

Manpower Planning and Cost-Benefit Analysis of Education

HUMAN DEVELOPMENT INDEX (HDI):

In 1990 the first Human Development Report introduced a new approach for advancing human wellbeing. Human development – or the human development approach - is about expanding the richness of human life, rather than simply the richness of the economy in which human beings live. It is an approach that is focused on people and their opportunities and choices.

The Human Development Index (HDI) is a statistical tool used to measure a country's overall achievement in its social and economic dimensions. The social and economic dimensions of a country are based on the health of people, their level of education attainment and their standard of living.

Description: Pakistani economist Mahbub ul Haq created HDI in 1990 which was further used to measure the country's development by the United Nations Development Program (UNDP). Calculation of the index combines four major indicators: life expectancy for health, expected years of schooling, mean of years of schooling for education and Gross National Income per capita for standard of living.

The index is based on the human development approach, developed by Ul Haq, often framed in terms of whether people are **able to "be" and "do"** desirable things in life. Examples include—Beings: well fed, sheltered, healthy. Doings: work, education, voting, participating in community life. It must also be noted that the freedom of choice is central—someone choosing to be hungry (e.g. during a religious fast) is quite different to someone who is hungry because they cannot afford to buy food

Every year UNDP ranks countries based on the HDI report released in their annual report. HDI is one of the best tools to keep track of the level of development of a country, as it combines all major social and economic indicators that are responsible for economic development.

Millennium Development Goals:

The eight Millennium Development Goals (MDGs) are internationally-agreed upon targets that aim to decrease poverty and advance living standards by 2015. Given how wide-ranging and interdependent the MDGs are, engineers play an essential role in achieving these Goals. The eight Goals are as follows:

- Goal One: Eradicate extreme poverty and hunger
- Goal Two: Achieve universal primary education
- Goal Three: Promote gender equality and empower women

- Goal Four: Reduce child mortality
- Goal Five: Improve maternal health
- Goal Six: Combat diseases including HIV/AIDS, malaria and other diseases
- Goal Seven: Ensure environmental sustainability
- Goal Eight: Develop a global partnership for development

Community infrastructure is key to alleviating poverty and thus engineers have a vital role to play in all the MDGs". Providing strong and sustainable infrastructure helps increase the welfare of local communities, nations and regions. As a result, the socio-economic development of societies is connected to the engineers who design, create and manage the technologies and the physical infrastructures of societies.

The MDGs emphasized three areas: human capital, infrastructure and human rights (social, economic and political), with the intent of increasing living standards. Human capital objectives include nutrition, healthcare (including child mortality, HIV/AIDS, tuberculosis and malaria, and reproductive health) and education. Infrastructure objectives include access to safe drinking water, energy and modern information/communication technology; increased farm outputs using sustainable practices; transportation; and environment. Human rights objectives include empowering women, reducing violence, increasing political voice, ensuring equal access to public services and increasing security of property rights. The goals were intended to increase an individual's human capabilities and "advance the means to a productive life". The MDGs emphasize that each nation's policies should be tailored to that country's needs; therefore most policy suggestions are general

Cost in Education:

Cost analysis can contribute significantly to decision-making, planning, and monitoring in education. The different concepts of costs explain how they can contribute to improve policy-decisions in education.

Taxonomy of Costs of Education:

Costs can be classified into two types: (a) Individual or private costs (b) Institutional or public or social costs

Individual Costs or Private Cost:

Individual costs or private costs of education are those costs of education incurred by a learner or by his/her parents/guardians or by the family as a whole. Individual costs are of two types: Direct and Indirect.

Direct costs -- These are those costs that are directly visible. They include all money expenditure incurred on different items by the student. For example, expenditure on tuition

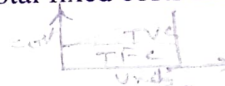
fees, other fees and charges, purchase of books, stationary, uniforms, hostel expenses and transport.

Indirect costs (opportunity costs) -- Indirect costs are those costs which are not directly visible. These costs are sometimes called 'opportunity costs or foregone earnings'. Opportunity costs refer to the value of students' time or earning forgone to continue the study.

Institutional Costs of Education or Public Costs of Education -- Costs incurred at the institutional level (government, private or mixed) are called institutional costs or public costs of education. Public costs are those that include financing by the government on the basis of taxes, loans and other public revenues. The institutional costs of education are, generally, analyzed using the following variables.

- Variable and fixed costs of education.
- Recurring and non-recurring costs of education.
- Current and capital costs of education.

Total Cost -- The 'total cost' is the sum of all fixed costs and all variable costs. Equation $TC = TFC + TVC$, Where, TC = total costs, TFC = total fixed costs and TVC = total variable costs



Total Fixed costs and Total Variable Costs -- Fixed costs are defined as those that do not change with a change in the number of learners, e.g., costs on institution's building. In other words, the costs that do not increase or decrease with the changes in the level of activity of the institution are known as the fixed costs.

Variable costs -- Vary with every change in number of learners. e.g., costs on teachers, laboratory materials and stationary items.

Sometimes we also use terms like short run fixed costs and long run fixed costs. For example, the cost of buildings forms long run fixed costs and the cost on teacher salaries is referred to as short run fixed costs. The fixed costs include the costs of the following items: (a) purchase and construction of land and buildings; (b) purchase of furniture ; (c) purchase of durable equipment; etc. (d) costs on other non-recurring items.

Current Costs and Capital Costs-- Most of the time, capital costs and current costs are synonymously used with fixed costs and variable costs respectively. Current costs are incurred on consumable items within a given financial year. Capital costs refer to costs incurred on durable items like land, buildings, equipment and so on that rendered useful service over a period of years.

Opportunity Costs or Foregone Earnings -- The concept of opportunity cost emphasizes the factor of choice. Because the resources are scarce, we are forced to choose. If we choose to have more of one thing, we shall have to accept less of another thing. This type of cost plays a very important role in decision-making. By the opportunity cost of decision is meant

the sacrifice of alternatives required by that decision. If there are no sacrifices, there is no cost.

*opportunity cost = what one sacrifices
what one gains*

Total social costs of education -- The sum of individual costs and institutional costs is called the total social costs of education.

Unit Costs of Education-- Unit costs of education means costs per unit i.e. per student, per graduate, per credit, etc. Generally, unit in unit costs means the total number of learners enrolled in a course in a particular year. unit costs refer to the unit of output i.e. successful learner or graduate. This is called effective costs of education.

Average Cost-- The average cost is the same as the unit costs or cost per student. The AC is derived by dividing the total cost by the number of units (enrolments). $AC = TC / N$ Where, AC= average costs, N = number of students enrolled.

Marginal Cost -- Marginal cost refers to the cost incurred on an additional learner or the additional cost attributable to an extra learner. We can express it symbolically as: $MC_n = TC_n - TC_{n-1}$ Where, MC = marginal cost, n = enrolments in a year, n-1 = enrolment in previous year It is also called an incremental cost. It may be emphasized that in cost analysis in education, total cost and average cost are used extensively. On the other hand, the use of marginal cost in education is limited.

Cost Benefit and Cost Effectiveness Analysis-- Cost-benefit analysis and cost effectiveness analysis can help us in evaluating the alternative uses of resources. The estimation of a unit cost is necessary, if one has to make a cost-benefit or cost-effectiveness analysis. In a cost-benefit analysis, the output is measured in monetary terms, and in cost-effectiveness analysis, the output is addressed in terms of the level of achievement of the objectives. Cost benefit analysis is also known as "rate of return" analysis.

For example, if a computer printer's cost is Rs. 10,000 to acquire, and yields on annual constant income of Rs. 1200, and has a life expectancy of 10 years, the rate of return of investment on this printer is equal to about 3%.

This is found by solving the following equation. $C = B_1 + B_2 + \dots + B_{10} (1+r) (1+r)^2 (1+r)^{10}$, Where, C =represents the cost of the computer printer, B = annual benefits, and r = rate of return.

We can define 'cost benefit' as a tool, which measures, in economic terms, the benefits of education to the individual or to society. In order to use this technique, it is necessary to measure both the costs and benefits in economic or financial terms. On the other hand, in 'cost effectiveness analysis', the output of education can be measured in terms of scores in cognitive achievement tests, examination results, etc.

Relationship Between Total, Average and Marginal Costs-- An analysis of the relationship between total, the average and marginal costs provides information regarding the economies of scale and the optimum size of the institution, which is a very valuable

information for the future planning of education in general, and open and distance education in particular.

Purposes of using cost analysis –

1. Testing the feasibility of expansion plans, proposals and targets. } Projecting future levels of educational costs.
2. Estimating the costs of alternative policies and of educational reforms and innovations.
3. Comparing the alternative ways to achieve the objectives.
4. Comparing the profitability of alternative investment projects.
5. Improving the efficiency of resource utilization.