Wollo University

Institute of Teachers' Education and Behavioural Sciences

Department of Educational Leadership and Management

Economics of Education (EdPM 2061) 3 Chrs

Unit One

The Nature and Concepts of Economics of Education

1.1. The Meaning of Economics

Archeological and written records of human existence suggest that obtaining the material means to satisfy wants has been a perpetual problem. Food and shelter are requirements of human life. Other goods satisfy a range of human desires and give pleasure or utility to individuals. Thus, economics, for most writers, is the study of ways that humans deal with these issues and challenges. More specifically, the term economics can be assessed from two angles as the study of problems related to allocation of scarce resources and as the study of provisioning.

Economics as the study of allocation problems emphasizes on how various alternatives or choices are evaluated to best achieve a given objective. The domain of economics, in this case, is the study of processes by which scarce resources are allocated to satisfy unlimited wants.

Economics as a study of problems related to allocation raises five basic questions to be answered by a society. These questions are as follows:

1. **What goods and services should be produced?** This requires a valuation or ranking of goods and services from the most valued to the least valued.

2. **How many units of each type of goods (or services) should be produced?** Since not everything can be produced, some goods must be sacrificed for other goods.

3. How should those goods (and services) be produced? There are often different ways to produce goods. The amount of the goods to be produced may influence the ways in which goods are produced.

4. When should the goods (and services) be produced? The time that goods (or services) are available may affect their value. Economists, accountants and others use the concept of present value to adjust the value of goods (or money) that will be acquired at some point in the future. Generally, goods to be obtained or consumed at some future date are perceived to have a lower value than those available currently.

5. How should those goods (and services) be distributed among the members of a society?
A society must devise rules or principles that govern how goods are shared or distributed among its members. The ways that goods are distributed may alter incentives that influence the behavior of individuals. The distribution of goods among the members of a society may also influence the ways in which different goods are valued.

Economics as a study of provisioning is concerned with the nature and evolution of the structure of a society that consists of a matrix of institutions, values, beliefs, knowledge and resources.

This study is concerned with relationships among individuals. The interaction among individuals is a major feature of any economic system. Another important feature of any economic system is the nature of the relationship between individuals and the community. The structure of an economic system must also consider the relationship between individuals and both the natural and built environments. Natural environment refers to the geographic (cultural and physical) and meteorological phenomena. The built environment consists of the infrastructure and knowledge that a society has created and inherited.

1.2. Scarcity, Choice and Allocation

Scarcity is the imbalance between man's boundless wants and the limited means or resources to produce these wants. Consumers want goods and services to satisfy their consumption needs. Business units and government also require different materials to produce goods and services. These wants are numerous and they expand through time. On the other hand, the economic resources (land, labor, and capital) available to produce these wants are limited.

Note that: *The existence of scarcity constrains us not to produce all of our wants and force us to choose those goods and services that offer us the highest satisfaction and that our resource is capable to produce.*

For example if we want to produce goods A, B and C, and if our resource is capable to produce only two of these goods, we have to choose between combinations A and B, A and C, or B and C. Thus, scarcity compels us to engage in choice decisions. Based on valuation of alternatives, we allocate resources to the production of goods and services we choose to produce. Hence, allocation is a central issue in economics.

Once we choose the different goods and services we want to produce, then we have to allocate our finite (limited) resources to produce our choices. For example if we choose to produce combination A and C, we have to decide how much to produce from each type of goods. Should we use more resource to the production of type A or type C? These questions are allocation questions. Therefore, allocation is a central issue in economics.

1.3. Economic Problems

A society is confronted with a finite set of resources and a given state of technology at any given point in time. As a result, there is a finite amount of goods and services that can be produced in that time frame. Given human desires and need for food, clothing and shelter, it is not always possible to produce everything that everyone would like to have.

When individuals want more than can be produced, the most obvious question is: "How can relatively scarce recourses be allocated to satisfy as many unlimited wants as possible?"

Every society faces the problems of allocation and provisioning. There are two broad approaches to these economic problems: social interaction and the advancement of knowledge. Individuals acting together can often accomplish more than when they act alone. This is one of the reasons that humans are social. They work together in groups, tribes, firms or other organizational forms for protection and producing the means of sustenance.

Knowledge about how the natural and built environments can be manipulated to satisfy wants is another way to minimize the scarcity problem.

There are three possible approaches to the narrow allocation problem. First, an increase in the output of goods and services is the most simplistic and most obvious answer. A second approach is to alter the mix (relative amounts) of goods and services produced, so that more highly valued goods are produced by reducing the output of lower valued goods. A third strategy would be to alter or reduce individuals' wants.

Individuals can often accomplish more by interacting than they can as individuals. In a society, this team or group behavior of individuals must be coordinated through social interaction. This social interaction may take many forms ranging from cooperation to competition. In the process of resolving the allocation problem through social interaction, a set of institutions, organizations, beliefs, principles, perspectives and commonly held values are created. Society, guided by these values, perceptions and beliefs and constrained by institutions, technology and resource endowment, must solve the problem of provisioning. The specific uses of goods and resources must be determined. These choices involve which resources to use, which goods to produce, who will bear the costs and who will benefit. The basic problem is the coordination of the choices and behavior of individuals.

1.4. Economic System

An economic system consists of a matrix of social institutions (law, political institutions, religion, etc), agents (individuals or actors), organizations (corporations, unions, charitable organizations, not-for-profit firms, etc) and the society. The principles, beliefs and values held by individuals are included in the structure of the society. The function of an economic system is to coordinate the activities of agents in the processes of provision and allocation.

The economic questions you learned in section 1.1 are addressed in a different approach in different economic systems.

In market or capitalist or free enterprise system, there is individual/private ownership of resources and the invisible hand interaction between demand and supply solves these questions.

In command/socialist economy system, there is state ownership of productive resources, and authoritarian methods are used to determine use of resources.

In mixed economic systems, private sector is allowed to use free market within the broader political and economic policy framework. On the other hand, the public sector reserves certain trade, industry, and service activities.

1.5. Branches of Economics

1.5.1. Macroeconomics

Macroeconomics is the branch of economics that focuses on the whole economy. The overall performance of the national [or world] economy is the primary concern of macroeconomics. In macroeconomics, the role of descriptive economics is to measure or quantify National Income Accounts [Gross Domestic Product, National Income, etc.], overall levels of employment [or unemployment], price levels and interest rates. Economic stability [or instability] and economic growth are also important issues in macroeconomics.

Macroeconomics develops models to explain and/or predict the forces that affect the aggregate measures of economic activity. The conclusions and models developed in macroeconomic theory are used to design and defend policy prescriptions. Because of the close relationship of macroeconomics to policy choices, competing ideologies offer different solutions to the perceived problems.

1.5.2. Microeconomics

Microeconomics is the study of the behavior and interactions among the various individuals and organizations within an economic system. It considers the forces that shape the behavior of such economic elements as consumers, producers, buyers, sellers, individuals, sole proprietors, partners, corporations, not-for-profit organizations and industries.

The interactions among the various economic elements identified above are usually described as interactions within the context of markets. In microeconomics the individual units are studied and summed to reflect the operation of the whole system. Most of the explanations in microeconomics use "cause and effect" to explain the interactions among individual agents.

One of the ways that the economic units interact is through market exchange. A market is a social institution that organizes the contractual relationships among all potential buyers and sellers. . When the buyers and sellers of a product or service interact with one another and engage in exchange, a market is said to exist. In a market system everything has a price -each commodity and each service.

Since market transactions are observable and quantifiable, microeconomics tends to focus on competition in the context of market exchange. Micro economics is a segmentary approach to various economic and social issues.

For example, How do prices affect business and private decisions in a sector?

How are prices determined in a market?

1.6. Basic Economic Agents and Functioning of an Economy

An economy is a system which links up different economic agents in a society. A decision also implies the existence of an agent.

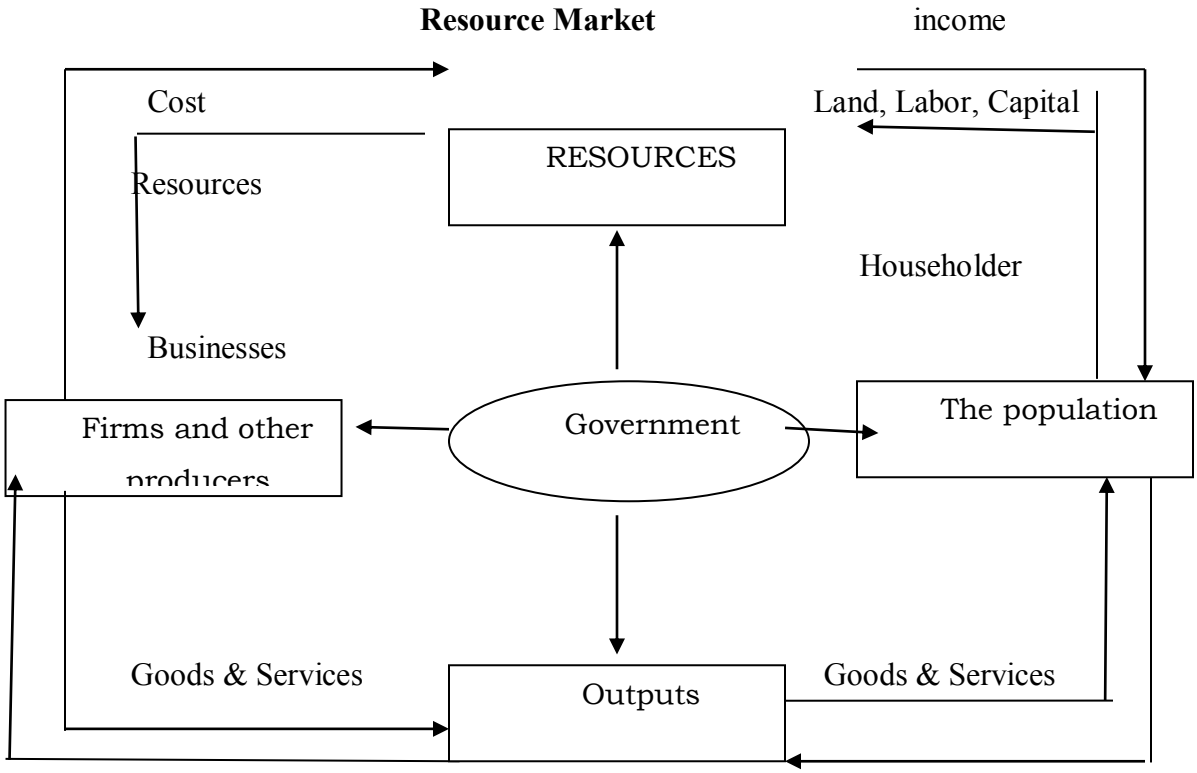
An agent is an individual who has the authority to evaluate, select, and act on alternatives to achieve an end. Any decision implies that there is an end, objective, or goal that an agent wishes to achieve.

Humans seek means to achieve ends. Both the ends and means may be influenced or constrained by resource endowment, technology, or social institutions (such as customs, traditions, markets and law).

In real world economic systems, we have three main economic agents-households, firms, and government. Households are consumption units who consume goods and services to drive satisfaction. Firms are production units whose ultimate objective is getting profit.

These three economic agents are related through flows of real products and income. Households supply factors of production like labor and earn income in return. Combining these resources, firms produce goods and services to sell to households and in return collect revenues. Government collects taxes from households and firms to expend it on the provision of public goods and control negative externalities. By way of illustration a highly simplified diagram which constitutes two economic categories, namely business and household, is presented below. It shows how the two categories relate to each other in the economy. Government's action is treated as implicitly as exogenous to the system.

Figure 1: The Flow of out put, Resource and Income in an Economy



Receipts of business **Product market** Consumption expenditure

The upper half of the diagram portrays the resource markets. Households supply their resources (labor, land, capital) to businesses (to be understood as organizations) that require these resources in the production process. Interactions between them determine prices of these resources in the resource market, which is cost to businesses and income to households.

The lower half of the diagram shows the output markets. Business organizations supply their outputs to the market and households buy these goods and services with the money they received in return for their resources. Consumption expenditure of house holds is income to a business. The inner loop (counter clock-wise flow) shows the flow of real resources and products. The outer loop (clock-wise flow) displays the flow of cash both as cost and income.

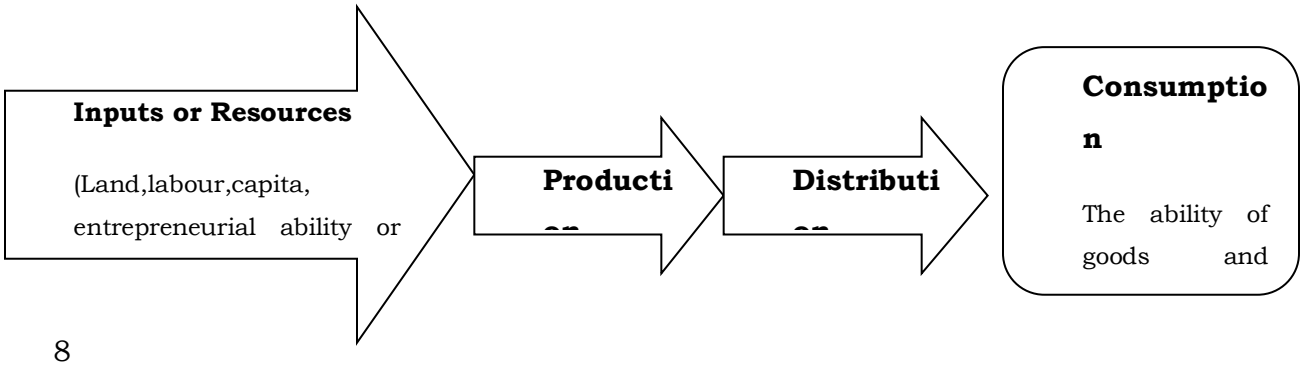
Government action in any one of the two markets will be felt everywhere. Government has various leverages at its disposal. Say it increases tax on a certain consumption item. Then price of the commodity will accordingly increase. On the aggregate then less of that commodity will be purchased by households. A business therefore adjusts production downwards and it will purchase fewer inputs from the resource market. Such flows and adjustments are continuous phenomena in an economy.

1.7. Economic Activities and Factors of Production

Production, distribution and consumption are clearly economic activities. Each of these activities is interrelated with other aspects of society as well as the natural and built environments. It may be helpful to think of an economic system as a process that begins with a set of inputs (or resources) that are used for production that must be distributed for ultimate consumption.

The economic process is the process of altering a set of inputs to satisfy individual wants. As the example given below, the steps in the economic process are production, distribution and consumption.

Figure 2: Economic Process



1.7.1. Inputs or Resources

The economic process begins with a set of inputs. These inputs are often referred to as resources or "factors of production." Typically, these resources are classified as labour, capital, land, and entrepreneurial ability.

Land is a resource or input that is a "gift of nature" It exists independently of human activities. Soil, forest, deposit of oil, coal, rain, river, and climate are a few examples of land. In economics the payment for land is often called rent.

> ***Labour*** *is any human effort to produce goods and services. The payment for labour is usually called wages (payments might be commissions, salary, bonus or whatever). Labour can be physical or mental. A person digging a ditch, managing a firm, or performing accounting functions is providing labour.*

Capital is a means of production that is made by human labour and used for the further production of goods and services. The payment for capital is usually measured as interest.

Entrepreneurial Ability: the act of creating something new is fundamental to the concept of the entrepreneur.

The person who provides the capital for a new venture is not an entrepreneur. The person who manages a project after its creation is not an entrepreneur. The process of creating new goods or processes is usually accompanied by risk. Innovation and risk are important elements of the entrepreneurial function. The return to the entrepreneur is usually thought of as profit.

1.7.2. Production

Production is the process of altering inputs to increase their ability to satisfy human wants. Production can occur if inputs are physically altered to increase their ability to satisfy wants (utility). Physical production is the most obvious and easiest to measure. Units of automobiles, cans of peaches, pizzas and bottles of wine can be counted.

On the other hand, services are often more difficult to measure. A police department may produce safety or security. How is that measured? A teacher produces education. How is that measured? Is the output of a fire department measured as the number of fires they put off or the number of fires they prevented?

1.7.3. Distribution

Distribution usually describes the process of allocating the property rights to goods and services that have been produced. The primary means of distribution or allocative mechanisms that are used in most societies are exchange, reciprocity and eminent domain.

1.7.4. Consumption

> ***T****he end purpose of economic activity is to provide for the survival and betterment of the conditions for individuals in a society. One aspect of this is the production of goods and services that can be consumed by individuals to satisfy needs and wants.*

Consumption patterns are influenced by preferences (tastes), income, wealth, and the relative prices of goods. Preferences cannot be measured directly. The choices that individuals make give some indication as to preferences. The consumption choices are often correlated with variables that can be measured. Age, gender, ethnicity, religion and other characteristics may be related to preferences and consumption choices.

> *Production, distribution and consumption are interrelated. What to produce is influenced by what individuals want to consume. What people want to consume is influenced by the distribution process and what can potentially be produced. This coordination may come in the form of cooperative activities, such as the creation of a business firm. The firm usually organizes production internally as a cooperative process but must compete externally. Alternatively, the coordination of activities may be accomplished by competition or some combination of cooperation and*

1.8. The Concept of Economics of Education

- it seeks to study how resources are allocated among educational institutions and activities, and what benefits or returns are obtained by both the individuals and nations.

- education economists analyze both what determines or creates education and what impact education has on individuals and the societies and economies in which they live.

❖ aim of economics of education

- it aims at an analysis of the economic value of education on the one hand, and the economic aspects of educational systems on the other.

Scopes and Major Issues in Economics of Education

✓ The analysis of the economic and social determinants and consequences of education is the realm of the economics of education.

✓ analyze the effects of education on wages, employment, economic growth and social equality.

✓ scrutinize the role of education in a society's capability to advance knowledge through research, entrepreneurship and innovation.

✓ estimate how family backgrounds, schools' resource endowments and institutional features of the education systems determine the quality of education, using *observational and experimental data to estimate the effectiveness of education policy interventions.*

✓ deal with the public and private financing of different levels of education

- *from pre-school learning to on-the-job training and compare the benefits of each type of education to its costs.*

- *economics of education can thus assist governments in optimizing their policies through better-informed choices*

❖ major issues and concerns of economics of education

- education involves scarce resources.

- Scarcity is insufficiency in quantity and worrying about the remaining quantity and how to use (economize) it.

- If there is scarcity there is choice, if there is choice then there is cost. Educ is a process of training and developing knowledge, skill and character.

  Educational activity involves both production and exchange.

- involves the use of scarce resources.

- scarcity forces people to make choice through evaluating alternative actions.

- This action of alternative choice is known as opportunity cost.

- In economics there is no free lunch. *Individuals and society scarify one resource for each choice of other resource.*

  The issue of scarcity calls for economic analysis in the education system of a country in terms of:-

- *Demand of schooling,*
- *Educational expenditure,*
- *The contribution of education system to GNP.*
- *Manpower planning*
- *Out comes of education*

- education involves the use of a substantial amount of scarce resources.

- This leads to a number of questions for which answers may be sought within the domain of economic analysis.

  These questions may involve: -

  What to produce, how to distribute among competing individuals, how much to spend in education sector, and to whom it should be spent?

  The following major issues are the concern of economics of education:-

- Identification and Measurement of the Economic value of Education
- Both individuals and society at large have a stake in educational investment.
- the value of a given investment in education both to the individual and to society be calculated. This involves estimation of educational costs and benefits.

  Allocation of Resources in Education

  education involves the production of educational outputs from sets of inputs. Systematic analysis techniques may be used to evaluate the functioning of educational institutions and to examine the possibilities for increased efficiency.

- Teachers' Salaries

  The level and determinants of teachers' salaries

- Educational Finance:

  Who should pay for education?

  Should the government support public and private education?

  And what share of the total costs should be borne by the taxpayer as opposed to direct beneficiaries of the educational endeavor?

- Educational Planning:

  Since education is not a private good and is not subjected to the full rigor of market competition, it has been argued that there is a need to institute educational plans to insure the optimal use of resources.

1.10. Interdependence between Education and Economics

Education is defined as the acquisition of the art of utilizing knowledge for moral and material development, the discipline of economics deals with the study of how individuals choose to deploy resources on various activities for maximizing social and economic returns.

- While the economy of a society provides resources to fulfill the educational aspirations of its members, the education systems, in turn, help in equipping the society and the economy with the required types and levels of manpower which are needed for expediting (speed up) the process of socio-cultural transformation and economic modernization.

  As education and training ensure social and economic vertical mobility, every person seeks to acquire better education and strives to have greater access to the store of knowledge possessed by the mankind.

Unit Two

Demand and Supply Analysis in Education

A market is an arrangement by which buyers and sellers of a commodity interact to determine its price and quantity.

When the buyers and sellers of a product or service interact with one another and engage in exchange, a market is said to exist.

- In a market system everything has a price
- human labor have prices (wage rates). We receive income for what we sell and we use this income to buy what we want.

Demand is one of the most important and fundamental concepts in all economic analysis.

- It is the willingness and ability of people to purchase goods and services at each possible price per unit of time.
- important components in this definition - willingness, ability and per unit of time.
- Willingness assumes that people desire the good. Ability assumes that people have the means to buy the goods or services. Per unit of time is important in this definition because time affects diminishing marginal utility.

Marginal utility (benefit) is the psychic or monetary benefit provided by an additional unit of items consumed.

- The principle of diminishing marginal benefit states that in a given time frame each additional unit of consumption or usage provides less benefit than the proceeding unit.
- Accordingly, the price that an individual is willing to pay will decrease with the quantity purchased.

Note that as the price falls, quantity demanded increases. This is known as the law of demand. Price and quantity are inversely related.

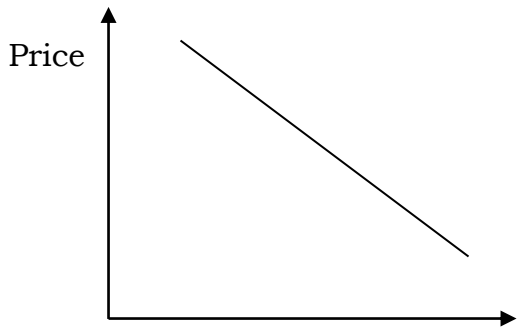
Demand can be represented by: *the Demand Schedule, the Demand Curve, and the Demand Equation*

The Demand Schedule: is a list of the quantity demanded at different prices. When constructing a demand schedule, everything else that might affect demand is assumed constant.

The table below can represent the demand for milk.

Price of a liter of milk in Birr	Quantity demanded of milk in liters
1.50	5
1.75	4
2.00	3
2.25	2

The Demand Curve: is a curve indicating varying quantities of goods or services that consumers are ready, willing and able to purchase at varying prices, per unit of time, other things being constant.



Quantity demanded

Demand Curve

- The demand curve slopes downward. This is due to diminishing marginal utility.
- there is an inverse relationship between price and quantity demanded. By showing the maximum price the buyer is willing and able to pay to get each unit (or particular quantity) of the item, the individual demand curve helps a seller to determine the maximum that a buyer is willing to pay for any specified quantity.

The Demand Equation: is a mathematical relationship between the quantity demanded and the entire collection of elements that determine quantity bought.

An individual's demand function for goods (Goods X) might be written:

QX = fX(PX, Prelated goods, income (M), preferences, . .)

- QX = the quantity of goods X
- PX = the price of goods X
- Prelated goods = the prices of compliments or substitutes
- Income (M) = the income of the buyers
- Preferences = the preferences or tastes of the buyers

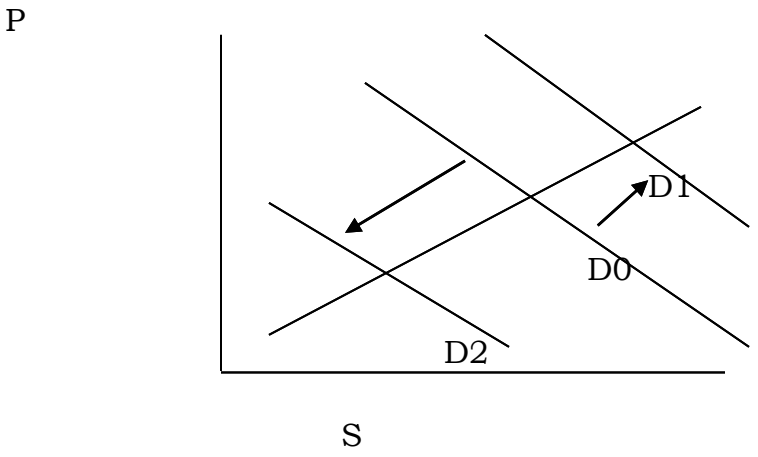
Determinants of Demand

Determinants of demand are things that affect the marginal utility of purchasers in the market.

- They are factors that totally alter the relationship between price and quantity demanded of the goods at each price. In addition to own price of the goods or services, there are other factors that can affect quantity demanded. These are Price of related goods

There are two categories of related goods: substitutes and complements. Substitute goods are direct or indirect rivals (goods or services that are used for similar function or purpose). An increase/decrease in the price of a substitute goods increases/decreases demand for the related goods. For example, suppose that chicken and beef are substitutes. When the price of chicken goes up, the demand for beef increases. Conversely, when the price of beef falls, the demand for chicken declines.

Thus, the variable for price of substitute goods in the demand equation bears positive sign.



Price of Substitute falls

the Effect of Change in Price of Substitute Goods on Demand

Complementary goods or services are jointly consumed goods or goods purchased as a bundle, so that, an increase in demand for Goods X will increase demand for Goods Y(X and Y are complements). An increase/decrease in the price of a complementary goods increases/decreases demand for the related goods. Therefore, the variable for the price of complement goods has negative sign.

- Demographics

Change in age structure of the population in a market also affects demand for goods and services. Age structure of a population refers to the number of people in different age ranges.

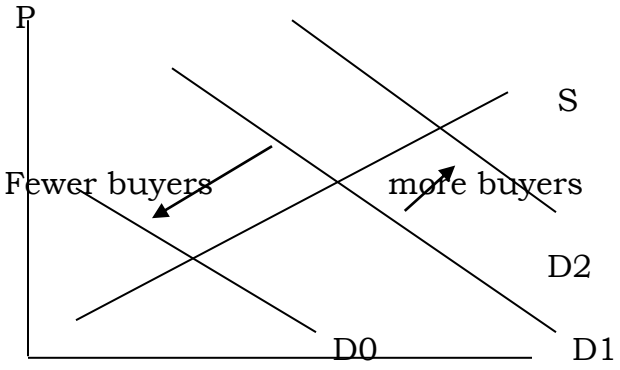
Through time, the number of people in a given age range increases or decreases. This change creates opportunities to some firms while it appears as threats to others.

- the number of children is highly increasing compared to the other age groups. This situation increases the demand for goods and services produced with the intention of solving the needs of children.
- the demand for schooling definitely increases. Demographic variable bears positive sign in the demand equation of goods produced for age group that is growing and negative sign for suppliers that targeted in age groups that are declining.

Population (Pop)

Population refers to the number of consumers in the market.

As the number of consumers of a given commodity in the market increases, demand also increases.



The Effect of Change in Number of Buyers on Demand

Taste and Preference (T)

Taste and preference refers to the feelings of liking or disliking of a product. It also refers to attitudinal/behavioral changes of people. People may become more health conscious, fashion followers, etc.

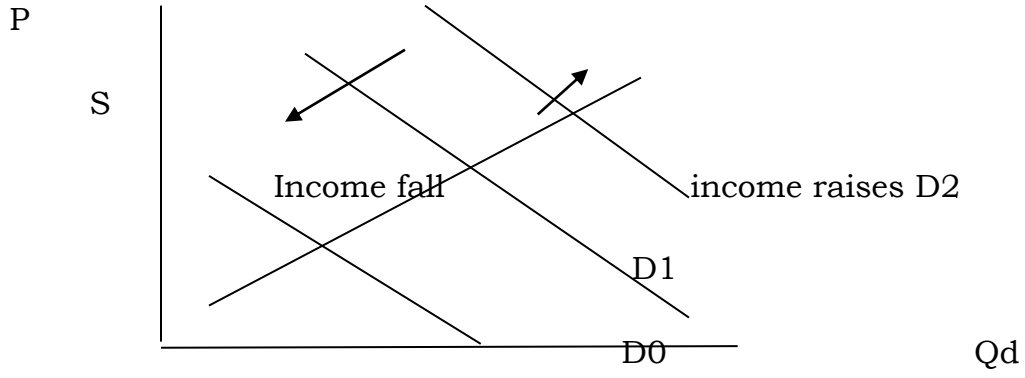
A favorable taste change increases demand for goods and services. On the other hand unfavorable taste/preference change toward a product decreases its demand. This implies the variable for taste in demand equations possesses a positive sign.

Income (I)

Probably income is the most important of all the determinants of demand. Level and distribution of income of people highly affects demand for goods and services. Based on the effect of a change in income on demand of goods and services, we classify goods and services into normal (necessities and luxuries) and inferior.

A product is normal goods if an increase in income raises its sales. Most goods and services fall in this group. Therefore, the sign of the income variable in most demand equations is positive. We classify normal goods as necessities and luxuries.

The classification is based on the value of the income elasticity of demand for the goods and services. As we said, most goods and services are normal, the exception is inferior goods, where an increase in income lowers their sales, and the sign of the income variable would be negative in the demand equation.



The Effect of Change in Income on Demand

Expectations (E)

Based on past experiences or current information collected, people forecast about the levels of important variables in the future. Two of these important variables are relative future prices and income.

Changes in Demand Vs. Changes in Quantity Demanded

When there is a change in own price of the good, *other things held constant*, this causes a change in quantity demanded (movement along a demand schedule or curve). When one of the non-price determinants of demand changes it is necessary to draw a new demand curve. Accordingly, the demand curve shifts inward or outward. This is known as change in demand.

Elasticity in Economics

- a sensitivity measure that may be of interest with respect to any independent variable.

  Price elasticity of demand (Ep): sometimes called own price elasticity of demand, is a measure of consumers' price sensitivity, or a measure of how responsive consumers are to price changes.

- Price elasticity answers the question when price goes up, how much does Qd fall? A lot? If so, demand is responsive or elastic. A little? If so, demand is relatively unresponsive or inelastic.

Mathematically:

$$E_p = \frac{\%\Delta Q}{\%\Delta in P} = \frac{\Delta Q/Q_0}{\Delta P/P_0} = \frac{(Q_1 - Q_0)/Q_0}{((P_1 - P_0)/P_0}$$

Where P_0 and Q_0 are the initial price and quantity and P_1 and Q_1 are the new price and quantity.

Interpretation: if the magnitude of the computed price elasticity of demand in absolute value of x, then this value is interpreted as a 1% increase/decrease in the price of the good in question brings about an x % decrease/increase in quantity demanded.

Rules of elasticity:

1. When **$\%\triangle Q_d > \%\triangle P$,** then in **absolute terms Ep>1** and demand is **ELASTIC.**
2. When **$\%\triangle Q_d < \%\triangle P$**, then in absolute value **$E_p < 1$** and demand is **INELASTIC.**

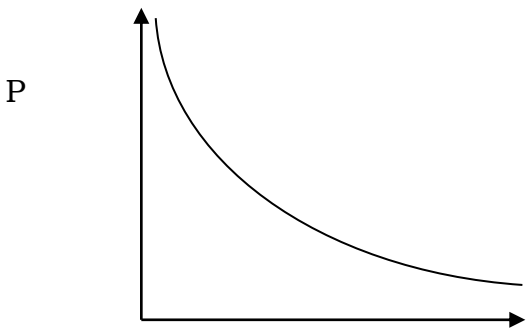
When **$\%\triangle Qd = \%\triangle P$,** then in absolute terms **Ep=1 and demand is Unitary ELASTIC**

The Concept of Demand in Education

The first person who depicted the relationship of P and Q in education is Blang in 1966. According to him, people demand education in as long as the rate of return (RE) for education is greater than some market rate of interest (RB). (RB = the rate of interest in bond + opportunity cost).

Therefore, the greater RB, the lesser is the demand for education.

Figure: 7



E (amount of education demanded.

According to Blang, the demand for education can be measured with the demand function.

DE = f (P.Y), Where,

Y= refers to the income, P= refers to the price of education (the tuition fee), D= demand for education

However, this approach is criticized by many researchers in the area, because it assumes education only as consumption expenditure.

The justifications they :

The management of education system is not same as the management of a business firm. Whether it is the developing country or developed, the management of the education system is carried out at different levels with the interconnection of varying functionaries.

in education, the demand for education may be for 10 years or 5 years. Here, the demand takes the long term framework. Therefore, it is difficult to know the taste, by buyers or consumers, in 10 years or 5 years.

The intention of the above criticisms was to show how difficult it is to apply the idea of demand in education. If exhaustively carried out, P and Q analysis may help educational managers in making policy decisions.

1.6. Factors contributing to the demand of Education

- an increase in population.
- The demand for education increases with increase of economic development.

when there is an increase in real income (i,e total + per capita income) the social and technical environment will become more complex and calls for more skill and knowledge.

Expansion of activities

The development of arts can cause an expansion of activities, and expansion of activities means greater demand for education.

Supply Concepts

2.1. Meaning of supply and quantity supplied

Supply is a relationship showing the various amounts of a commodity that producers would be willing and able to sell at possible alternative prices during a given time period, ceteris paribus.

- Quantity supplied is the total amount of a commodity that firms are willing and able to sell at a given price at a given time period.

the different ways to represent supply

We can represent supply using supply table, supply curve or supply equation.

The supply table shows the relationship between prices and quantity supplied at each price a firm is willing and able to supply, citrus paribus.

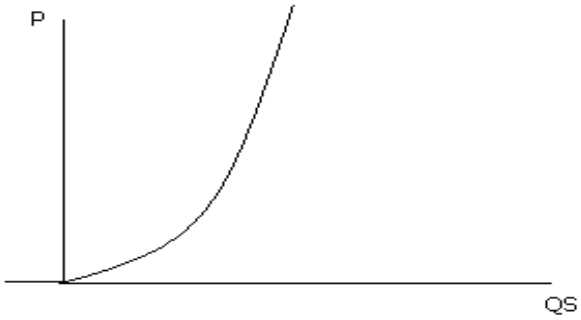
Supply Table

Price of a liter of milk in Birr	Quantity supplied of milk in liters by Almi enterprise
1.50	10,000
1.75	15,000
2.00	19,000

2.25	20,500

The supply curve is a curve that shows the relationship between various prices and quantity of supplied at each price .As price increases, quantity supplied also increases making the supply curve upward sloping.

The supply curve is an upward slope



Supply equation is *a model that represents the behavior of the producers and/or sellers in a market.*

QXS *= fS(**PX**, PINPUTS, technology, number of sellers, laws, taxes, expectations . . .)*

Where, PX = price of the good,

PINPUTS = prices of the inputs (factors of production used)

Technology is the method of production (a production function),

Laws and regulations may impose more costly methods of production

Taxes and subsidies alter the costs of production

Note that, unlike supply table and supply curve, supply equations show all the determinants of supply .Supply tables and supply curves only show a bivariate relationship.

The law of supply

The law of supply states that as the price of good increases (decreases), more (less) of it will be produced and offered for sale .there fore, price is positively related to quantity supplied.

2.2. Determinants of supply

Determinants of supply are things that directly or indirectly affect the supply of goods and services.

These include:

Number of firms in the industry

If the number of business firms producing a given product increases, ceteris paribus, supply increases (the supply curve shifts to the right).

Changes in the cost of production

- a result of an increase or decrease in prices of the factors of production.
- **Changes in technology** also may affect the quantity of the factors of production required, or output derived from production factors, thus reducing cost as well.

A decrease in the cost of production leads to higher profit from each unit of output sold, assuming the price of the good remains unchanged .Earning higher profits motivates firms to increase their production and supply. Therefore, there supply curve shifts downward.

State of technology

Innovations and new technology will generally reduce production costs, and supply would be affected.

Prices of other commodities that use the same or similar set of inputs

With regard to production, goods are also related in different forms. They might share same inputs or pass through same production lines. They might also compete for

same financial resource and distributional channels .Therefore, we expect that an increase in the prices of other products the firm could produce sharing any of the aforementioned things might lower the supply of a goods.

Producers' expectations

2.3. Changes in supply Vs changes in quantity supplied

? In section one, you have learnt the difference between a change in demand and a change in quantity demanded .Now, similar to that , can you identify the difference between a change in supply and a change in quantity supplied?

Analogous to demand, a movement along a supply curve is referred to as a change in quantity supplied. The quantity supplied changes because of a price change. A shift in the supply curve is referred to as a change in supply.

Supply changes (the supply curve shifts) because one or more of the factors affecting supply other than price (costs of production, technology, number of firms, etc.) changes.

2.4. The Price Elasticity of supply

The price elasticity of supply is calculated in much the same way as the price elasticity of demand.

$$Es=\%\Delta Qs/\%\Delta P$$

Supply is said to be ***elastic when the reaction in quantity supplied,*** *in percentage terms, to a particular percentage change in* ***price is greater than one.***

If quantity supplied is sensitive to price changes, then a small price change causes a large change in quantity; therefore, the ratio of percentage change in quantity supplied to percentage change in price is larger than one. If quantity supplied is not sensitive to price change, then Es<1, and we say that supply is inelastic.

2.5. Meaning of Market Equilibrium

Equilibrium is a situation in which there is no tendency for change.

- A market will be in equilibrium when there is no reason for the market price of the product to rise or to fall.
- This occurs at the price where quantity demanded equals quantity supplied.
- At this price, the amount that consumers wish to buy is exactly the same as the amount that producers wish to sell.

? If price is larger than the market clearing level, which one would be larger, quantity supplied or quantity demanded? How does the market work to clear the imbalance?

If price is larger than the market clearing price, quantity supplied would exceed quantity demanded. A surplus or an excess supply is said to exist. Inventories accumulate and people are consuming less than current production. In this situation, most shop owners have a sale or some other promotion to stimulate buyers. That is, both buyers and sellers put downward pressure on price, and this condition continues until the surplus is eliminated. This is an equilibrium theory of price determination; natural market forces continuously push price in the correct direction to eliminate shortages or surpluses even though equilibrium might never be reached because the world is dynamic. Notice that when the market is at equilibrium, there is a seller for every buyer. Everyone who wishes to purchase at this price finds a seller, and each producer locates a buyer.

2.6. Issues to be considered in the Supply of Educational Services

There are three determinants of supply of educational services:-

The time precedence

The unity of supply

The complementarities of components

The Time precedence

Time precedence refers to the concept, the supply of educational services must be available before it is needed. There should be advance preparation in terms of qualified teachers, buildings and other physical facilities. However, when we see the actual situation in most developing countries, there is a problem of advance preparation. In this, respect, the supply of educational services calls for the demand projection mechanism for teachers, equipment and other facilities and non-teaching staff.

The Unity of Supply

All types or levels of schools must expand at the same time. For instance, to accommodate the flow of students across the levels, the expansion of primary schools should go with the expansion of secondary schools and the expansion of secondary schools should go with the expansion of tertiary education. This is because, the rapid expansion at one level may force the other level to use less qualified teachers, class rooms may not be enough (may be resulted in the large class size), equipment may be scarce, finally the quality of the education system will be damaged.

Complementarity of components

? What do we mean by complementarity of component?

The idea of complementarities of components entails that component parts of the education system (like teachers, non-teaching staff, equipment and facilities) should be fixed based on their proportion.

Section III: Demand and Supply Principles Vs Education Market

2.7 Are the Demand and Supply Principles Applicable in Education Sector?

So far everything said about demand and supply is true for all sectors. In education, there are several notable market failures. There are several instances where an individual undertaking education may not take into account all the costs and

benefits of education to society as a whole. The three most commonly identified justifications are as follows:

Externalities arising from a more literate work force, from the sharing of ideas whose value are not captured by the originator, and from the contribution to the functioning of civil society. The latter is an obvious, if difficult to quantify, element in countries where the sense of nationhood is recent and not well established. Many people have a strong intuition that most of these external effects are associated with basic literacy though there is really no direct evidence for this. Shared ideas could well originate in research activities at higher levels of education.

Systematic underestimation of the value of education. This is sometimes mixed in with a possible problem of parents acting as imperfect agents for their children's' welfare.

Failures in associated markets, particularly the credit market. Since unsecured consumption loans are often difficult to obtain, the high cost of schooling, at full price, can interfere with people undertaking a profitable investment, especially at higher levels, which are more expensive. Economic principles and how schools operate are necessarily more than mere businesses, yet their creation and operation respond to market forces and rules.

Is information or knowledge an exceptional goods?

Unlike physical labor (and the other factors of production) knowledge has unique characteristics:-

Knowledge is expandable and self generating with use, for example, as doctors get more experience, their knowledge base will increase, as well their endowment of human capital.

In human capital, the economics of scarcity is replaced by the economics of self-generation.

Knowledge is transferable and sharable:

Knowledge can be moved and shared. This transfer does not prevent its use by the original holder. However, the transfer of knowledge may reduce its scarcity –value to its original possessor.

Information, or knowledge, even when it is sold, remains with the producer. It is collective goods in that once it has been created, it is by its nature available to all. It is a challenge for economic theory to design a socially optimal policy of investment in knowledge (including how much money should be spent for basic research; what allocations should be made for education, and for what fields; in what areas and so on) and to determine how to provide 'price' information and knowledge to users.

Schooling as a market phenomenon

Education producers and consumers make choices under the constraint of limited budgets; in other words, they engage in economic activity.

? In your opinion, what are the questions to be raised by both producers and consumers of education?

	What kind of facilities to buy
Producers	How much to invest in facilities
What classes to offer	What security measures are needed
What grade levels to offer	How much to spend on maintenance
Which students to admit	How much to charge for tuition
How many teachers to hire	How much to pay teachers
How many administrators to hire	How much to pay administrators

Consumers

What school to choose	What supplies to buy
Which classes to enroll in	How much time to devote to homework
How to transport students	Summer school, tutoring, or test preparation
How much involvement with teachers	Whom to vote for in school board elections

Most of the resources that make schooling possible are scarce. Teachers, administrators, books, other learning aids, and facilities all must be purchased, which means of bidding them away from competing uses.

? What are the issues that could be decided by the elected officials and by market forces?

In government schools, some policy are set by voting, but much also occurs in the market. Teachers and administrators, for example, are not elected but hired, and they are paid salaries competitive with other occupational choices. The same is true of nearly all the items identified in the list.

> *Some key choices concerning whether and how to provide services are made by elected officials, but nearly all the activity of actually producing the service*

More of the decision-making process of private schools takes place in the market, because, unlike their government counterparts, private schools cannot count on steady supplies of tax revenue and students are assigned to schools based on where they live.

Eight Public-Choice Propositions

? Government schools are owned and managed by political institutions, so if economists are to study them, they must apply the tools of public-choice theory. What are these public choice propositions?

The following eight propositions of public-choice theory have been validated by empirical research and are all-relevant to the study of government schools.

Dear Colleagues! You are expected to understand the meaning of each of the propositions either by discussing with your instructor or with your classmates.

- ***Bureaucrats tend to favor more spending by their bureaus***
- ***Regulators tend to represent the interests of those they are supposed to regulate rather than those they are supposed to protect.***
- ***Elected officials tend not to share most of the views of most of their constituents.***
- ***Once elected, officials tend to use the powers of their offices to entrench themselves, becoming less accountable to voters.***
- ***Elected officials tend to favor higher levels of spending than do the voters they claim to represent.***
- ***Locally elected officials tend to be more accountable to voters than state officials, who in turn are more accountable than national officials.***
- ***Government programs tend to redistribute income from the general public to small but well-organized interest groups.***
- ***The votes of legislative bodies tend not to reflect the wishes of the majority of their members.***

3.2. Should Markets Produce and Supply Schools or not?

The production of information requires investment and the organization of capital and human resources, all of which take place in capitalist institutions and in competition with those seeking to produce other goods and services. Because of its ubiquitous nature, much information is distributed spontaneously without the formal trappings of exchange, but especially valuable information is bought and sold under terms of agreements that are sometimes implicit although often explicit. Either kind of transaction takes place in markets, even though those markets may not resemble

those in which more common commodities are traded. However, there are eight propositions in favor of market to supply education. These are:

- *Markets reward efficiency rather than budgetary expansion.*
- *Markets replace top-down accountability through regulation with bottom-up accountability to consumers*
- *Markets ensure that the interests of a greater number of citizens are met.*
- *Markets make it easier for consumers to hold producers accountable for the quality of their work.*
- *Markets allow consumers, not producers, to determine the proper price and quantity of goods and services to be produced.*
- *Markets decentralize decision-making authority, minimizing opportunities for corruption and the cost of mistakes*
- *By empowering the general public, markets overcome the organizational advantages held by well-organized interest groups.*
- *Markets rely on consumer choices, rather than on votes by deliberative bodies, which can be manipulated.*

For all these reasons, market production of schooling would tend to be more efficient and responsive to consumer demands than government provision.

Dear Learners! You are required to understand the propositions in favor of market supply of education in the above table, just in a similar manner to what you did for eight public choice propositions.

Unit Three

3. Education and Human Capital

3.1. Human Capital Theory

3.1.1. Human Capital in Early Economic Doctrines

In 1776, Adam Smith considered the skills of the labor force to be the predominant force for economic progress. In his definition of fixed capital, human capital is also included.

According to Adam Smith:

- *consists of the acquired and useful abilities of all the inhabitants or members of the society. The acquisition of such talents, by the maintenance of the acquirer during his education, study, or apprenticeship, always costs a real expense, which is a capital fixed and realized, as it were, in his person. Those talents as they make a part of his fortune, so do they likewise of that of the society to which he belongs. The improved dexterity of a workman may be considered in the same light as a machine or instrument of trade which facilitates and abridges labor, and which, though it costs a certain expanse, repays that expense with a profit.*

Although Adam smith did not go as far as attempting to estimate the *value of human capital*, he strongly believed that the production of human capital yields a considerable return in the form of greater lifetime income.

- Those economists included human capital in their definition of capital, generally referred to the value of human skill and other acquired abilities rather than to the individual himself.

John Stuart Mill says the human being himself I do not class as wealth. He is the purpose for which wealth exists.

- his acquired capacities by labuor, fall rightly, as it seems the human capital designation.

Heinrich von Thumen, in 1875, accepted the notion of human capital wholeheartedly:

- the nonmaterial goods (services) of mankind form part of national wealth

- a more highly schooled nation equipped with the same material goods creates a much larger income than an uneducated people
- higher schooling can only be obtained through an educational process, educated nation also possesses a larger capital the returns of which are expressed in the larger product of his labor.

- Alfred Marshal also assumed that the profit motive operates in personal investment in the same manner as it operates in any other investment decision:

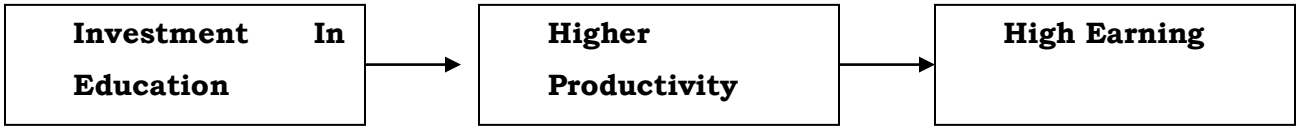
  The motives which induce a man and his father to invest capital and labor in preparing him for his work… are similar to those which lead to the investment of capital and labor in building up the material plant and the organization of a business.

3.1.2. The Concept of Human Capital Theory

Human capital represents the investment people make in themselves that enhance their economic productivity. It rests on the assumption that formal education is highly instrumental and even necessary to improve the production capacity of a population.

- *The provision of formal education is seen as a productive investment in human capital, which the proponents of the theory have considered as equally or even more equally worthwhile than that of physical capital.*
- *education increases the productivity and efficiency of workers by increasing the level of cognitive stock of economically productive human*

- basic justification for human capital formation is that investment in education leads to higher productivity; this in turn leads to high earning.



Rationales behind investment in human capital are:

1. *the new generation must be given the appropriate parts of the knowledge which has already been accumulated by previous generations;*
2. *That new generation should be taught how existing knowledge should be used to develop new products, to introduce new processes and production methods and social services; and*
3. *That people must be encouraged to develop entirely new ideas, products, processes and methods through creative approaches.*

Most economists agree that it is human resources of nation, not its capital nor its material resources that ultimately determine the character and pace of its economic and social development. According to them:

Human resources constitute the ultimate basis of wealth of nations. Capital and natural resources are passive factors of production, human beings are the active agencies who accumulate capital, exploit natural resources, build social, economic and political organization, and carry forward national development.

3.2 Factors Contributing to Human Capital Formation

- level of skills, knowledge and competence held at any one time represent the stock of human capital.

Some of the factors contributing to human capital formation are:

- *Education (formal schooling)*
- *On-the-job training*
- *Job search (choice of individuals)*
- *Health service*

3.2.1. Education (formal schooling)

- Human capital theory equates workers' knowledge levels with their levels of formal schooling and says more schooling would lead to higher productivity and macroeconomic growth.

- However, better educational attainment depends on individual's ability, availability of funds for him, his socio-economic background (taste of parents) and the like.

For example, Chance of going to school increases as:

- *Cost of going to school decreases*
- *Expected wage after college increases*
- *Wages given up when in colleges decreases*
- *Number of years working after school increases*
- *Internal rate of return decreases (decrease in the number of years it will take to repay the investment on education*)

3.2.2 On-the-Job Training

- investment in on-the-job training and the criteria determining who will pay for such training and who will benefit there from.

- To resolve this issue a distinction is made between what is called "general" and "specific" training.

While schooling frequently involves both explicit tuition costs and implicit costs, particularly loss of earnings, other kinds of training may not involve that explicit tuition cost. On-the job training, in particular, involves only a loss in income over what you might have earned without training. Here the employer simply deducts training costs from your wages so that most workers never pay money out-of-pocket tuition for on-the-job training.

two types of human capital investments in terms of on-the-job training.

- Some skills are useful only to one employer, while other types of skills have broader applicability. Much sales knowledge, for example, is specific to a particular employer kinds of skill investments are called specific human capital

- investments in general human capital that have applicability to numerous employers. For example, learning to keep and read accounts is broadly useful in many financial capacitates.

- Skills that are specific to one employer create monopoly power for an employer (economists actually call this monophony or buying power rather than monopoly or selling power).

- Skills that are general, however, involve competitive markets so that if one employer refuses to pay the market value for a person's skills, another employer may be able bid an undercompensated employee away.

  In general skills as competition ensures that wage premiums go to trained employees, there is clearly a future return after training. In the graph below, we can see that the horizontal axis is labeled time and is divided into two periods, training and post-training.

  During the post-training period, competition requires wages to equal workers' productivity. Consequently, workers may compete for these positions by offering their services below their alternative wages. Ultimately, firms will not hire these workers unless wages are low enough to offset training costs.

  Consequently, wages in the pre-training period also equal worker productivity (here productivity is defined as the value for the work produced minus training costs).

  the results of general training

- General training raises workers productivity in the firm giving the training and another firm by the same amount; it is transferable to another firm.
  Results of General Training

- Workers must pay for the training through reduced wages.
- Firms will train any worker that wishes to pay for the training.

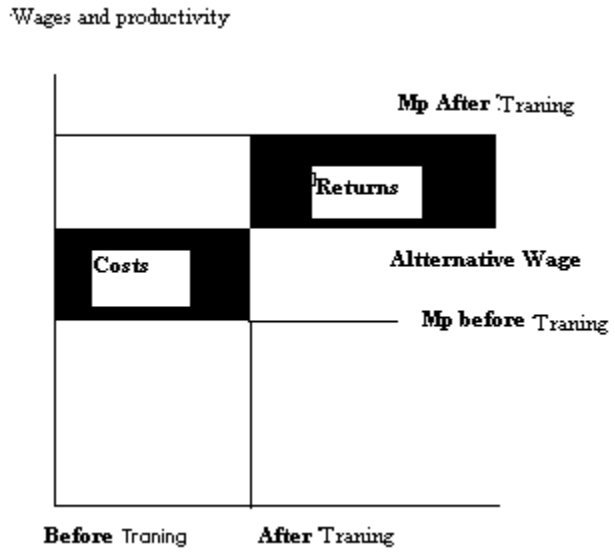


Figure 8: General human capital with sharing of investment returns and cost.

In specific human capital, the big difference is that nothing guarantees a firm will pay a worker an amount equal to their productivity.

No other firm is competing for workers trained with skills specific to this firm. Consequently, there appears to be no reason to pay such workers any more than the wages they might receive in their best alternate employment which involved no investment in human capital. If this actually happened, then workers would certainly not accept lower wages during the training period, as they would be better off taking positions without training. Wages would be flat and equal to the wages of untrained individuals for the entire training and post-training period.

If that workers quits, the employer stands to lose the investment made in that employee's training, to prevent turnover and loss of their investments, firms

employing specifically trained workers may offer wages slightly higher those available to untrained workers once training has been completed.

This makes these jobs more attractive than those with no training and consequently workers will compete for them.

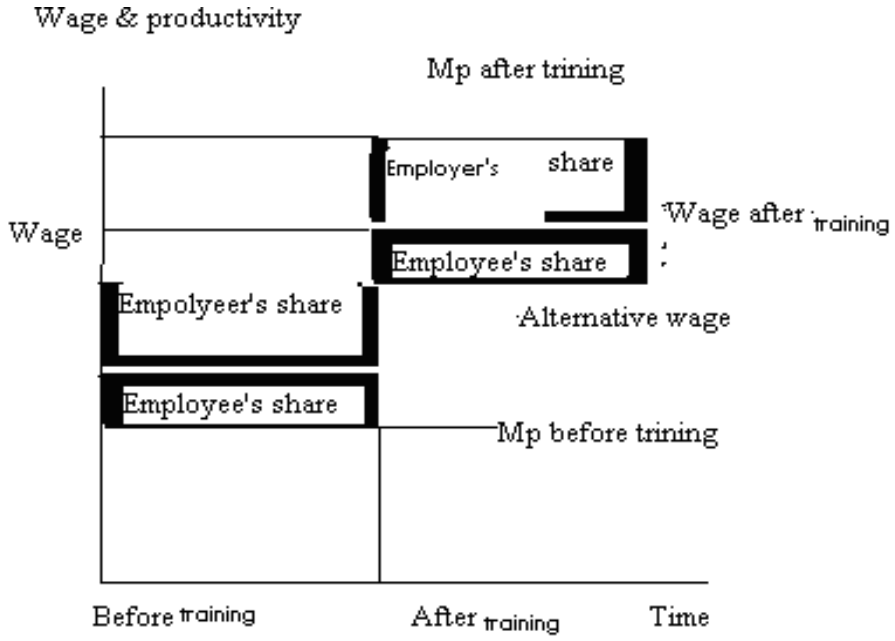
- This may lower the training wage a little below that of untrained workers.
- The net result is that theory suggests specific human capital involves shared investments and shared returns by employers. That sharing may serve to change relations between employers and employees in a number of ways, giving each a longer term outlook.

❖ *Specific training makes the employee more productive in the current firm but does not increase productivity elsewhere; it is non-transferable.*

Results of Specific Training

- *Workers and firms share the cost and the* benefit of the training
- *Training reduces turnover and induces both parties to make appropriate investment* decisions.
- *Firms will wish to train workers with low turnover probabilities*

? In your opinion, what are the results of specific training?



3.2.3 Job Search (choice of Individuals)

Individuals acquire and collect knowledge, skill and competencies with the aim of earning more. This is because the variations in labour income are due to differences in labour quality in terms of the amount of human capital acquired by the workers.

3.2.4 Health Service

The nature and the availability of health service have both quantity and quality implications for human capital. Improvement in the standard of health of people has a direct link with population growth.

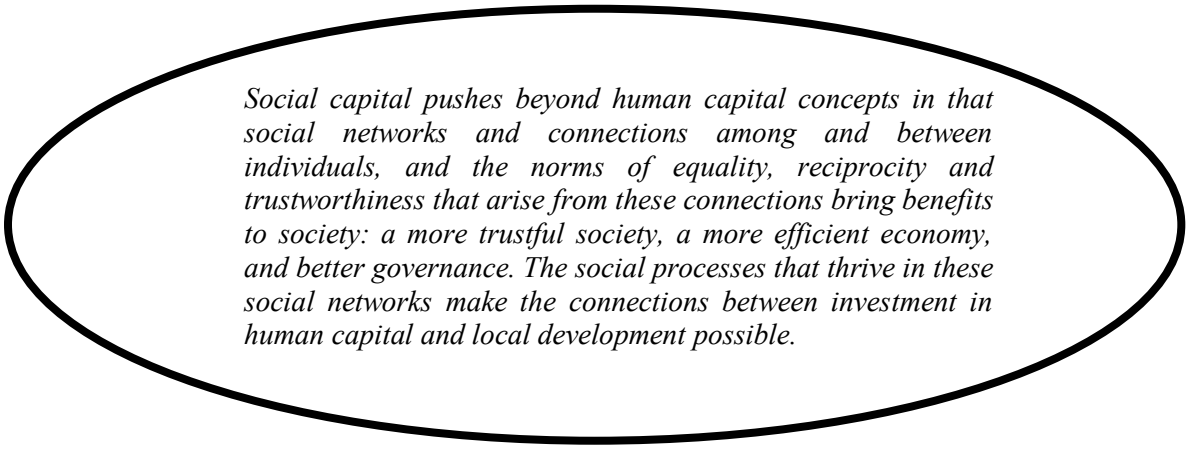
Modernized health services improve life expectancy, reduced infant mortality, and the incidence of disease. All these factors improve the possibility of sustaining physical vigor and longevity of the labour force and they are positively related to high life long earnings. Moreover, the health services enhance the quality of human resources by enabling them to require better knowledge, and benefits from the new knowledge which in turn, enhances not only the prospects of earnings but also the quality of life enjoyed by them.

3.3. The Notion of Social Capital

? What do we mean by the term social capital?

The notion of social capita focuses on the resources that individuals or groups possess in the form of the networks, relations and institutional capacities that they can draw on. Social capital may be represented, for example, by a set of informal values or norms shared among members of a group that encourage cooperation among them. Just like its physical and human counterparts, social capital may contribute greatly to productive activities; while social capital may seem less "tangible" than physical or human capital, investment in social relations nevertheless brings returns in the marketplace, and individuals with the most social capital typically have the highest incomes.

? Are the concepts of social capital and human capital interrelated? If yes, how?



Activities such as mentoring, job networking and mutual support combined with high levels of social capacity are seen as factors leading to success in business or education. An example would be mutual support among entrepreneurs to promote self-reliant economic development, without need for government.

3.4. The Complementarities between Human and Social Capital

? How can the states of social capital influence the ability to acquire human capital? Discuss.

Closely linked to the notion of organizational learning or capital is the concept of social capital which has gained currency among analysts in the present decade. Social capital refers to aspects of social life - the existence of networks, institutions, policies, norms and relationships that enable people to act together, create synergies, and build partnerships.

When strong communities enhance learning at school, social capital also sets the context in which human capital can be developed and generally facilitates learning. Human capital can help to produce social capital through preparing individuals to partake more effectively in various social groups and fostering civic awareness and the capacity to work and live productively with others.

? Can the concept of human capital investment be easily transferred to social capital?

The concept of human capital investment borrows from an economic metaphor of investment in capital where investment involves a cost, a time dimension, a benefit flow and an asset value at any point in time. The concept is not so easily transferred to social capital. First, the definition of social capital is not clear since it exists in many forms and at different levels of society. Second, social capital is to some extent which is the result of a complex interaction of historical and cultural factors and not one in which investment or cost analogies can be easily applied. Third, the measurement of its impact on economic or social activity is arguably even more challenging than that of human capital.

? Is social capital public goods or private goods?

Social capital, nevertheless, is a concept growing in importance amongst policy-advisors and researchers. Many see social capital as an important factor in explaining why some families provide better learning opportunities for their children. They stress the importance of different types of networks at the local, regional or organizational level in contributing to positive social and economic outcomes.

As a public goods, social capital like human capital, may risk under-investment due to market failure. Social capital incurs an opportunity cost in terms of time spent in networking and other activities implied by this concept - however, the private benefit of such activities may be less than the combined social effect (assuming that this is positive). It may be easier to approximate the level of social capital by measuring its absence as revealed in negative outcomes. So, for example, the absence of trust and social or civic co-operation may be reflected in various types of social behaviour and fragmentation which indicate its absence. Without sufficient social capital, human, physical and natural capitals are much less effective.

In general, the concept of social capital may be linked to that of social capabilities understood as embodying the entire set of social influences (including for example education, learning, government social policies and programs, rule of law, institutional efficiency, political stability, political freedoms, trust, networks etc). There is a range of social programs and policies which can contribute to the strengthening of social capital and more broadly social capabilities - namely those enabling participation in civic society, the labour market and early childhood development.

Chapter Four

Consumption and Investment

Unit Overview

Investment can be defined as the deployment of physical and financial resources that have alternative productive uses in any activity. The benefits of such activities will accrue to the individual and to society over a period of time. The benefit of investment takes the form of production of goods and services which, in effect, are treated as incomes. The use of resources for the development of education is

essentially an investment, the benefits of which accrue to society for relatively lager period of time. Therefore, education, in all countries, is regarded to a large extent as a social responsibility. The task of making provision for adequate and relevant education to suit different types and levels of learners is, therefore, largely assumed by the government everywhere.

This unit, broadly speaking, deals with issues related to educational investment. We talk of issues concerning the decision making for development of human resources and increase in earning.

Generally, the chapter overviews the theories of human resource capital, decision making, earning a differential and the relationship between learning and productivity.

Unit objectives

After you read this chapter, you should be able to:

Distinguish between education as consumption and education as investment.

Describe the decision making processes in education

Explain the external efficiency of investments in education and training especially its impact on productivity and earnings of educated people

Explain the difference and similarities between human and physical capital

4.1 Consumption and Investment view of Education

Goods and services can be broadly classified under two classes:

1. Those among which consumers satisfy their immediate wants are called consumption; and
2. Those which are used in production to generate income over a long term are called investment.

Education can be termed as either consumption or investment, or even both depending upon how it is being used. Education can be considered private consumption, because people value it in itself, and

spend their money on it. It can also be considered as public consumption to the extent that the state decides to spend a portion of its income on education rather than on any other programme with a view to deriving certain immediately visible benefits. Expenditure on education may also be treated as investment since people invest in themselves or in their children or the states do it for their subjects in a planned way to derive benefits in the future.

Obviously, education is both investment and consumption always and everywhere. It is so because education of a particular type in one country may act to increase future output while another type within the same country may not do so. Besides a given quantum of education, say a year's schooling for some one, invariably shows elements of both consumption and investment. Thus, it could be said that the perception of education as consumption and investment changes, depending upon the angel from which we look at it. Much, however, depends on the perception of the decision makers especially about the economic consequence of the decisions taken by them.

4.2 Decision making for educational investment

In order to play justifiable role in expediting the process of educational investment, the government and its constitute bodies have to make a number of sound decisions, of course taking into account the human resources requirements of different economic and social sectors of the country. A wide spectrum of issues which always receive the attention of educational planners and decision makers encompass such areas as:

- ➔ Estimation of budgetary requirements of different sectors of education, like primary, secondary, vocational, higher, general and technical education.
- ➔ Public and private uses of current resources.
- ➔ Public expenditure on social welfare programmes including those relating to the promotion of economic growth as education health, national defense, road construction and housing, etc.

Pre-decisions in respect of all these, however, require detailed information pertaining to

- ➔ The identification of factors which have significant bearing on the process of educational development, and the extent to which each factor exterts its influence in determining the course of the above process; and

➔ The alternative costs or losses which a society will have to incur if the appropriate decision is not taken to initiate action for the promotion of education.

Obviously, such information, as noted above, which is gathered through different means from individuals as well as institutions, forms the basis for taking decisions in respect of planning, managing and financing of the education system.

Therefore, investment decisions with regard to the nature, types and levels of education as well as the extent of sharing the costs of the related educational provisions are accordingly taken by both the individual and the society.

4.3 Categories of Decision making

1. Individual decisions

It is a kind of decision made by individuals with regard to buying or obtaining education of different kinds and levels.

The investment decisions taken by individuals for buying their dependants' education constitute individual decisions. Individual decision making varies from person to person and from situation to situation because the decisions are based on the individual's perception of the social and economic gains. These gains are expected to accrue to the family as a whole, after the dependant (s) receives a particular type and level of education.

Individual decisions in education may pertain to the type and level of education, choice of institution and other related aspects which are expected to yield somewhat higher returns from the various alternative investment choices available to individuals, especially in areas characterizing purely economic activities

2. Institutional decisions

All investment decisions taken by either individuals, private enterprises, public institutions or the state with respect to the creation of necessary facilities for providing education to all who are eligible and seek it, are termed as institutional decisions. Such decisions are generally to social judgment and even control in one form or another.

? What distinction can be made between institutional and individual decisions about investment in education?

Dear colleagues, have you tried the answer? Well, here goes the answer: institutional decisions pertain to those decisions for which there are private or public agents to provide education, and individual decisions denote those made by or for individuals for procuring their own or their dependents' education. There is, thus a difference in the main categories of investments made by institutions and individuals.

➔ A large chunk of investment by an institution is accounted for by such items as payments of salaries to teaching and non-teaching staff and infrastructure facilities like buildings, equipment, laboratory, library, etc.

➔ Investments by individuals are made in the form of payment of fess, maintenance expenditure, and the opportunity costs or foregone earnings.

3. Collective decisions

Unlike the individual and institutional decisions, the social approaches to investment in education are dominated by considerations like the social and economic welfare of a society. Societal judgment on investment decisions in education takes into consideration the entire investment made by individuals and private and public institutions. These societal decisions are, therefore, reflected in the policies and programmes of the government for educational development.

Sometimes individuals and/or institutions come into direct conflict with each other and, therefore, indicate divergent trends in human activities. These trends may satisfy the wants of the individuals and institutions concerned but the overall expected gains for the society may be somewhat lower.

In such a situation, it becomes imperative to rectify the diverse and heterogeneous nature of choices of investment by way of strong societal intervention so that the overall social gains of investments in education are maximized without unduly affecting the individual and/or institutional options for purchasing education.

4.4 The Balance of Educational investment

Why invest in Education?

Educational investment is very important, because education fulfills a number of vital objectives:

- ➔ It provides essential skilled manpower for both the industrialized and informal sectors of the economy, provides the means of developing the knowledge, skills, and productive capacities of the labor forces, and acts as catalyst in encouraging modern attitudes and aspirations.
- ➔ It helps to determine not only the incomes of the present generation but also the future distribution of income and employment.
- ➔ It satisfies a basic human need for knowledge, provides a means of helping to meet other basic needs, and helps sustain and accelerate overall development.
- ➔ It influences social welfare through its indirect effects on health, fertility, and life expectancy and helps to increase the profitability of other forms of social and physical investment.

Because of the wide variety of benefits of educational investment and the diverse needs of different developing countries, no single formula can be applied to all countries or to all education projects. Universal rules cannot be applied and that educational investment must be broad and diverse if it is to respond to the diverse needs of developing countries. In other words, the strategy of choice between alternative investments must be country specific, although it must follow broad criteria.

The shift in allocations by level of education reflects the realization that it is not only secondary and high-level technical education that contributes to economic development, but that primary and non formal education and training are also productive investments.

Activities

1. Describe how education is used as consumption and as investment

2. What is the difference between individual decisions and institutional decisions?

4.5 Criteria for Educational investment

The basic economic problem all governments face is how to allocate scarce resources between competing ends. The resources consist of:

- Labour (which can be classified according to its different capacities, skills and knowledge)

- Capital
- Land and other natural resources;

Each of these categories can be subdivided according to levels of quality. The competing ends are consumption (that is, the production of consumer goods and services) and investment. The choice between current consumption, which brings immediate satisfaction of needs and wants, and investment, which creates the capacity to produce future goods and service, is a matter of time preference, and it rests on political as well as economic considerations. Thus, it can be said to depend on society's objectives. The choice between investment in manufacturing industry and agriculture, or between factories, bridges, ships or schools-also depend on society's objectives, and on the balance between the costs of the investment, in terms of scarce resources, and the future benefit to be derived from the investment.

Although the objectives of society are many and varied and not always well defined, the economic policies and choices of government are typically concerned with three objectives. These are:

1. Satisfying immediate needs and wants through current production of goods and services, that is, consumption.
2. Increasing the supply of goods and services in the future through increased national income, that is, economic growth and
3. Ensuring adequate distribution of goods and services between different groups in society, that is, equity.

In venturing the balance between investment in human capital and infrastructure, policy makers must consider two important questions.

? Dear colleagues can you guess what these questions are?

Well, the questions are

1. *Does education contribute to economic growth?*
2. *How do you see the contribution of education to economic development compared with the contribution of physical capital?*

4.6 Financing Educational Investment

Education in almost all countries is provided in both private and public sectors. Education, thus, is not purely public goods: the exclusion principles, barring students who fail to pay fees to a particular educational institution, can be readily applied even though it is rarely applied in the lower grades. Education consumes a significant amount of resources in almost all countries. A certain minimum level of educational profusion is generally assumed to be necessary in order for a country to attain a reasonably high rate of economic growth.

The distribution of educational opportunities to different groups of the population has consequences for social justice. As a result of the size of the set of educational activities in a country, and because educational provision affects economic growth and the distribution of income, systems of educational finance are likely to be complicated.

There are three main criteria by which systems of educational finances are traditionally judged:

i) Whether the level of provision of educational services is adequate.
ii) Whether the distribution of educational resources is efficient, and
iii) Whether the distribution of educational resources is equitable. These three criteria are interrelated.

? How do we judge the systems of educational finance ?

i) Adequacy of Funding

During the 1960s and the first half of the 1970s, adequacy was defined in terms of the percentage of GNP devoted to education (the figure of 8% was often demanded "adequate"), and in terms of the share of the central government's budget spent on education (20% was at appropriate figure).

Since the late 1970s, following the leadership of the World Bank, a new set of adequacy measures had come to be accepted. These measures are intended to get somewhat closer to the outcomes of educational system.

? Mention some of the new set of adequacy measures that are being used by the World Bank?

Have you tried? All right, some of the new set of adequacy measures that are being used are the following:

- *the proportion of the relevant age group enrolled in primary school*
- *whether educational opportunities are provided to women (relates to balance by sex)*
- *The proportion of the age cohort enrolled in secondary school*
- *Adult literacy rate*

Generally, the requirements for real resources to meet standards of adequacy set, in turn, determine the financial requirements.

ii) Efficiency

Publicly financed institutions, whether at the school, technical institute, or university level, ordinarily claim a certain degree of autonomy in managing their affairs. There are two main criteria for judging efficiency in education: cost-benefit and cost-effectiveness. To raise standards of educational efficiency, it is necessary that central governments use the power of the "purse" string (budget) to ensure appropriate implementation of policy. The cost-benefit ratio can be reduced by improving efficiency of the educational system. This implies that reducing repetition, and dropout, through wise use of other educational inputs is very important.

iii) Equity

The effect of a search for equity in the design of most systems of educational finance are so strong and the approaches to finance of primary and secondary schools, on the one hand, and to finance of post-

secondary institutions, on the other, are sufficiently different that it is necessary to distinguish clearly between these two main sectors.

In the administration of primary and secondary schools, most central governments seek an arrangement, which is neither wholly centralized nor wholly decentralized.

A mixed system of provisions, one which is subject to decision rules about the presence of central powers and local powers, calls for a financial arrangement within the category of "intergovernmental fiscal relations". The money flows from the lager governments (or federal government) to the smaller (local government), regardless of the number of levels.

Summary

- Those goods and services which satisfy consumers' immediate wants are called consumption and, those which are used in production to generate income over along term are called investment.
- Investment on education and training benefits both society and the individual from the point of building up a civic society, poverty alleviation and income redistribution and efficient utilization of resources.
- Investment decisions with regard to the nature, types and levels of education as well as the extent of sharing the costs of the related educational provisions are accordingly taken by both the individual and society.
- The strategy of choice between alternative and investment must be country specific, because countries have diverse needs.

Unit Five

The Benefits of Education

Unit Overview

Since the seminal contributions of Schultz, Becker and Mincer, the economics of education has gathered vast evidence on the contribution of education to the economic and social well-being of individuals and nations. The benefits of education are at one and the same time obvious but difficult to measure. It is common knowledge that education is a means by which persons could climb up both the social and economic ladders in society. But the exact magnitudes of such benefits are extremely difficult to estimate. Still, considerable progress has been made in recent years in this area. For descriptive purposes, it would be useful to distinguish between direct and indirect benefits and between consumption and investment benefits. Direct benefits are those that may be directly attributable to a given educational endeavor. Several classes of indirect benefits will also be discussed.

In addition, estimation of benefits has largely been confined to what has been termed the investment component, as distinct from the consumption element. The investment component includes the benefits of education that are manifested in increased productivity of individuals.

Consumption benefits are largely confined to the satisfaction people get while undertaking an educational endeavor; it should be noted, however, that insofar as education increases one's capacity to enjoy literature, art, etc., consumption benefits extend to future periods (following completion of the educational program) as well. In this unit you will be introduced to the clear understanding of the benefits of education, their classification, and how development of a given country can be influenced by education.

☺ Unit Objectives

After studying this unit, you will be able to:

- Define the benefits of education;

- Describe the various classifications of the benefits of education;
- Appreciate the influence of education on economic growth and economic development;
- Identify the differences between the concept economic growth and economic development;
- Describe the different factors that indicate the linkage between education and economic development;
- Explain the approaches for assessing the contribution of education to economic growth.

Section I: Classification of Educational Benefits

Section Overview

Most economists' who have attempted to tackle the job of measuring educational benefits have employed the "human capital" approach. This approach is based on the presumption that educational investment is much like other investments which individuals could undertake - an investment which has an expected return over cost - the only difference being that education is an investment in persons, not on physical assets.

In addition to the direct benefits (in the form of expected increased lifetime earnings), it has long been asserted that educational investments bring forth benefits to society that go beyond the mere increase in productivity. Education may increase one's enjoyment of his job, change one's attitudes and habits, and increase one's geographic and occupational mobility. Education enables individuals to perform various activities outside the market whose value is not commonly measured.

Moreover, we may add another important item - external benefits. These are the benefits that an individual cannot himself capture but which are diffused into society. These include inventions and innovations for which the inventors or innovators cannot hope to be fully compensated. In many cases, indeed, an invention is recognized long after the inventor had already passed on.

In general, based on the incidence of the benefits, educational benefits could further be classified as private and social benefits. In this section, we will deal with the various classifications of benefits of education.

☺ Section Objectives

After completing the study of this section, you will be able to:

- Identify the monetary and non monetary benefits of education,
- Explain the private monetary and non monetary benefits of education,
- List social direct monetary benefits of education.

1.1. Private Benefits

We can further classify private benefits of education as monetary and nonmonetary private benefits.

1.1.1. Private Monetary Benefits of Education

? Private monetary benefits can be seen as direct and indirect monetary benefits. So, what are the direct monetary benefits of education?

> *At the individual level, the most obvious effects of education and training are those on wages and earnings. Thus, increased wages and earnings are the direct monetary benefits of education to*

Schooling raises the individual market productivity which is rewarded in the labour market in terms of higher earnings or wages. The positive association between education and individual earnings in the labour market is probably one of the most robust findings in all of empirical economics.

The education of an employee not only affects her wages, but also her non-wage remuneration. This non-wage remuneration is indirect monetary benefits of education to individuals.

? Can you tell us some of the non-wage benefits of education to individuals?

Such non-wage labour market remuneration can take the form of improved working conditions or fringe benefits such as insurance provided by the employer, a company car and childcare, to name a few. Micro evidence suggests that more educated people are more successful in securing such benefits for themselves than are people with lower levels of education.

In addition to affecting labour-market outcomes, education also affects decisions related to expenditure and savings. A person's rate of saving is significantly correlated to her individual

level of education. There is also some evidence that higher schooling is associated with higher saving rates.

1.1.2. Private Non-monetary Benefits of Education

? What do you think are the non-monetary benefits of education to individuals?

Education affects the well-being of individuals not only via monetary effects. There is also considerable evidence of non-market benefits of education.

Both life-satisfaction and happiness are related to education. Empirical evidence on the effects of education on health is overwhelming. Education is consistently shown to have considerable effects on the general health status of an individual. There are several channels through which education can be assumed to make an impact on health and life expectancy. First, schooling may affect the decision to work in hazardous employments.

Moreover, there is evidence that education is associated with better health behaviour. Lifestyle, diet and exercise seem to be related to education. Better health also translates into higher wages and earnings, but apart from this monetary aspect, it contributes to a person's general well-being in terms of reduced pain, lower expenditures on medical care and less time spent to treat various illnesses. A person's life expectancy also increases with her/his education.

The educational attainment of parents has strong effects on the well-being of their children. An important pathway for this effect of mother's education on infant health is the use of prenatal care, among others. Similarly, the general status of health of children is positively influenced by the education of their parents. Strong effects of parents' education are also found on the level of education eventually attained and on the cognitive development of children.

Moreover, education seems to enable individuals to choose more efficiently in a variety of situations. Some studies have shown that there is a positive relationship between the efficiency of choices made by consumers and their level of education. Highly educated people are also more likely to participate in the labour market and have better chances to be employed.

1.2. Social Benefits

The benefits of education to society can also be classified as monetary and non-monetary benefits.

1.2.1. Social Monetary Benefits of Education

? What do we mean by the social benefits of education? What is the direct monetary benefit of education to society?

> *From a fiscal point of view, a large impact of education and training on the society consists in their effect on taxes. In the same way as education and training raise the earnings of an individual, they also tend to raise the taxes paid by this individual. These tax payments are part of the government's budget and ideally benefit the society at large.*

? How can education affect labour productivity and economic growth? Is the labour productivity and its impact on the economic growth a direct or an indirect monetary benefit to society?

There are three mechanisms through which education can have impact on labour productivity and economic growth. First, education increases the human capital inherent in the labour force, which enhances labour productivity and thus transitional growth towards a higher equilibrium level of output. Second, education can increase the innovative power of an economy, and the new knowledge on new technologies, products and processes promotes growth. Third, education facilitates the diffusion and transmission of knowledge which is needed to understand and process new information and to successfully implement new technologies which also lead to economic growth.

1.2.2. Social Non-monetary (Externality) Effects of Education

? What are the non-monetary (externality) effects of education to a society?

Whenever individuals decide on the amount of education to acquire, they tend to take only their private benefits into account. Quite often, they do not even realize their own benefits accurately. It is possible that many individuals are not aware of many of the individual benefits listed above. However, education may inhibit externalities which have to be taken into account when calculating the economy-wide returns to education. The forthcoming paragraphs describe some of the known non-monetary benefits of education to society.

Perhaps the most important fields of society that are influenced by education are the process of democratization, the development of civic institutions and human rights, and political stability. Education and higher per capita income play an important role in the democratization process since they give rise to a growing demand for political participation.

One channel through which education affects democratization is through civic participation, civic knowledge and attitudes. Education leads to an increased demand for civic participation within the population. Empirical evidence suggests that educational attainment has large effects on both voter participation and support of free speech. Moreover, it increases the frequency of newspaper readership and thereby the quality of civic knowledge.

Micro econometric analysis also shows that the probability of committing crime is significantly reduced by schooling .Effects of education are found to be particularly large on murder, assault and theft. Absolute poverty is reduced by increasing economic growth and secondary education. Education also has the potential of reducing inequality in the income distribution. But whether it reduces inequality depends crucially on the distribution of educational resources within the population. Inequality in schooling has been found to be significantly related to the percentage of people at the end of the income distribution.

Social cohesion is also promoted by an increasing awareness of the responsibility that every single person has for the society. More educated people contribute more volunteer time and more financial resources to community service and charity.

Moreover, education is not only connected to own health and the health of ones' children. It also reduces the spread of contagious diseases within the whole population. The effects of education on the environment are almost entirely indirect and operate through the reduction of poverty and population growth rates. Reduced poverty and population growth rates are associated with less water pollution. Similarly, education has an indirect effect on air pollution through its effects on population growth, democratization and economic growth. In countries with high population growth rates and high poverty rates, forests are cleared for agriculture, heating and cooking.

Intergenerational Effects

? What do we mean by intergenerational effects of education?

In addition to the various direct and indirect returns [discussed above], One must consider possible educational benefits that will be felt only a generation later. It has been ascertained through studies that persons are more likely to complete a given level of education if their parents are (or were) more highly educated. The intergenerational effect is the increment in a person's education that can be ascribed to the incremental education of the parent. This is to be noted because increased education results in increased potential income. Hence we could trace some of the higher expected earnings of the children back to their origin in the increased educational investment by the parents.

Section II: Education and Economic Development

Section Overview

Education is an economic good because it is not easily obtainable and thus needs to be apportioned. Economists regard education as both consumer and capital goods because it offers utility to a consumer and also serves as an input into the production of other goods and services. As capital goods, education can be used to develop the human resources necessary for economic and social transformation. It is widely accepted that education creates improved citizens and helps to upgrade the general standard of living in a society. Therefore, positive social change is likely to be associated with the production of qualitative citizenry. This increasing faith in education as an agent of change in many developing countries, including Ethiopia, has led to a heavy investment in it. Generally, this goes with the belief that expanding education promotes economic growth. In this section, we will discuss issues related to the impact of education on economic development.

☺ Section Objectives

After completing your study of this section, you will be able to:

- Distinguish between economic growth and economic development,
- Discuss on how education influences economic development,
- Identify the indicators of the linkage between education and economic growth,
- Explain approaches for assessing the contribution of education to economic growth.

2.1. Views of Economists on the role of Education for a Country's Economic Success

? What do they mean when Economists say "Educate part of the community and the whole it benefits"?

There are several ways of modeling how the huge expansion of education accelerated economic growth and development. The first is to view education as an investment in human capital. A different view of the role of education in the economic success is that education has positive externalities. "Educate part of the community and the whole of it benefits," The idea that education generates positive externalities is by no means new. Many of the classical economists argued strongly for government's active support of education on the grounds of the positive externalities that society would gain from a more educated labour force and populace.

Smith (1976) reflects such progressive contemporary thought when he wrote that by educating its people, a society derives no inconsiderable advantage from their instruction. The more they are instructed, the less liable they are to the delusions of enthusiasm and superstition, which, among ignorant nations, frequently occasion the most dreadful disorders. An instructed and intelligent people are always more decent and orderly than an ignorant and stupid ones.
Smith views the externalities to education as important to the proper functioning not only of the economy but of a democratic society.

? The level of education of its citizens is a critical input for innovations, research and development of a country. Discuss this in detail.

Another way of modeling the role of education in the growth and development process is to view human capital as a critical input for innovations, research and development activities. From this perspective, education is seen as an intentional effort to increase the resources needed for creating new ideas, and thus, any increase in education will directly accelerate technological progress.

Education is seen as an input into the intentional and entrepreneurial efforts to create new technology and new products. Proponents of this view of education point out the close correlation between new product development and levels of education. The countries that are at the forefront of technology also have the most educated population.

2.1 Distinction between Economic growth and Economic development

As it has been argued earlier, education is strongly correlated to the economic growth of a nation. However, the latter should be distinguished from economic development, for this distinction has obvious implications for developing any economic perspective of education.

? What is the difference between economic growth and economic development? How do they correlate?

☞ Dear colleague, as you know many individuals are confused by the terms economic growth and economic development. However, there is a fundamental distinction between the two. Economic growth refers to the increase in the GNP or per capita income of a country. So long as the national income of a country keeps growing, the country is experiencing economic growth. But economic development means much, more than mere growth, a fundamental change in the structure of production in an economy. Most important among the structural changes are:

- the rising share of industry (and the falling share of agriculture),
- increasing urbanization[1]
- the consumption pattern of the people also changes so that they do not have to spend their entire income on basic necessities and food requirements; rather so that they can buy goods and leisure.
- the participation of the masses in the production process,

Moreover, the benefits of development should accrue to the whole society, not to the privileged few.

Generally, development is a more comprehensive concept than growth.

- Education and training even to the extent of elementary stage or functional literacy and numeracy, help improve the efficiency and productivity of labour forces of all types and at all levels. The linkage between education and economic development are positive and strong and they reinforce the development process of the economy.

? Is economic development possible without economic growth? Discuss.

It may be said that both growth and development involve a rise in per capita income. However, though development is not possible without such a rise in per capita income it does mean more than such a rise. In other words, development is a more comprehensive concept than growth.

? In your opinion, is it possible to determine the precise degree of the contribution of education to economic growth?

Although it is extremely difficult to determine the precise degree of the contribution made by education to economic growth, the creation and expansion of educational opportunities at all levels have been actively pursued all over the world, in the belief that education does contribute to economic growth by way of:

a) *Creating a more productive labour force and endowing it with increased knowledge and skills which increase production.*
b) *Providing widespread employment and income-earning opportunities for teachers, school building and construction workers, textbook printers, school uniform manufactures, etc;*
c) *Creating a class of educated persons to fill vacancies created by departing expatriates (in the case of countries recently freed from colonial occupation) or otherwise vacant positions in governmental services, public corporations, private businesses and professions; and*
d) *Providing the kind of training and education that would promote literacy, numeracy and basic skills while encouraging modern attitudes on the part of*

How can Development be influenced by Education?

i) First, the spread of education helps in molding people's attitudes behavior and approach to the emerging realities of the world especially with respect to work ethics, social ethos and universal human values. These, in turn, promote good will among all sections of the society. Moreover, the inculcation of the relevant and adequate knowledge of means of gathering and analyzing information, and preparing the human resources to suitably respond to challenges confronted by human kind, maximize social mobility and help increase the innovative and risk taking capabilities among people. These, in turn, contribute to an increase in the socio-economic activities which accelerate the pace of national development.

ii) Second, the social and cultural taboos, superstitions and the common belief that the material benefits to be enjoyed by an individual are predetermined by some superhuman force constitute the major cause of economic backwardness. Through education, these superstitions get eliminated as people become increasingly conscious of their detrimental effects.

? Dear colleagues! How can scientific and technological advancements overcome the various impediments associated with traditional uneducated society?

Scientific and technological advancements have made it possible to overcome various impediments by providing:

a) *Reasonable explanation for various natural phenomena, the knowledge of which enables the people to effectively tackle and adjust to emerging situations as well as to respond positively to national policies; and*
b) *Technology for large scale production of goods and commodities so as to satisfy the material wants of most people, and thereby help them develop a favorable attitude to technological developments and to be more self-reliant.*

In general, from the explanations given above, it is clear that education and training, even to the extent of elementary stage or functional literacy and numeracy help improve the efficiency and productivity of labour forces of all types and at all levels. Dissemination of knowledge of all types and levels through various methods like on-the-job training, extension programme, etc. increases the ability of labour force optimally use human and material resources for raising production in every sector of development. Obviously, the linkages between education and economic development are positive and strong and they reinforce the development process of the economy.

2.2. Indicators of the Linkage between Education and Economic Growth

? Dear learners! In the preceding section we have seen that the existence of quality and quantity labour force in a given country is directly related (linked) to the country's level of development, other things held constant. So, what are the indicators of the linkage between education and economic growth?

The following are some of the selected indicators of the linkage between education and economic growth.

➲ **Education and Gross National Product**

? How can education increase the Gross National Product of a given country?

The first indicator of the linkage of education to economic growth is the increase in the Gross National Product (GNP). Other things remaining equal, education promotes growth in a positive manner. As the income of a country rises, increasingly larger sums of money are spent on educational development with a view to meeting the manpower requirement of all kinds and levels of the different sectors of the economy. Evidences from various studies suggest that the indicators of educational development like literacy and/or enrollment ratio and GNP or per capita income are positively correlated. This demonstrates that a country chooses to spend more on education as its income rises.

? What can indicate the efforts made by a country to expand educational services for its citizens?

The extent of expenditure, from the GNP, devoted to the education system is considered an important indicator of the educational efforts made by a county. Another equally important measure of educational efforts is the proportion of educational expenditure in the aggregate national budget. It is generally true that economically advanced countries, and the different regions within such a country, spend more out of their incomes on educational development than those countries and regions even among those which have achieved considerable levels of economic development. This is largely attributable to the perceptions of different societies about the relative role of education in

Employment

? Is there any relationship between education and employment? Discuss.

The relationship between education and employment is the second indicator of economic growth. Education has come to be seen as an aid to realizing the socio-economic objectives of individuals as well as the society. The nature of employment and the earnings there from are crucial determinants of the economic gains that accrue to people. In this context, the relationship between education and different aspects of employment like level of earnings, status and employability is assessed to be strong and positive. Earning functions and path analyses of the effects of the individual's background and characteristics on occupational attainment and earnings have invariably indicated that a large part of the variance is explained by the index of education. The number of years of education is the best single predictor of the eventual occupational status and earnings of an entrant into the labour market.

The amount of schooling received by an individual is largely influenced by the demand for and supply of education.

? What are the two major factors that can affect the demand for education?

The two major factors which influence the demand for education are:

i) the prospects of earning over a life span of an educated person and/ or the expected private and social benefits; and

ii) The education costs-both direct and indirect-which a student and/or his/her family must bear to get him/her educated.

The demand for education is a "derived demand" for employment opportunities fetching higher wages especially in the modern sectors which assure higher earnings over the entire period of employment. In developing countries, the demand for education is not so much to satisfy intrinsic non-economic wants of people as to enable them to pursue a financially rewarding career over the span of their life time.

? In your opinion, how can individuals safeguard their economic status when their job opportunities diminish?

The connection between education and employment is strong indeed. That is why when job opportunities for the uneducated diminish, individuals safeguard their economic status by acquiring primary or secondary, vocational and higher education in order to gain the best employment opportunities available to them. Hence education, employment and earning are not only closely related to one another but to a large extent interdependent.

➲ **Quality of Labour Force**

? What do we mean by the term "labour force"? How can the increased quality of labour force cause growth in an economy?

The third indicator of economic growth is the increase in the quality of the labour force caused by education. The term "labour force" refers the persons who are able to work. A part of the total population in every country is too young or too old to be deployed in gainful employment programmes. For instance, children below 15 years of age and persons above 65 years of age are not treated as part of the working age group. The students pursuing various courses of study are also included in this category. The remaining population, which is available for work, constitutes of labour force of a country.

? Is it possible for the entire labour force, existing in a country, to contribute to the GNP? Why?

The entire labour force may not, however, be contributing to the gross production as there are those who remain without work or are reluctant to work in the formal sector and are therefore engaged in household jobs. We can say that the total labour force depends upon the proportion of the working male and female population which is fit and willing to work.

The contribution of the working population to the productive process depends not only upon its quantity, i.e., the number of people involved in work but also largely upon its quality, i.e., the kind of work that people do, the amount of effort they put into their work and the efficiency with which they manage their work.

A person who is capable of analyzing facts scientifically and applying the acquired knowledge in his/her routine activities would surely have a relatively higher degree of efficiency than those who lack in such qualities. The earning of workers over the span of their working life would accordingly vary.

? Can higher earning alone indicate the increased productivity of labour force? Discuss.

The differences in earning alone can not measure the productivity-raising effects of education and training unless of course, the relationship between the volume of output and its determinants, as well as the measure of educational attainment of the labour force are thoroughly examined. Nevertheless, if additional schooling is provided to individuals, their productivity would increase due to the proper application of newly acquired knowledge and practical skills as well as the creation of conditions conducive to effectively managing the human and material resources. Therefore, the correlation between education as measured by the number of years of schooling and productivity as measured by wage differences among the persons of varying educational qualifications is positive and strong. The quality of the labour force can thus be enhanced by making adequate provision for relevant general and technical education as well as training in improving one's skills.

➲ **Productivity**

? What do we mean by the concept of productivity?

The fourth indicator of economic growth which is also a very significant one is productivity resulting from increased education, training and technical know-how. The concept of productivity refers to a derived ratio of output to input in a production process in a given condition. Whereas the relation between the total outputs and inputs in a particular period of time is called the average productivity, the relation between the incremental output and additional input or a unit of factor of production causing that output is called marginal productivity.

? In your opinion, what are the various sources and methods of increasing productivity?

Of the various sources and methods of increasing productivity of human resources, socio-economic systems, institutions, education and training etc, are very important as they improve the entrepreneurial capacity of the manpower which raises the productivity and the volume of production, thereby raising per capita income of people.

? In the proceeding unit, we have seen the concepts related to human capital. Can you remember what human capital is?

The acquired knowledge and skill which add to the productive capacity of an individual (from both the individual and social point of view), are termed as human capital. The money spent on human resources development therefore yields definite returns to the beneficiaries-individuals and the society.

? How can the expenditure on research and development influence productivity?

The expenditure on research influences productivity by way of innovation and up gradation of technology devising new policies for and approaches to production and exploring fresh opportunities for investment and creation of employment. These in consequence generate income for people.

Thus, education and training contribute significantly to improving the productive capacity of human resources, and thereby raising the quality of life in general.

- **Work Satisfaction and life Satisfaction**

? Dear learners! Is life satisfaction a consumption benefit or an investment benefit?

The fifth significant indicator of economic growth is satisfaction in one's life while one is in the field of work. These non-monetary returns, which accrue to the beneficiaries of education over their life cycle refer to the consumption benefits of education. As such, these include not only the non-monetary satisfaction enjoyed by the students while at school, but also the contributions made by education to such aspects of day-to-day life as it can help an educated person to utilize his/he leisure most satisfactorily for a happy and prosperous life.

In brief, the consumption benefits of education accrue in the form of a family's better health, higher return of savings, better management of household affairs and increased socialization and social welfare.

Some of the notable consumption benefits are as follows.

i) Education is closely correlated to good health: for example, the children of educated parents are generally healthier. Further, it has been also observed that the mother's education significantly affects a child's I. Q. which could be helpful in further education.

ii) Those consumers who have higher levels of education are supposed to rationalize their spending patterns among consumption items in such a way that their total utility is maximized and the real income is maintained at a high level.

iii) Education contributes a lot to the management of household affairs especially by employing labour and time-saving devices. For instance, the rapid swing automatic washing machines wash and wear clothing, and paying bills by the cheque require less time than the corresponding earlier, alternatives. But they do require knowledge of repair management plus some accounting skills. Thus, for adjusting savings, teaching children, or even for life cycle planning, more education is required without which, effective utilization of new advances in technology is not possible.

iv) Educated women are found to be more efficient in market search and household management. As a result of rational purchasing behavior and effective management of household affairs, a considerable amount of savings is generated.

And all these together contribute to a happy and prosperous life.

2.3. Approaches for Assessing the Contributions of Education to Economic Growth

? Dear colleagues! There is a general belief regarding the contribution of education to economic growth?

Having discussed in some detail the relationship between education and economic growth, we now turn to approaches and methodologies which are generally employed by the planners and researchers for assessing the contributions of education to economic growth and social development. The four commonly known approaches are discussed hereunder. They are:

- Simple correlation approach;

- Residual approach;
- Returns to education approach; and
- Forecasting manpower needs approach.

➲ ***Simple Correlation Approach***

? What do we mean by simple correlation approach? What are the variables expected to relate each other in this approach?

The theoretical expectation that education and training contribute to economic growth requires to be quantified so as to assess the nature and the extent of the relationship between the variables characterizing educational and economic activities. Such calculations and information are very useful for policy makers and planners, who are necessarily concerned about the cause and effect relationship between two or more variables, especially from the point of view of preparing development plans determining the appropriate allocation of funds. The approach which is generally used to study such aspects is known as the correlation method which, when employed, indicates the nature and strength of the relationship between the chosen variables. Such a relationship can be studied when the data pertaining to the two theoretically related variables are fitted in a functional form of the type:

$$Y=a+bX$$

Where Y and X are variables 'a' is a constant and 'b' is a correlation coefficient. For instance, we can correlate the level of literacy or enrolment ratio and the GNP per capita. Such a correlation reveals that the association between the two variables is positive and significant.

? What type of data can be used in the simple correlation approach?

The analysis of data, using the time series, and cross-sectional data pertaining to measurable factors which influence and, in turn, are influenced by development activities, help gauge the performance of educational activities both over time and across the different regions, and

➲ ***Residual approach***

? Do you have any idea about what residual approach means?

The residual approach is used to measure the extent to which different factors are responsible for contributing to economic growth. The rate of increase in the aggregate output is compared, under this approach, with the aggregate input.

? How does a residual approach indicate the contribution of education to economic growth?

The sources of the economic growth are identified to the extent possible in measurable inputs like capital and labour. The unexplained or residual part is attributed to and unspecified input, i.e., education and advances in technology.

The results obtained on application of this approach have been largely responsible for generating interest in investment in human resources and also in recognizing the fact that educational expenditure needs to be regarded as an investment owing to its crucial role in determining economic growth.

? It is believed that, there are a number of alternating techniques that can be adopted under this approach. So can you describe some of them?

For instance, it is possible to proceed by calculating an input series for the labor input, a separate input series for the capital input at constant prices and then combining these two input series into an overall arithmetic index of inputs. Next, the rate of increase in this aggregate input series is compared with the rate of increase in the aggregate output series, and by simply subtracting the former from the latter, it is possible to obtain a measure of the contribution of the 'residual" or "third factor". The size of the

"residual factor" certainly does serve as a mandate to explore in detail the economic effects of activities often neglected in growth accounting exercises.

➲ **Returns to Education Approach**

? Do you have any idea about returns to education approach? What are the two variables to be compared according to this approach?

The return to education approach is another method of studying the economic consequences of education. In this approach, the lifetime earnings of persons who have had schooling at different levels are compared with the life time earnings of persons who have had relatively less education. The difference in life time earnings is then expressed as an annual percentage rate of return on the costs involved in obtaining education.

? What are the two broad categories of returns to education?

It is helpful to distinguish between the two broad categories of returns to education:

(i) the personal profit orientation; and
(ii) the national productivity orientation

The personal profit orientation refers to the difference in the net earning of persons with varying amounts of education as evidence of the amount of personal financial gain that can be associated with the attainment of a given level of education. The national productivity orientation refers to education related earning differentials as partial evidence of the effects of education on the output of the country. This is based on the premise that in a market economy, differences in earnings reflect relative variations in productivity. These two approaches are also known as private and social rate of returns to education respectively.

? The rate of return approach is considered as an important approach to assess the benefit of education to economic growth. Why?

The rate of returns approach has been considered an important approach because it helps in relating educational benefits to educational costs in a way that holds out the hope of providing useful information concerning the adequacy of the overall level of investment in education and the extent to which economic benefits accrue directly to private individuals.

But the application of this approach is fraught with many difficulties for conceptual and statistical reasons. For the measurement of returns to education, it is essential to get reliable data of the cost as well as the yield of education. The estimation of this yield is more difficult because the returns to education can be monetary, non-monetary, private as well as social. However, this approach has contributed vastly in the assessment of the contributions of education to an economy since it is possible to obtain results in such a form as permits comparisons of costs with benefits. It may be noted here that this approach is susceptible to further refinement, and there are reasons to believe that further research will remedy some of the present difficulties in this approach.

- **Forecasting human Resource Needs Approach**

? What are the objectives of forecasting human resource needs approach?

The objectives of all forecasts of human resource needs are to work out the future needs of the economy for persons with various kinds and levels of training. Such forecasts can be expressed in terms of broad groupings of people. A variety of methods have been used in arriving at human resource projections. For example, employers are asked to specify how many persons with certain kinds of qualification may be needed in a given number of years in the future, which are then added up to arrive at the aggregate figure for the total requirement of human resource with the specific expertise. Further, the calculated ratios of trained human resource for total employment are also projected into the future on the basis of demographic information.

The importance of this approach has been well recognized because it offers definite guidelines framed in the terms in which decisions must actually be made. Whereas the returns to education approach reveals whether the given level of spending on education is too much or too little on education, manpower studies indicate that 'X' number of new students placed in the field 'Y' could be created by the year 'Z;. This type of information is obviously much more useful to the policy maker and planner.

? Many economists see this approach as the weakest of all the others discussed above. Why?

This approach has been widely criticized because it has been viewed that the human resource projections have not succeeded in taking account of the flexible possibilities of substitution between capital and labour, and between highly trained human resource and not so highly trained human resource. Moreover, this approach is not really directed at assessing the economic contribution of education. On the basis of the criticism raised it could be said that human resource forecasting ought not to be viewed as an alternative method of working out the investment requirements of the education sector, but as a way of obtaining information which can be analyzed usefully for effective planning and management of education system.

Chapter Six

Cost and Cost Benefit Analysis in Education

Unit Overview

The problem of limited resources available for education in relation to the enormity of the tasks involved in educational development for many developing countries has been receiving considerable attention in recent years. In Ethiopia, for example, though the actual plan outlay by MOE has increased from year to year, much remain to be done in the task of educational development both in quantitative and qualitative terms. Therefore, it becomes essential to carryout educational cost analysis which will ensure efficiency in the allocation of resources to education. Such cost analysis may help us in making optimum use of available resources and it may enable us to make the expenditure on education meet the criteria of cost-benefit and cost-effectiveness.

Utilization of resources for various sectors and levels of education would mean incurring expenditure to meet certain set of objectives. The ultimate considerations when these expenditures are incurred will be

the costs involved and the benefits received from them. Moreover, it is essential to examine both cost effectiveness and cost-efficiency in order to evaluate the activities of an educational programme. In this unit, we shall discuss these aspects of educational costs.

6.1 The Concept of Costs

Before looking into the various educational costs, it is essential to understand the concept and types of costs involved in an educational enterprise.

6.1.1 Cost Vs expenditure

The term cost of education is often loosely equated with expenditure on education. Information on expenditure on education is more easily accessible and available from budgets and accounts of the central and state governments. Cost of education refers to the amount of money spent to acquire or impart education. From the point of view of individuals, costs refer to the amount of money spent during a particular period (one year) to acquire education. From the point of view of the state, it refers to the expenditure incurred on education during a year.

The terms cost and expenditure are used interchangeably, but more popularly, we use the term 'cost' and refer to cost per student pertaining to a particular level (primary, secondary or higher education institution).

i.e => cost per student for a particular level may include expenditures incurred on

-staff salaries

- equipment and buildings

- maintenance costs

- library books, sports etc.

=> From the point of view of the individual, cost of acquiring education does include expenditure on – books and stationery.

- school fee

- travel cost

- rent of hostel accommodation (in case of students making use of hostels)

- mess charges etc.

In an educational enterprise, we have to measure the cost incurred by the supplier of education and by the consumer of education separately. This necessitates a re-consideration of cost in economics so that it can suitably be applied to education.

Dear learner! When we try to apply the concept of cost to education, three difficulties may arise due to the inherent nature of the activity of education.

These difficulties are:

1. The definition of "production" resulting from education
2. The identification of the "economic transactors" connected with education; and
3. The fact that education has the character of a "public service".

6.1.2 Cost in economics and in education

In economics cost is used when reference is made to the production of goods and services.

⇨ The cost of resources utilized in the production of goods and services should always be with reference to or for an economic transact or such as a producer/ seller) or consumer (buyer). Literature in economics has distinguished between real cost and money cost.

Real cost is said to correspond to the sacrifice of resources or inputs needed to produce goods and services. Therefore, real cost corresponds to opportunity cost, which refers to the foregone output that could have been produced had the input been utilized in the next best way.

? Who is the producer of education?

☞

The producer of education could be

- *a government*
- *an institution (public or private)*
- *a teacher or a family*

On the other hand, the consumers are the students and their families who are the buyers of education. Thus, we can speak of cost for both the agencies producing education and the persons consuming

education. There can be differences between cost and expenditure because of government subsidies to education, tax relief on institutions, income foregone by students while studying, etc.

6.1.3 Determinants of educational Costs

The costs of an educational plan or innovation is often expressed in terms of its total cost to indicate the value of the total resources devoted to it, but for diagnostic and evaluative purposes, unit cost is more meaningful.

Unit cost is the cost per educational unit.

Examples – Cost per students

- Cost per school
- Cost per teacher etc.

However, education has multiple outputs measured variously in terms of student achievement, number of graduates passed, and so on. Hence while estimating unit cost, due care should be taken to avoid ambiguity. The problem of deciding on the unit cost has to be solved carefully.

Dear learners! Do you know the reason why it needs careful decision? Well, this is because all costs do not vary with the number of students. For instance, the teachers and their salaries, the number of square meters of building space, etc may not depend on the number of students. Therefore, cost per teacher or cost per school should also be considered.

Generally, cost depends on

1. the average pupil-teacher ratio at each level
2. the level and structure of the teachers' salaries
3. the non-salary costs of education; and
4. the capital cost for buildings and other equipments

In fact, each of these factors is also determined by a number of other factors like student enrollment rate, availability of teachers and funds, etc. It is because of the variations in these factors that countries or states and districts within the country differ with regard to their educational priorities and the corresponding expenditure.

6.1.4 Types of Educational Cost

The very idea of cost immediately poses the question: cost for whom? Cost can be defined from the supplier's point of view as well as from the consumer's point of view. Moreover, cost can also be of various forms. Let us briefly discuss the types of costs below.

6.1.4.1 Private and Social Costs

If the purpose of the cost-benefit analysis is to evaluate education as a form of social investment, the relevant cost concept is the total resource cost of education to the economy (social cost). This includes the value of teacher's time, books, materials and other goals or services, the value of the use of buildings and capital equipment, and finally the value of students' time, measured in terms of alternative uses.

If the purpose of a cost analysis is to evaluate education as a form of investment for the individual, the relevant costs are those born by the student or her/his family (private costs). If fees are changed these must be included together with expenditure on books and other direct costs such as travel. Once again, indirect costs must also be included in the form of earnings foregone. If students receive scholarships from public funds to cover fees or maintenance costs, the average value of such scholarships must be subtracted from the total estimate of private costs.

a) Private Costs

These concern individuals in families and represent costs which the individuals and the families must bear in return for the education received. These include mainly school fees, books and other learning materials, and forgone earnings or an imputed value of the opportunity costs of going to school.

? Why do you think is the pinch of these costs much stronger to the population of developing countries?

☞

This is because in developing countries

- *income is low*
- *the number of children in a family is quite large and*
- *opportunity cost is also quite significant as children join the labour force at young age*

b) Social Costs

These costs concern society (borne by government) and refer to such costs (or expenditure) as are borne out as a result of all education and training activities in a society at a given point of time.

? The contribution of private cost is negligible compared to social cost. Why do you think this is so?

☞

It is because:-

Public/ social cost consists of all costs required in the school systems, namely salaries to teachers and to all non-teaching staff, buildings, instructional materials, board and room, etc.

Table 3: summarizes the elements of total social and private costs of education.

Table 3: Social and private costs of education.

Social costs	Private costs
Direct	Fees minus average value of scholarships
Teachers' salaries	earnings forgone
Non-Teaching Salaries	Transportation
Transportation	Cost of books and supplies
other current expenditure on goals and services	
Costs of books and supplies	
imputed rent	
Indirect	
Earnings forgone by students	Earnings Foregone by students
Costs of Educational Capital	Earnings Foregone by parents
Foregone Interest	

Depreciation 9. Earnings Foregone by Parents (esp. mothers)	

6.1.4.2 Opportunity Cost

Opportunity cost is the cost of alternatives foregone. Any attempt to measure the economic profitability of an investment must consider not only money expenditure, but also real resources that have alternative uses. To estimate the opportunity cost of resources in terms of the alternative opportunities that are sacrificed when resources are invested in one project rather than another, it is necessary to include not only the monetary value of resources (e.g. teachers' salaries) but also the estimated value of resources that are not bought or sold. Students' time, for example, is usually measured by earnings foregone.

In developing countries, for instance, the land and even the buildings for a school may be donated by the local community. However, these buildings or the land may have alternative uses and the decision to build a school may mean the sacrifice of an opportunity to build a hospital or a community development center.

Example

Table 4: The table below depicts the alternative production possibilities of a college student.

Possibilities	**Earnings from a part-time job**	**Grade points Average (GPA)**
1	0	4.00
2	400	3.20
3	700	2.50
4	1000	1.75

? Answer the following questions based on the above information

a) Calculate the opportunity cost of increasing earnings moving from possibility 1 to 4 one step at a time.

b) Draw a production possibility curve from

⇨ There are three possible product mixes. As we move from possibility 1 to 4, the quantity of earnings from a part-time job increases while the grade point average decreases, demonstrating that when there is more of one product there is less of the other.

The opportunity cost of earnings moving 1 to 4

Opportunity cost = grade point average given-up

additional unit of earning

obtained from a port-time job

For instance as we move

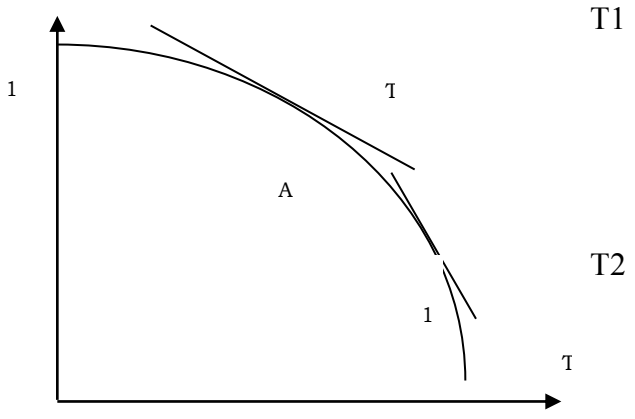
i) from production possibility 1 to 2 = $\left(\frac{4.00-3.20}{400-0}\right)$=0.0020

ii) from production possibility 2 to 3 = $\left(\frac{3.20-2.50}{700-400}\right) = 0.023$

iii) from production possibility 3 to 4 = $\left(\frac{2.5-1.75}{1000-700}\right) = 0.0025$

i.e. 0.002 unit of grade point average is given up in order to get one additional unit of earnings (500 birr) as we move from production possibility 1 to 2. This is called the opportunity cost of one unit of earnings.

=> The production possibilities curve for the example above will be



A production possibility curve that exhibits the property of increasing opportunity cost bends downwards and therefore, it is concave to the origin.

=> T1 and T2 are the slope of the tangent lines A and B respectively.

=> The slope of T2 is greater than the slope of T1 as T2 is steeper than T1. And hence, the opportunity cost at B is greater than the opportunity cost at A.

Activities

1. *Calculate the opportunity cost of grade point average as we move from possibility 4 to 1 in the example given above.*
2. *How would the production possibilities curve shift over time as an economy emerges from peace to war?*

? What is the difference between fixed and variable costs?

Whatever the level of production is, a firm always bears certain fixed expenses such as of premises occupied, maximum staff salary requirement, etc, and certain variable expenses which depend on the production level or, which vary according to the number of units produced.

The same distinction can be drawn in the field of education. In the case of teaching establishment like a school or a university, the fixed expenses include, for example, the capital cost of building, the equipment and furnishing or their corresponding annual rents, etc. The variable expenses on the other hand, include school books, teaching staff salaries, etc. but for all practical purposes, expenditure on permanent staff salaries (both teaching and non-teaching) can be treated as fixed costs.

6.1.5 Unit Costs Estimation and Analysis

Comparisons of aggregate public spending on education are common place. They give us an initial impression of the overall fiscal effort in education. The information is limited, however, and needs to be supplemented with analysis of spending per student (that is, unit cost).

? State common methods which are used to compute unit costs.

Dear learners, we have basically two ways to compute unit costs, and both should yield consistent results.

1. Unit cost can be obtained simply by dividing aggregate spending, such as that reported in budget documents, by the number of students. Although easy to implement, this method is not without problems. i.e.

- The aggregate data may be organized under rubrics that prevent clear-cut attribution of spending by level or type of education. For example, administrative expenditures may appear as one entry, with no distinction by level of education.
- The aggregate data may be organized according to source of funds or to the structure of the government bureaucracy so that expenditure for a given level of education may appear in several places in the budget, possibly without any detail regarding functional categories. For example, in some countries the budget document show spending supported by external donors separately, even though for analytical purpose the expenditure may belong to the same category as the government's own spending.
- The data may not distinguish between capital investments and recurrent spending, making it difficult to compute meaningful indicators of costs.

2. Unit cost can also be obtained by building up from the constituent parts of costs. In this approach the cost components are identified, evaluated and then aggregated to obtain the desired estimates.

   In primary education, for example, teachers and pedagogical materials are two of the main components of costs. Thus, we would calculate the unit cost of these components separately, and then add the results together to obtain an estimate of the overall unit cost of primary education. Further more instead of dividing aggregate spending on each component by the number of students, we would use other data to make the estimate. For example, to obtain the unit cost of teacher inputs, we would use data on teacher salaries and pupil-teacher ratios. This approach yields more detailed analysis of education costs and provides a basis for stimulating the cost implications of alternative choices in the delivery of education services.

Estimating unit costs from aggregate data: unit cost (uc) at each level of the education is simply given as follows:

$$UC=B/N= \left(\frac{P+G+W+A}{N} \right) = \frac{P}{N} + \frac{G}{N} + \frac{W}{N} + \frac{A}{N}$$

Where B= aggregate public budget or spending at the indivated level.

N= total number of students

P= the spending on staff remuneration

G= the spending on goods and non staff services

W= the spending on student welfare services, and

A= the spending on administrative overheads.

Example

Consider the following data extracted from budget documents and other statistical reports for a hypothetical country whose per capital income is currently estimated at 8900 USD.

No.of students(‘000)	Spending in millions (USD)				
	Staff remunerations(‘000) (S	Goods & non-staff service (000) (G)	Students welfare (‘000) (W)	Administrative over head (000) (A)	Aggregate spending (‘000)
3,206 Primary	6,227	185	40	140	6,592
299 Secondary	1,853	40	44	150	20,87
205 higher Education	917	130	600	195	1,842
Total 3710	8,987	355	684	485	10,521

? Based on the data given above, calculate the overall unit cost and the unit cost of each by level of education

Solution a) UC = aggregate spending

Total number of students

$$= \frac{10{,}521}{3{,}710}$$

$$= \underline{2.84}$$

b) For each level based on the component

i) Unit cost for primary level (UCPL) $= \frac{S + G + W + A}{N}$

$$= \frac{6{,}227 + 185 + 40 + 140}{3{,}206}$$

$$= \underline{2.06}$$

ii) Unit cost for secondary level (UCSL) $= \frac{S + G + W + A}{N}$

$$= \frac{1{,}853 + 40 + 44 + 150}{299} = \underline{\underline{6.92}}$$

iii) Unit cost for higher education (UCHL) $= \frac{S + G + W + A}{N}$

$$= \frac{917 + 130 + 600 + 195}{205}$$

$$= \underline{\underline{8.99}}$$

As we can see from the above analysis, unit cost increases as level of education increases (from primary to secondary to higher and secondary education).

6.1.6 Cost Variation across Schools

We assume that the operational costs of education at individual schools consider a fixed and a variable component. By definition, the fixed component for example, a school incurs to maintain a minimal administrative staff and a core teaching staff does not vary with the size of enrollments. In contrast, the

variable component depends on the size of enrollment. To a large extent, teacher salaries belong to the latter category because, as a school enrolls more students, it also generally hires more teachers. We can therefore conceptualize the relationship between a school's total costs (TC) and the other parameters - total fixed costs (TFC), unit variable costs (UVC), and enrollments (N) - as follows.

$$TC=TFC + UVC.N$$

When fixed costs are sizable, the overall costs per student tend to be substantially lower in large schools than in small schools. Where the fixed component is modest, however, overall unit costs are more or less constant (and almost the same as UVC). The existence of economies of scale in education is therefore an important source of variation in costs across schools.

6.1.7 Trends in Total Costs

During the 19605 and 1970s total educational expenditure increased at a remarkable rate, both in money terms and in real terms, that is, in terms of constant purchasing power. Total public expenditure on education rose as a proportion of national income and of public expenditure in both developed and developing countries during much of this period, although there has been a slowing down in many countries since 1975. These two ratios can be regarded as indexes of educational effort and fiscal effort. Countries can be compared on the bases of these indexes of effort as well as the following three variables:

i) unit costs as a proportion of GNP per capital
ii) enrollment ratios and
iii) School-age population, as a proportion of total population or the demographic burden.

The amount a country or region devotes to education does not depend on the level of economic development as measured by GNP per capital, but is influenced by unit costs as a ratio of GNP per capital and the enrollment ratio. The relative importance of these factors varies between countries, however, and also between regions. In east Africa, for example, the proportion of GNP devoted to primary education in the late 1970s was higher in Kenya than in east Africa as a whole and unit cost as appropriation of GNP were below average, but the enrollment ratio was well above average and this clearly influenced the total expenditure.

Analysis of education expenditure in Africa (Eicher 1984) provides information on the causes of high level of educational spending in the region. Eicher concludes from an analysis of data from 122 countries that between 1960 and 1976 the enrollment ratio for 6-10-11 age group is the most important variable to explain variations in educational expenditure as a proportion of GNP. Nevertheless, the demographic pressure is such that even if the proportion of GNP devoted to educational expenditure continues to rise until the end of the century, universal primary education (UPE) will still not be achieved in either Africa or Asia. So, it is possible to conclude that government does have a good reason to be concerned about the rising trend of total cost and about their ability to finance those costs in the future.

Generally, to achieve UPE by 2015, countries should reduce unit cost or a greater share of the GNP should be devoted to primary schooling.

6.1.8 Cost efficiency and cost effectiveness

Efficiency is the ratio of output to input. A method or system is cost-efficient if its cost per unit of output is less than another method or system. Cost efficiency of a system increases when its outputs increase with less than proportionate increase in inputs. The output is produced as economically or cheaply as possible, and it is concerned with the quantitative relationship between inputs and outputs.

An institution or educational mode, as the case may be, is said to be cost- efficient if the present level of cost can be minimized further without reducing the output, or if output can be increased with the present cost level.

Cost effectiveness is concerned with both the quantitative and qualitative relationship between inputs and outputs. It takes into account decision alternatives for both costs and consequences, and attempts higher achievement of predetermined objectives or targets within the given cost as economically as possible.

The cost-effectiveness approach is more appropriate at the level of the institution, the classroom or even the lectures delivered in the class room, as at such levels, objectives can be more precisely defined.

6.2 Cost –Benefit Analysis

The cost benefit principle is what a rational individual roughly applies when deciding how best to spend his money when his desires exceed his means. He examines his alternatives, weighs the cost of each and

the corresponding satisfaction or utility he feels it will bring him, and then chooses those particular options within this means that promise the highest ratio of benefits to costs. This is a technique that has been used for the purpose of choosing a project from among a number of projects on the basis of a consideration of their cost-benefit relationship. In applying this technique, one has to be careful about both the concepts of costs and benefits as well as their measurement.

? What is the purpose of educational cost-benefit analysis?

> ☞ Educational cost-benefit analysis provides a measure of the profitability of education as an investment for society, or for the individual student or he/his family. i.e, it will act as a general guide for resources allocation and enables the comparison of the profitability of different types of education.

Generally, cost-benefit analysis provides a means of appraising future benefits in the light of the costs that must be incurred at present.

6.2.1 Measurement of Benefit

6.2.1.1 Direct and Indirect benefit of education

To evaluate education as an investment, we need a measure of expected contribution of education to future levels of income or output. The obvious way in which education contributes to future income is by imparting knowledge and skills to educated manpower, thus improving the productivity of labor. If the productivity of educated workers is higher than that of the uneducated ones, this will be reflected in increased output and in higher earnings for the educated. We therefore need an estimate of the additional lifetime earnings of educated workers. In principle, these data should be collected by comparing the earnings of educated and uneducated workers over their whole working lives. The total lifetime earnings differential would then provide an estimate of the higher productivity of the educated.

? From your experience, what are the characteristics of age-earnings profiles?

☞ *Well dear colleague, experience tells us that typical age earnings profiles have the following characteristics*

i) Earnings increase with age until the highest peak at middle age and then flatten, or even decline, until the age of retirement.

ii) Earnings are highly correlated with education; at every age the highly educated earn more than the less educated.

iii) The age of which earnings reach the highest is latter for highly educated than for less-educated workers; in a few cases the earnings of highly qualified manpower continue to rise until retirement:

iv) The profiles of highly educated workers are steeper than those of the less educated. The peak earnings of an educated worker are higher, in relation to initial earnings, than the peak earnings of the less educated.

When cost-benefit analysis is used to judge the profitability of investment in education as a sector in comparison with other forms of investment or to compare different levels or types of education as a form of investment in human capital, the additional lifetime earnings of educated people provide a monetary measure of the direct private returns to individuals and a proxy measure of their extra productivity as a measure of the social returns. This approach may also be used to assess the profitability of a proposed education project such as building a vocational school, where the objective is to increase the supply and improve the quality of education, but if the outcome cannot be measured in unitary terms, cost-effectiveness analysis may be more appropriate, as explained in section 6.1.8 above.

? What is the difference between direct and indirect returns of education?

Dear colleagues, let us have an excursion into return to education accruing to both the individual and society at large.

i) Private Return to Education

The individual benefits from schooling in two ways.

These are:

A) The increased monetary return one gets according to each additional year spent in school. This increased monetary return stems from two endowments an educated person possesses.

➔ Education enhances the productivity of the individual and

➔ Education increases the ability to conceive of new ideas and new frontier of production.

An educated person is better organized to manage resources efficiently. The types and quality of outputs produced in an educated society are more diverse and of higher quality compared to those produced in a traditional society. From this, one can conclude that the chances that a poor person will remain poor are much higher than if he had received some education.

B) The non-monetary gains out of education are rather psychological, namely the immediate satisfaction the person gets while he or she is at school and the satisfaction he or she derives in his/her lifetime and work experience. The life of an educated person is largely led by rational thought, awareness and deliberate choice.

⇨ All these are not measurable in monetary terms and yet an educated person enjoys greater fulfillment in life than a person with less or no education.

? Is it possible to consider the non-monetary gain out of education in calculating financial earnings?

> ☞ *Well, if your answer is no you are right. These educational gains cannot be valued in financial terms; they are not normally considered in calculating financial earnings according to an educated individual*

ii) Social Returns

Society also gains from the education of an individual. These gains are called social returns or externalities. At the household level, education of parents broadens the child's opportunities and cultural background. Children of educated parents begin to appreciate the value and importance of education right at the beginning of their school days. An educated environment is a less hostile place to live in. People have a better understanding of other people and society.

It is usually the school system which creates individuals who devote full-time in search of new knowledge, technology and means of production from which the society at large eventually benefits.

6. 2.1.2 Rates of Return

Rates of return are statistical measures of the relationship between costs and earnings. Rates of return can be either private or social returns. Monetary returns accruing to society out of investment in education arise from higher productivity as reflected in higher earnings of the educated.

We must follow different steps while calculating the rates of return. The first practical step in such calculation is data collection. In principle, the following data are required.

i) data on the earnings of a representative sample of individuals classified by age, educational level, length of schooling, type of course social background, sex, location of employment, etc.
ii) data on current expenditure on educational institutions by level (primary, secondary, or higher education)
iii) estimates of capital value of educational buildings and equipment by level
iv) estimate of private expenditure on education by level
v) average income tax rate and
vi) data on labour market conditions, increasing rates of employment and labour force participation by age, sex and educational level.

These data can be used to consider age earning profiles and to provide estimates of private and social costs of education. If the data are not available, we have a sample survey giving details of the earnings classified by age and level of education. Data on earnings by level of education and age provide average earnings profile. From this profile we can estimate the annual earnings differential associated with education.

The economic aspect of any educational project should never be overlooked because every educational project deals with scarce resources. Therefore, educational management especially educational planning decisions should involve analysis of educational returns for various educational projects.

Accordingly, all cost-benefit calculations involve the discounting of future flows of income since the purpose of the calculation is to compare the present value of expected future benefits (returns) with the cost of investment, which must be incurred in the present.

The technique of measuring future streams of income in terms of its present value is called the "discounted cash flow" technique, and is a common feature of all kinds of investment appraisal. The three main indicators of discounting are Net Present Value (NPV), Internal Rate of Return (IRR), and Benefit-Cost Ratio (BCR)

1. Net present value of an educational project is the value of the discounted future benefit minus discounted costs.
2. The internal rate of return of any investment project is simply the ratio of interest that equates the discounted present value of expected benefits and the present value of costs of the project.
3. a benefit-cost ratio, as the name implies, simply measures the ratio of discounted future benefits to discounted costs, at a particular rate of interest.

The knowledge of methods of measuring educational projects help educational managers in choosing educational investments with better future private and social benefits.

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