and how academic capitalism has become an important phenomenon of the university systems. The entrepreneurial university that Burton Clark described in 1998 (included in the present volume) became the widely accepted university model under different nomenclature in the modern days of privatisation and globalisation. Even research universities are in transition and new global models are emerging, as described by Kathrun Mohrman and others.

Academic ranking and league tables have influenced the educational leaders in different ways, some influencing positively in making efforts towards improving quality, standards and pursuing excellence, some have had a serious adverse effect on certain key academic dimensions. There are also questionable inherent characteristic features of rankings. For example, according to global rankings, "educational institutions and agents are viewed as isolated and distinct elements" (Clarke 2012, p. 301); they lead to unhealthy competition; local needs are replaced by global concerns; and so on. All scholars including those who do not favour, nevertheless realise that the rankings are here to stay. So the question is: how to live with them. Ellen Hazelkorn describes, based on a survey of international leaders and their experiences, how to learn to live with rankings and league tables.

Not only the league tables and the rankings, but also several other aspects of higher education that have emerged in the recent years are here to stay. For instance, higher education is no more confined in any country to remain within borders; in fact, many educational planners plan it to go beyond national borders. Educational *bazaar* or markets are indeed becoming global; academic labour markets seem to work on the basis of the familiar principles of normal labour markets, with little difference between normal labour markets and academic labour markets. New vocabularies, theorizations, arguments and methods of analysis have entered into higher education in a big way from different disciplines. The volume under review covers a wide variety of current issues in higher education — some familiar, some that are increasingly becoming important, some that refuse to die, and some not so familiar. They include public/private divide, expansion and quality, expansion without equity, internationalization, universities with 'brand name', evaluation, etc., apart from rankings, league tables, markets, globalisation etc.

In the midst of many of these developments, which formed the focus of many articles included the present volume, to remind that concern for education as a global public good and principles of global justice should not be forgotten, the editors have included a few important articles — one by Joseph Stiglitz on education as a global public good, another by Mala Singh on "Re-Inserting the 'Public Good' into Higher Education Transformation," and an article by Amartya Sen on "Global Justice — Beyond International Equity." Similarly Jussi Välimaa and Marcela Mollis refer to the need to recognise social functions in higher education when making evaluations of university systems. Except for some of these articles, the book is largely concerned with *modern* issues of development of higher education under globalisation. However, it must be stated that each article is very well written and provides good, and sometimes fresh insights into the problems.

As globalisation is becoming a dominant phenomenon, in fact, as some argue as an irreversible phenomenon, criticism of the same is slowly fading away. The present collection also reflects this trend. Nevertheless, it must be stated that *The Globalization of Higher Education* is a valuable, in terms of price too, volume. As the theme is becoming increasingly introduced as a special course of study in higher education in many universities, scholars would find the present volume along with the *Handbook* edited by the same team of editors (King et al., eds., 2011), extremely important reference material. So do the administrators and policy makers in higher education. It is not clear why no attempt has been made by the editors to organize the present volume of 37 chapters running over 750 pages, into a few major thematic sections.

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