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Private and Social Cost of Technical and Professional Education With reference to J.N.V. University, Jodhpur (Rajasthan) India

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Abstract

Angus Maddison (Former Member of OECD) has described the role of education in respect of five major goals as : a means of personal fulfilment; an instrument for social continuity and cohesion; a mechanism for social mobility; a means to promote social equality and as an economic investment for individuals and society. The importance of knowledge was recognised as long ago as 1776. Adam Smith at that time argued that "Man educated at the expense of much labour and time may be compared to an expensive machine." And Benjamin Franklin, Smith's contemporary, declared that "An investment in knowledge pays the best interest." A prime example is the work of Princeton Professor Fritz Machlup "The production and Distribution of knowledge in the United States. According to Machlup's all-encompassing definition, knowledge industry includes education, research and development, communications media, information machines and information services. Chicago Professor Theodore Schultz points out that "The growth of this investment in human capital may well be the most distinctive feature of the economic system. Increase in national output has been large, compared with increases in land, man hours and Physical reproducible capital. The investment in human capital is probably the major explanation for this difference." Nonetheless, knowledge investment is a costly affair. Expansion of higher-education cost has been even more starting. The necessity for increased education investment is due to increase in the numbers and rising demand for higher education. With increases in family income, a larger proportion of the population is able to afford the costs associated with sending children to college and foregoing their earnings while there. With migration of the population to urban industrial areas, a larger proportion of the population resides in urban area where facility of higher education is available and where higher education is demanded as a job passport. Further with the advances in technology, the demand for persons possessing the necessary skills has increased.

Keywords : Human Capital, Investment, Private and Social Cost, Recurring expenditure, Fixed Cost, Variable Costs, Capital Costs, Stipend.

1. Introduction

Cost of education is the cost incurred by the government and the household sector on education. It is divided into two parts institutional and private cost. Institutional cost refers to the expenditure incurred by the institution or/and government for providing education that is not directly recovered from students. It is further divided into recurring and non-recurring expenditure. Alternatively, these are also known as variable and fixed costs or current and capital costs. Recurring expenditure, as the term implies, recurs regularly. It can be defined as the cost which an institution or/and government spends on operating or maintaining the education system. It is calculated annually. It includes expenditure on salaries and allowances of teaching and non-teaching staff, scholarship and stipend paid to the students, repair and maintenance of building and equipment, hostel expenses to the extent they are not covered by fees, cost for conducting games and sports activities as also conducting examinations, and expenses on consumables (chemicals etc.) and contingencies. Non-recurring expenditure of capital cost is one-time expenditure. It includes expenditure on land and library purchases, construction of buildings, purchase of furniture and equipment and other durable items. Students or/and parents incur private cost. It is further divided into direct private cost and indirect private cost, the later includes the opportunity cost or income foregone. The total of public (institutional) and private cost net of transfers is termed as Social cost of education.

2. Purpose of Education

The purpose of education is to impart the necessary skills and knowledge to the recipients so as to make them well-informed, socialised and open-minded citizens having scientific temper for their own well-being and that of the society as a whole. There is debate whether education is more of a consumption activity or is merely a means of socialization **(Gintis, 1971)** or is an investment in human capital or is simply a signalling factor and acts as a filter. The logical challenge to the human capital theory comes from the screening and signaling hypothesis **(Maglen 1993: 25-37, Weiss 1995:134)**. According to this hypothesis, schooling does not raise productivity; it

merely signals the existence of differences in productivity raising characteristics in individuals like learning ability, intelligence, cooperative spirit and other characteristics, which exist independent of schooling. Education provides these signals only because it is related to these traits. Moreover, better students go to better schools and end up having higher qualifications, which are, however, only reflection of pre-school traits. Education does not transform students, it only reveals or signals the underlying traits to everybody. Employers pay for this sorting or signaling function of education. In the words of **Tam and Tang (1998: 17)**, "The essence of a sorting mechanism is that it would not transform students but it would reveal the underlying traits of schooling. If the school is a sorting mechanism, students with more schooling are more likely to possess a range of pre-school traits, and these traits explain their higher productivity, which in turns explains the returns to schooling". **Morris (1993: 65-73)** studies the productive and screening hypothesis with reference to six-education labour market scenario and concludes that there is no relation between education and economic growth. Similar results are obtained by **Benhabib and Spiegal (1994: 143-174)**. If the sorting and signaling function of education is prominent then education either produces 'Credential inflation' or increasing 'defensive expenditure' **(Thurow 1975: 96-97)**. These merely raise cost of production. The central opinion is that "Though education is in some measure a consumption activity rendering satisfaction to the person who receives it, it is predominantly an investment activity" **(Schultz 1961, Becker 1964, 1971, 1993, Barro 1991, Gemmel 1996, Sianesi and Reenen, 2002)**. Empirical evidence both at macro and micro level suggest that education makes substantial contribution to productivity and national income and its growth **(Krueger and Lindahl 1999, Topel 1998, Griffith, Redding and Van Reenen 2000, Cameron, Proudman and Redding 1998, Benhabib and Spiegel 1994, Denison 1985)**. Education not only provides the much needed supplies and expertise but also guarantees access to high income and high status occupation. Since education yields returns to the recipients, it affects the dynamics of the class structure of the society. That's why liberal societies aim to supply equal access to education to all segments of the society and pay individual on the basis of merit. In such a situation education acts as *'social lift'* and facilitates intergenerational mobility. Thus, the aim of education is to establish either "Meritocracy" or "Neo-liberal" society **(Bell 1973:127-128, Jonsson 1993a: 91-118)**.

In this study, the maintained hypothesis is that education raises productivity of the recipient. Here the focus is entirely on the investment component of education. Other uses and consequences of education, though not insignificant are not dealt with in this study. It is thus assumed that education provides the much needed supplies and expertise to the employers/producers and thereby guarantees the workers access to high income and high status occupations and jobs. Education is thus expected to lift the earnings profiles of the recipients of education. However, all streams and levels of general, technical and professional education do not add to the productive capacity and earnings to the same extent and cost of obtaining such education also differs.

3. Objectives of Study

The main objective of this study is to conduct cost analysis and to compute private and social cost of various technical and professional courses offered by the J.N.V. University Jodphur.

In the present study firstly the components of private cost are discussed. Afterwards, private costs of the technical and professional courses are estimated. This is done on the basis of information collected from the sample of current final year students of different courses under scrutiny. It is corrected for scholarship and stipend received. However, all this cost cannot be treated to be contingent on attending the course. Some of it would have been incurred any way even if the scholar had not joined the course and remained at home. Correction has also applied for this factor in our estimation. Finally, net private and social costs are calculated.

4. Hypothesis

The hypotheses for the present study are as follows :

S.No.	Null Hypothesis (H_0)	Alternative Hypothesis (H_1)	Logic
1.	There is no significant difference in private cost between different courses.	Private cost differs between the different courses.	Differences in private cost may be due to differences in tuition fee and pre-admission costs, as well as class composition.
2.	There is no significant difference in social cost between different courses.	Social cost differs between the different courses.	Differences may be due to difference in expenditure incurred on equipment, plant and machinery, buildings and different degrees of subsidization.

5. Methodology

Role of education is multi-dimensional but in the present study the focus is on the economic aspects of technical and professional education of the University. This requires estimation of institutional (recurring and non-recurring), private and social cost keeping the conceptual and practical issues in view.

6. Review of Literature

Cost of education constitutes of: (a) institutional cost or public cost and (b) Private cost. Here we cite some of the studies conducted on cost of education.

(i) **Panchmukhi (1965)** estimated total cost, resource-cost and opportunity cost of education in India for the period 1950-51 to 1959-60. He found that the total cost of education constituted 6.2 per cent of GNP in 1959-60.

(ii) **Kothari (1967)** calculated total cost of education for 1950-51, 1955-56 and 1959-60. He found that total cost of education constituted 5 to 6 per cent of GNP in 1960-61.

(iii) **Mathur (1974)** studied (a) the growth and variation in educational expenditure during 1951-61 with respect to objects, institutions, states, sources and management, (b) the pattern of expenditure from different sources of education finance and (c) the relative performance of different states in education. He found that the total expenditure increased by 201 per cent and the expenditure per student increased by 162 per cent during 1951-61. It was also observed that out of the total growth of expenditure, 72.2 per cent was direct and the remaining was indirect. Fees accounted for about one-fifth of the total expenditure on education. However, the relative contribution of fees to total expenditure on education found to be declining.

(iv) **Dutt (1969)** computed the cost of education for 28 colleges in Haryana using correlation and regression techniques. The author found direct relationship between unit cost and all the other factors other than enrolment and an inverse relationship between unit cost and enrolment.

(v) **Kulkarni (1969)** studied the unit cost of education in commerce colleges in Bombay and found the teacher's salaries constituted 40-50 per cent of the total costs.

(vi) **Kamat (1973)** computed the unit recurring cost for different types and levels of higher education and objects of expenditure of University of Poona for the period of 1964-65. He found technical education (Engineering and Medicine at the degree level) costlier than that of general education.

(vii) **Tilak (1979)** estimated the unit institutional cost for different states and Union Territories. Vast regional differentials were revealed. The total unit cost ranged from Rs. 1308 in Rajasthan to Rs. 2461 in Uttar Pradesh. Similarly, in the case of professional education, the unit cost varied from Rs. 835 in West Bengal to Rs. 12800 in Pudduchery.

(viii) **Gasper and Sebastein (1997)** considered only the recurring cost of Medical education in Kerala. They found that expenditure on salaries increased from 89 per cent in 1977-78 to 93 per cent in 1992-93 but the share of expenditure on library, equipments and laboratory materials declined from 11 to 7 per cent. Institution cost of medical education accounted to 87.7 per cent to total cost of medical education.

(ix) **Ansari (1997)** calculated the unit institutional cost incurred by the fifteen selected central and state universities during the year 1988-89. Initially the author estimated per student cost on the basis of full time equivalent students i.e. (by applying weighted enrolment). Finally faculty and departmental unit cost were computed.

(x) **Salim (1994:110)** calculated private cost of higher education (general and technical) in Kerala and investigated into financial commitment of households according to socio-economic categories. He concluded degree courses to be costlier than the PG courses in both general and technical education. Net cost per student of technical education was 14 per cent higher than that of general education at the degree level and 359 times lower at the PG level.

7. Private Cost of Education : Conceptual and Practical Issues

Private Cost is incurred either by the individual, or parents or both. It is further divided into direct private cost and indirect private cost. Direct private cost is the expenditure incurred directly by the household for the education of individual while indirect cost (opportunity cost) is the income foregone by the student while obtaining education and not being employed in the next best alternative.

The calculation of private cost is based on primary data and it involves inclusion of many items of expenditure, which are likely to be misinterpreted or over-estimated by the respondents. Therefore, few scholars have calculated private cost of education.

Direct private cost is the expenditure on schooling borne by the household. Besides expenses on fees, books, stationary and equipment, boarding and lodging payments, conveyance, transport and entertainment those on private tuition and coaching as well as pre-admission expenses are also included **(Salim 1994:52)**. However, some of the living expenses would have been made even if the student had not joined this particular course **(Mehta 1996:25)** terms as cost of remaining at home and deducts these from private cost. **Shortlidge (1974)**, **Blaug (1969:197-198)** make this correction by including only expenditure on tuition fee, books and stationary in private cost.

Some of the researchers have suggested yet another correction. By joining a particular course, that person has to forgo opportunity of earning income on the basis of his existing qualifications. This forgone income is treated as opportunity cost of education and is added to direct private cost by **Kothari and Panchmuki, (1980). Schultz (1963) Bowman (1966), Blaug (1967), Tilak (1987), Salim (1994) and Mehta (1996).** However, **Vaizey (1962) Balog and Streeten (1963)** and **Merrett (1966)** neglected this part of cost in their studies.

8. Social Cost

Social cost presents the other part of cost of education. It gives only the expenditure of government or institution on creating and operating the education system. It does not consider the expenses and efforts made by the individual to complete a particular course.

9. Estimation of Average Annual Private Cost

Generally there are no major problems of exclusion or inclusion of certain items in calculating private cost of education. Most of the studies consider all the mentioned items in private cost of education except pre-admission cost. Pre-admission cost includes the expenditure incurred on application form and prospectus, attending coaching classes, engaging private tuitions, and training for group discussions and purchase of books and photocopying for the entrance examination. This component is included in the present study because admissions to Engineering and Management Courses are on the basis of pre-entrance tests. The format of these tests is different from the qualifying examinations, thus, requiring special preparation. Coaching for these entrance examinations is now a major business. Hence, pre-admission cost constitutes an integral component of private cost especially in the case of technical and professional courses like Bachelor of Engineering and Master of Business Administration. College fees include admission, tuition and examination fees. The remaining items of private cost are self-explanatory.

The estimate of the annual average private cost expenditure on different items derived on the basis of information provided by the students is presented in Table 1. The same for full course is given in Table 2.

Table 1 : Average Annual Private Cost of Education (In Rs.)

S. No.	Item	Course				
		B.E.	M.E.	MBA	LL.B.	LL.M.
	Deemed Duration (in Years)	4.00	1.6	2.00	3.00	2.00
1.	Pre-Admission Cost	4680.70	500.00	4950.00	106.33	107.50
2.	College Fees	1662.77 (13.62)	2000.00 (18.69)	15650.75 (42.99)	896.28 (14.27)	1580.50 (30.25)
3.	Books/Stationary/Equip.	1886.27 (15.45)	1400.00 (13.08)	1890.00 (5.19)	1186.89 (19.13)	995.00 (19.04)
4.	Hostel/Food	5313.91 (43.54)	3500.00 (32.71)	9806 (26.94)	2165 (34.91)	850 (16.27)
5.	Transportation	1293.11 (10.59)	1600.00 (14.95)	2735.00 (7.51)	522.22 (8.42)	540.00 (10.33)
6.	Private Coaching	575.58 (4.72)	800.00 (5.61)	1950.00 (5.36)	415.55 (6.70)	225.00 (4.31)
7.	Miscellaneous	1473.58 (12.07)	1600.00 (14.95)	4375.50 (12.02)	1028.15 (16.57)	1035.00 (19.81)
	Total (2 to 7)	12205.2 (100)	10700.00 (100)	36407.75 (100)	6203.92 (100)	5225.50 (100)

Source : Computed from sample data

* For M.E. student's deemed duration to complete the course is 1.6 years with the maximum limit of 7 years for regular students and 3 years for part-timers. However, from time to time special permission was given to some candidates to submit their dissertations after the specified period. * Figures in brackets denote the percentage expenditure on the item.

Table 2 : Average Private Cost for Complete Degree Course (in Rs.)

S. No.	Item	Course				
		B.E.	M.E.	MBA	LL.B.	LL.M.
	Duration (In Years)	4.00	1.60	2.00	3.00	2.00
1.	Fees	6651	4000	31301	2665	3161
2.	Books/Stationary/Equipment	7545	2800	3780	3560	1990
3.	Hostel/Food	21255	700	19613	6497	1700
4.	Transportation	5172	3200	5470	1566	1080
5.	Private Coaching	2302	1200	3900	1246	450
6.	Miscellaneous	5894	3200	8751	3084	2070
7.	Total Private Expenditure	48819	21400	72815	18608	10451
8.	Scholarship	3766	1600	0	0	0
9.	Cost at Home (Full Course)	56185	8579	36650	44144	30484
10.	Percentage not living at home	0.75	0.08	0.80	0.13	0.01
11.	Actual Cost remaining at home (Full Course)	42138	686	29320	5738	304
	Net Private Cost = (7–8–11+ Pac*)	7595	19614	48445	12975	10254

Pac = Pre-admission cost which is incurred before actual admission hence added to the annual private expenditure.

The student of B.E. on an average spent Rs. 12205 and that of M.E. student spent Rs. 10700 per year (Table 1). On an average, students of M.B.A, LL.B and LL.M spent Rs. 36408, 6204 and Rs. 5226 per year respectively. It is to be noted that this annual expenditure does not include pre-admission cost. (Table 1).

Students of B.E. and MBA are found to be incurring larger *pre-admission cost, as* they have to go through an entrance test and group discussion too. In contrast, pre-admission cost is nominal in case of M.E, LL.B and LL.M. students.

College fees vary from 13.62 to 42.99 per cent of the total annual expenditure. M.B.A students pay 42.99 per cent of their total annual expenditure towards college fees. Students of B.E. and M.E. courses contribute 13.62 and 18.89 per cent of total expenditure respectively towards college fees. LL.B. and LL.M. students pay 14.27 and 30.25 per cent respectively of total annual expenditure for college fees. (Table 1).

Expenditure on books, stationary and equipment varies from 5.19 to 19.13 per cent of the total annual private expenditure. As a percentage of total annual expenditure Law students (LL.B and LL.M.) spend the most (38.17 per cent) on books, stationery and equipments. MBA students spend the least (5.19 per cent) on this item. B.E. and M.E. students spend 15.45 and 13.08 per cent respectively as a percentage of total annual expenditure. (Table 1) The expenditure on books, stationary and equipment shows vast differences course-wise. It seems that M.B.A. students are well served by the library and LL.B. students the least. It is, however, contrary to the fact that the number of books in Law library is the highest followed by the number of books in libraries of Commerce, Management and Engineering faculties.

One reason for this peculiarity may be the differences in reading habits of the students. Indepth enquiries revealed that Law students spend money mostly on guides, keys and notes, which are not stocked in the library. The reliance in Engineering and Management is, however, mostly on test books and journals well stocked in the respective libraries.

Hostel/Food constitutes 16.27 per cent (for LL.M.) to 43.54 per cent (of B.E.) the total annual private expenditure. B.E. students spend more on this item than other students. One reason of this may be the fact that a relatively high proportion of them, about 62 per cent, stayed in hostels. This expenditure is the lowest in case of LL.M. and LL.B. students as 90 per cent and 87 per cent of them were living with their parents spending nothing on hostel/food.

Expenditure on private coaching varied between 4.72 to 6.70 per cent of the total expenditure. LL.B. students relies more on private tuition and coaching than other students. The expenditure on private coaching is 6.70 per cent of LL.B. students. The percentage expenditure or private coaching is 5.36 for M.B.A. students.

Expenses on miscellaneous items include pocket expenses and those on entertainment and clothing ranged between 12.02 to 19.81 per cent of the total expenditure. Law students seem to be spending more on miscellaneous items. The expenditure by LL.B. students was 16.57 per cent while in case of LL.M. students this percentage was 19.81 per cent.

Transport cost as percentages of total cost is highest in case of M.E. students and lowest in case of M.B.A.

students. The students of LL.B. and LL.M. incur 8.42 and 10.33 per cent of total expenditure respectively.

10. Cost of Remaining at Home

Since private cost is contingent upon joining the Course, the cost which would have been incurred anyway even if the student had not joined the course, termed here as cost at home. This cost should be deducted from the estimated private cost obtained as above. This is necessary for arriving at an estimate of the additional (net) expenditure on hostel and food contingent on joining and completing the course. Some economists have calculated the cost at home and corrected private cost for this fact. Mehta (1996: 27-28) and Shortlidge (1974) applied this correction in case of agricultural graduates.

Estimates of cost at home could not be directly generated from the present sample data hence an indirect method is used. The process is detailed below. The entire process would be clear from a glance at data generated by NSS consumption expenditure surveys. In the present case, NSS 48th round data published in Sarvekshana (Jan-March 1995) are used. [Table 4 of schedule 81 gives expenditure on main items of consumption by expenditure groups.] The table used here is for urban areas of India as a whole. The relevant information is reproduced in col. 1 and 2, of Table 4.

In calculating cost at home, first, the final year student respondents-family is assigned to a corresponding NSS expenditure class. This is done on the basis of income of the household as revealed by the respondents in the individual response-sheet. As students in different courses come from different socio-economic backgrounds, the average income is calculated separately for each of the courses.

Col. 2 and Col. 3 in Table 3 depict the mean family income per annum and mean family size respectively derived on the basis of the individual responses in the present field survey. Column 4 is per capita per month family income, obtained by dividing mean income by mean family size, that is, column (2) by column (3) and converted into per month income. Since NSS data are on expenditure and not on income, the mean per month income has to be converted to per month expenditure. This is done on the basis of average rate of savings. Assuming the relevant rate of saving to be equal to the national saving rate of 22 per cent of the national income, the propensity to spend is taken to be 0.78. This value when applied to mean income in col. (4) gives us mean expenditure in col. (5) at 2000-01 prices. To make these comparable with those given by NSS, income in col. (4) is converted to 1991-92 prices by applying a deflator of 0.493 which yields col. (6).

Table 3 : Cost at Home of the Graduates and Post Graduates

Course	Family Income per annum	Mean Family Size	Per capita Income per month 2000-01 prices	Con. Exp. at 2000-01 prices (Average)	Con. Exp. at 1991-92 prices (Average)	Interpolated Cost at home at 1991-92 prices	Interpolated Cost at home at 2000-01 prices
1	2	3	4	5	6	7	8
B.E.	216500	6	3049.71	2378.71	1172.73	695.37	1404.64
M.E.	51440	4	1020.63	796.09	392.47	265.45	536.20
M.B.A.	262400	5	4049.38	3158.58	1557.17	907.20	1832.54
LL.B.	218100	6	3205.86	2500.58	1232.58	728.46	1471.48
LL.M	237700	6	3329.10	2596.69	1280.17	754.57	1524.23

It should be kept in mind that average per person expenditure (APER) is obtained for 30 days from the NSS table for the entire family. However, all the items of expenditure are not relevant to the student. Cost on student has been defined as that part of average per person expenditure (APER) that is relevant to students only. Thus, expenses on items like tax, cesses, tobacco, other intoxicants, durable goods and social obligations are excluded from APER to define cost of remaining at home. This is given in Col.3 of Table 4.

In order to interpolate cost corresponding to APER (Col.8, Table 3), linear equation (1) is fitted between cost at home (Cost) and average per person expenditure (APER) as given in col. 2 and col.3 of table 4.

Cost = 49.20+0.551 APER _____(1)

R^2 = 0.82, Adjusted R^2=0.76, F=43.99, Sig. = 0.00

The relationship is robust with highly significant R^2=0.76, which is significant at zero per cent level.

The cost at home at 1991-92 prices (Table 3, Col. 7) is estimated by putting APER values (Col. 6) for each course derived from the field survey in this equation. Now it is inflated to value at 2000-01 prices by applying an inflator of 2.02 and corresponding values are put in column 8 of table 3. It gives cost at home for one year. Now the cost per student for the full course is obtained by multiplying it (i.e. Col. 8) by the respective duration of the course, on the basis of assumption that an average student remained at the university for ten months

in a year. This value is given in row 11 of Table 2. Finally, net private cost is obtained after deducting cost at home and scholarship from the total private expenditure but adding the pre-admission cost which is incurred only once at the time of admission (Table 2, Row 12).

Net private cost for completing the course comes to the highest for MBA course (Rs. 48445) followed by that for M.E. course (Rs. 19614). In contrast, private cost for completing LL.B, LL.M and B.E. courses comes to Rs. 12975, Rs. 10254 and Rs. 7595, respectively. The high degree of variation is due to differences in pre-admission cost, tuition fees and lodging and boarding charges. (Table 2, Row 12)

Table 4 : Per Person Average Expenditure for 30 Days and Cost of Remaining at Home

Expenditure (in Rs.)	Average Per Capita Expenditure (APER)	Total Cost at Home
1	2	3
90-110	75.65	70.49
110-135	91.86	86.84
135-190	108.57	102.77
160-185	125.47	117.16
185-215	142.52	131.11
215-255	163.09	151.18
255-310	190.26	173.26
310-385	220.78	199.24
385-520	261.28	227.64
520-700	318.83	264.39
Above 700	444.13	229.35

Source : NSS (Table 4: S 81)

11. Indirect Private Cost

Indirect private cost measures the opportunity cost of earnings foregone by the student because of joining the Course. It is also termed as hidden cost. Direct private cost shows the magnitude of physical resources used up in the process of obtaining education. It does not value the time that student has allocated to studies. An individual might have used this time in enjoying leisure or doing some job for pecuniary reward. It is difficult to quantify the value of leisure foregone in pecuniary terms directly. However, it can be valued at the margin, by the amount of income foregone by devoting the time to leisure instead of working. Hence opportunity cost is valued in terms of foregone earnings (Kothari and Panchmukhi, 1980), Schultz (1963), Bowman (1966), Blaug (1976), Tilak (1987), Salim (1994) and Mehta (1996) favour its inclusion but Vaizey (1962), Balog and Streeten (1963) and Merrett (1966) exclude it from private cost.

It is to be noted that, like benefits, income foregone would also be over the life span of the individual. Hence, instead of adding income foregone to private cost it would be better to deduct it from earnings in each year. Thus, age-earnings profiles are netted out for age profiles of earnings foregone. The adjusted age-earnings profiles can thus be interpreted as additional earnings consequent on obtaining the degree over the next best alternative. For LL.B and M.B.A courses the next best alternative profile required is earnings profile of B.A/B.Sc./B.Com. graduates. In the case of BE graduates, the next best alternative is the earnings from job available to those with the qualifying level of education, that is, higher secondary or senior secondary school completion and for M.E. degree, the survey itself provides an estimate of the expected earnings of the B.E. graduates.

In the present study, recourse is taken to the earning profiles of males with different levels of education prepared by Kapoor and Mehta (1997). Their study was based on a sample survey of 1913 rural and urban males aged 25 and above in Udaipur. They prepared two sets of earning profiles – one derived from combined regressions for all levels of education using dummies for each level and another from individual regressions for each level of education. In the present study, results (earnings profiles) from their individual regressions have been used to derive the opportunity cost. Earnings profile of graduation is used for M.B.A. and LL.B. while that of secondary school for B.E. as opportunity cost.

12. Corrections for wastage and stagnation

Some of the students taking admission to a particular course either do not complete the course within the stipulated period or leave the course before completing it. This leads to wastage of educational resources. It is, therefore, essential to make adjustment on the cost side by escalating the cost upwards. Tilak (1980:64-65) adjusted the costs of education upwards to include the full cost of wastage and stagnation; assuming that they have

no returns but Harberger (1965) adjusted the earnings profiles for this factor. In the present study, adjustment for this factor is made on the cost side as wastage raises the cost of education, which needs to be corrected.

Wastage is calculated for courses under scrutiny using following formula:

$$\text{Wastage ratio} = 1 - \frac{\text{Number of students promoted to next class}}{\text{Number of Students admitted}}$$

The wastage ratio is calculated for each year of the course separately (Table 5). It reveals that wastage declines with successive years of the course. Similar patterns are observed in all the courses. Wastage is about 15-16 per cent in the first year of all the B.E. courses. In second year also, it is the highest in B.E. (Computer Science) at 11 per cent. Further, wastage is negligible in remaining duration of the course. In MBA, wastage is 8.8 per cent in the first year and 2.2 per cent in the second year of the course. However, in LL.B, wastage is at the maximum level of 52 per cent in the first year, which declined to 28 and 11 per cent respectively in the second and third years of the course. In LL.M, wastage is 41 per cent in the first year which falls to 6 per cent in the second year of the course. Thus wastage is the highest in the first year of Law course.

In the present study, institutional cost is already calculated on the basis of degrees awarded, which accounts for wastage (drop-outs, absentees, failures) in process of completing the degree course. Hence no separate correction is required while calculating the institutional cost. However, separate correction is required in calculation of private cost. This is being done by escalating the cost upwards by the wastage ratio in different years of the course.

Table 5 : Wastage in Education at J.N.V. University, Jodhpur

Degree	I Year	II Year	III Year	IV Year	Stipulated Time (in Years)	Actual time (in Years)
1	2	3	4	5	6	7
B.E. (Civil)	0.166	0.057	0.071	0.029	4	4.62
B.E. (Electrical)	0.155	0.040	0.038	0.046	4	4.71
B.E. (Mechanical)	0.155	0.056	0.022	0.025	4	4.66
B.E. (E&C)	0.155	0.075	0.012	0.030	4	4.32
B.E. (Mining)	0.155	0.064	0.058	0.020	4	4.77
B.E. (CSE)	0.155	0.116	0.011	0.003	4	4.18
M.E.	N.A	N.A	N.A	N.A	1.6	3.6
M.B.A	0.088	0.022	-		2	2.00
LL.B	0.520	0.280	0.110	-	3	3.13
LL.M	0.410	0.060	-	-	2	2.22

Source: Computed from University Records

13. Social Cost of Education

Social cost of education is the sum of institutional and direct private cost. Thus, it shows how much cost the parent, the government and the institution incur on the education of an individual. In the present study social cost includes institutional cost (recurring and non-recurring) net of fees and receipts of the university and the direct private cost net of scholarship.

The social cost on each course, that is, the cost without taking account of the indirect (opportunity) cost, is given in Table 6, col. 3.

It costs Rs. 168093 to society to produce an engineering graduate and Rs. 119925 to produce a postgraduate in engineering. It is required Rs. 85921, Rs. 56624 and Rs. 39354 to produce one MBA, LL.B and LL.M, respectively. The percentage of private cost to social cost is the highest for producing MBA (56.38 per cent) (Table 6, col. 5) followed by LL.M, LL.B, M.E, and B.E. respectively. The degree of variation may be due to the different levels of tuition fees, lodging and boarding charges, pre admission expenses, purchase of scientific equipments etc. Only in case of M.B.A., direct private expenditure borne by individual is higher than institutional expenditure. Again, this is perhaps due to relatively high tuition fees charged as well relatively more lodging and boarding expenses incurred by the students since they come from relatively better off families. But in B.E. and M.E. institutional cost is more than that of private cost. Similar pattern is observed in LL.B. and LL.M. courses.

Table 6
Direct Private and Social Cost of Technical and Professional Courses at J.N.V. University Jodhpur

Course	Direct Private cost per Degree (Rs)	Institu-tional cost per Degree (Rs)	Social cost per Degree (Rs) (1+2)	Average Duration (in years)	Percentages of private cost to social cost	Percentage of public cost to social cost
1	2	3	4	5	6	7
B.E.	7595	160498	168093	4	4.51	95.48
M.E.	19614	100311	119925	2	16.35	83.64
M.B.A	48445	37476	85921	2	56.38	43.61
LL.B	12975	43649	56624	3	22.91	77.08
LL.M	10254	29100	39354	2	26.05	73.94

Source: Calculations based on sample data

14. Conclusions

At J.N.V University Jodhpur the students spent Rs. 48819, Rs. 21400, Rs. 72815, Rs. 18608, Rs. 10451 to obtain B.E, M.E, MBA, LL.B and LL.M degrees respectively (unadjusted for cost at remaining home). The share of all types of fees varies from 13 to 42 per cent of the gross private expenditure unadjusted for scholarship. The proportion of scholarship is 9.6 and 8.0 per cent respectively of the total private expenditure for completing B.E and M.E courses. However, there is no provision of scholarship to M.B.A, LLB and LL.M students.

Again at J.N.V. University, Jodhpur social cost per degree comes to Rs. 168093, Rs. 119925, and Rs. 85921, Rs. 56624 and Rs. 39354 for B.E, M.E, MBA, LL.B and LL.M courses, respectively. The recurring cost in the social cost per degree is 91 per cent in Commerce and management followed by 85 per cent for Faculty of Engineering and 70 per cent for Law. The capital cost in social cost comes to 9 per cent for Faculty of Engineering followed by 1.7 per cent in Commerce and Management and 4 per cent in Law. As noted earlier, capital cost seems to be underestimated in the present case. **Salim (1994:111-112)** reports that social cost per student for the year 1989-90 was Rs. 19769 for degree student and Rs. 14847 for PG student of technical education. In General education, the social cost per student was Rs. 8988 in degree courses and Rs. 10308 in P.G. courses. This difference is due to the high recurring and capital cost in technical education as compared to courses in general education. According to **Tilak (1979),** tuition fee constitutes only 1.5 per cent of the recurring expenses in the government funded engineering institutions in India. In contrast, in the engineering college under study, tuition fee constitutes 4.9 per cent of the recurring cost. This is perhaps due to hike in tuition fees during the last five years. The percentages of fees in recurring cost per degree is the highest (42 per cent) in case of M.B.A followed by much lower percentages of 5, 3, 6 and 8 per cent respectively in B.E., M.E., LL.B. and LL.M. courses,. This is due to the recent hike in tuition fees in all colleges in the state.

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