UNIT-I

LESSON 2 MANAGERIAL DECISION ANALYSIS

STRUCTURE

2.1 INTRODUCTION

Business Economics, also called Managerial Economics, is the application of economic theory and methodology to business. Business involves decision-making. Decision making means the process of selecting one out of two or more alternative courses of action. The question of choice arises because the basic resources such as capital, land, labour and management are limited and can be employed in alternative uses. The decision-making function thus becomes one of making choice and taking decisions that will provide the most efficient means of attaining a desired end, say, profit maximisation. Managerial Economics applies micro-economic tools to make business decisions. It deals with a firm. The use of Managerial Economics is not limited to profit-making firms and organisations. But it can also be used to help in decision-making process of non-profit organisations (hospitals, educational institutions, etc). It enables optimum utilisation of scarce resources in such organizations as well as helps in achieving the goals in most efficient manner. Managerial Economics is of great help in price analysis, production analysis, capital budgeting, risk analysis and determination of demand. Managerial economics uses both Economic theory as well as Econometrics for rational managerial decision making. Econometrics is defined as use of statistical tools for assessing economic theories by empirically measuring relationship between economic variables. It uses factual data for solution of economic problems. Managerial Economics is associated with the economic theory which constitutes "Theory of Firm". Theory of firm states that the primary aim of the firm is to maximise wealth. Decision making in managerial economics generallyinvolves establishment of firm's objectives, identification of problems involved in achievement of those objectives, development of various alternative solutions, selection of best alternative and finally implementation of the decision.

2.2 OBJECTIVES

The objectives of this lesson are:

- To provide knowledge of economic and managerial theory.
- To explain the concept of managerial decision making.
- To explain principles of managerial decision.

2.3 ECONOMIC THEORYAND MANAGERIAL THEORY

Economic Theory is a system of inter-relationships. Among the social sciences, economics is the most advanced in terms of theoretical orientations. There are well defined theoretical structures in economics. One of the most widely discussed structures is the postulational or axiomatic method of theory formulation. It insists that there is a logical core of theory consisting of postulates and their predictions which forms the basis of economic reasoning and analysis. This logical core of theory cannot easily be detached from the empirical part of the theory. Economics has a logically consistent system of reasoning. The theory of competitive equilibrium is entirely based on axiomatic method. Both in deductive inferences and inductive generalisations, the underlying principle is the interrelationships.

Managerial theory refers to those aspects of economic theory and application which are directly relevant to the practice of management and the decision making process. Managerial theory is pragmatic. It is concerned with those analytical tools which are useful in improving decision making. Managerial theory provides necessary conceptional tools which can be of considerable help to the manager in taking scientific decisions. The managerial theoryprovides the maximum help to a business manager in his decision making and business planning. The managerial theoretical concepts and techniques are basic to the entire gamut of managerial theory.

Economic theory deals with the body of principles. But managerial theory deals with the application of certain principles to solve the problem of a firm. Economic theory has the characteristics of both micro and macro economics. But managerial theory has only micro characteristics. Economic theory deals with a study of individual firm as well as individual consumer. But managerial theory studies only about individual firm. Economic theory deals with a study of distribution theories of rent, wages, interest and profits. But managerial theory deals with a study of only profit theories. Economic theory is based on certain assumptions. But in managerial theory these assumptions disappear due to practical situations. Economic theory is both positive and normative in character but managerial theory is essentially normative in nature. Economic theory studies onlyeconomic aspect of the problem whereas managerial theory studies both economic and non-economic aspects.

2.4 WHY DO MANAGERS NEED TO KNOW ECONOMICS?

Economics contributes a great deal towards the performance of managerial duties and responsibilities. Just as biology contributes to the medical profession and physics to engineering, economics contributes to the managerial profession. All other professional qualifications being the same, managers with a working knowledge of economics can perform their functions more efficiently than those without it. The basic function of the managers of a business firm is to achieve the objective of the firm to the maximum possible extent with the limited resources placed at their disposal. The emphasis here is on the maximisation of the objective and limitedness of resources. Had the resources been unlimited, the problem of recognising on the resources or resource management would have never arisen. But resources at the disposal of a firm, be it finance, men, or material, are by all means limited. Therefore, the basic task of the management is to optimise their use.

As mentioned, economics, though variously defined, is essentially the study of logic, tools and techniques of making optimum use of the available resources to achieve the given ends. Economics thus provide analytical tools and techniques that managers need to achieve the goals of the organisation they manage. Therefore, a working knowledge of economics, not necessarily a formal degree, is essential for managers. In other words, managers are essentially practicing economists.

In performing their functions, managers have to take a number of decisions in conformitywith the goals of the firm. Manybusiness decisions are taken under the conditions of uncertainty and risk. These arise mainlydue to uncertain behaviour of the market forces, changing business environment, emergence of competitors with highlycompetitive products, government policy, international factors impacting the domestic market due to increasing globalisation as well as social and political changes in the country. The complexity of the modern business world adds complexity to business decision making. However, the degree of uncertainity and risk can be greatly reduced if market conditions are predicted with a high degree of reliability. Economics offers models, tolls and techniques to predict the future course of market conditions and business prospects.

The prediction of the future course of business environment alone is not sufficient. What is equally important is to take appropriate business decisions and to formulate a business strategy in conformitywith the goals of the firm. Taking a rational business requires a clear understanding of the technical and environmental conditions related to the business issues for which decisions are taken. Application of economic theories to explain and analyse the technical conditions and the business environment contributes a good deal to rational decision-making. Economic theories have, therefore, gained a wide range of application in the analysis of practical problems of the business. With the growing complexity of business environment, the usefulness of economic theory as a tool of analysis and its contribution to the process of decision making has been widely recognised.

2.5 DECISION MAKING

Managerial economics is supposed to enrich the conceptual and technical skill of a manager. It is concerned with economic behaviour of the firm. It concentrates on the decision process, decision model and decision variables at the firm level. It is the application of economic analysis to evaluate business decisions. The primary function of a manager in business organisation is decision making and forward planning under uncertain business conditions. Some of the important management decisions are production decision, inventory decision, cost decision, marketing decision, financial decision, personnel decision and miscellaneous decisions. One of the hallmarks of a good executive is the ability to take quick decision. He must have the clarity of goals, use all the information he can get, weigh pros and cons and make fast decisions.

The decisions are taken to achieve certain objectives. Objectives are the motivating factors in taking decision. Several acts are performed to attain the objectives quantitative techniques are also used in decision making. But it may be noted that acts and quantitative techniques alone will not produce desirable results. It is important to remember that other variables such as human and behavioural con-siderations, technological forces and environmental factors influence the choices and decisions made by managers.

2.5.1 Contribution of Managerial Economics in Business Decision Making

Mathematical Economics and Econometrics are utilized to construct and estimate decision models useful in determining the optimal behaviour of a firm. The former helps to express economic theoryin the form of equations while the latter applies statistical techniques and real world data to economic problems. Like, regression is applied for forecasting and probability theory is used in risk analysis. In addition to this, economists use various optimization techniques, such as linear programming, in the study of behavior of a firm. They have also found it most efficient to express their models of behavior of firms and consumers in terms of the symbols and logic of calculus. Thus, Managerial Economics deals with the economic principles and concepts, which constitute “Theory of the Firm”. The subject is a synthesis of economic theoryand quantitative techniques to solve managerial decision problems. It is micro-economic in character. Further, it is normative since it makes value judgments, that is, it states what goals a firm should pursue. Fig. below summarises our discussion of the principal ways in which Economics relates to managerial decision-making. Managerial Economics plays an equally important role in the management of non-business organizations such as government agencies, hospitals and educational institutions. Regardless of whether one manages the ABC hospital, Eastman Kodak or College of Fine Arts, logical managerial decisions can be taken by a mind trained in economic logic.

2.6 MANAGERIAL DECISION ANALYSIS

Managerial Economics deals with allocating the scarce resources in a manner that minimizes the cost. As we have already discussed, Managerial Economics is different from microeconomics and macro-economics. Managerial Economics has a more narrow scope - it is actually solving managerial issues using micro-economics. Wherever there are scarce resources, managerial economics ensures that managers make effective and efficient decisions concerning customers, suppliers, competitors as well as within an organization. The fact of scarcity of resources gives rise to three fundamental questions-

a. What to produce?

b. How to produce?

c. For whom to produce?

To answer these questions, a firm makes use of managerial economics principles.

The first question relates to what goods and services should be produced and in what amount/quantities. The managers use demand theory for deciding this. The demand theory examines consumer behaviour with respect to the kind of purchases they would like to make currently and in future; the factors influencing purchase and consumption of a specific good or service; the impact of change in these factors on the demand of that specific good or service; and the goods or services which consumers might not purchase and consume in future. In order to decide the amount of goods and services to be produced, the managers use methods of demand forecasting.

The second question relates to how to produce goods and services. The firm has now to choose among different alternative techniques of production. It has to make decision regarding purchase of raw materials, capital equipments, manpower, etc. The managers can use various managerial economics tools such as production and cost analysis (for hiring and acquiring of inputs), project appraisal methods (for long term investment decisions), etc for making these crucial decisions.

The third question is regarding who should consume and claim the goods and services produced bythe firm. The firm, for instance, must decide which is it's niche market-domestic or foreign? It must segment the market. It must conduct a thorough analysis of market structure and thus take price and output decisions depending upon the type of market.

Managerial economics helps in decision-making as it involves logical thinking. Moreover, bystudying simple models, managers can deal with more complex and practical situations. Also, a general approach is implemented. Managerial Economics take a wider picture of firm, i.e., it deals with questions such as what is a firm, what are the firm's objectives, and what forces push the firm towards profit and away from profit. In short, managerial economics emphasises upon the firm, the decisions relating to individual firms and the environment in which the firm operates. It deals with key issues such as what conditions favour entryand exit of firms in market, why are people paid well in some jobs and not so well in other jobs, etc. Managerial Economics is a great rational and analytical tool.

Managerial Economics is not only applicable to profit-making business organizations, but also to non- profit organisations such as hospitals, schools, government agencies, etc.

2.6.1 Principles in Managerial Economics

Economic principles assist in rational reasoning and defined thinking. Theydevelop logical abilityand strength of amanager. Some important principles of managerial economics are:

1. **Marginal and Incremental Principle:** This principle states that a decision is said to be rational and sound if given the firm's objective of profit maximisation, it leads to increase in profit, which is in either of two scenarios-

- If total revenue increases more than total cost.

other. Marginal generallyrefers to small changes. Marginal revenue is change in total revenue per unit change in output sold. Marginal cost refers to change in total costs per unit change in output produced (While incremental cost refers to change in total costs due to change in total output). The decision of a firm to change the price would depend upon the resulting impact/change in marginal revenue and marginal cost. If the marginal revenue is greater than the marginal cost, then the firm should bring about the change in price.

Incremental analysis differs from marginal analysis onlyin that it analysis the change in the firm's performance for a given managerial decision, whereas marginal analysis often is generated by a change in outputs or inputs. Incremental analysis is generalisation of marginal concept. It refers to changes in cost and revenue due to a policy change. For example - adding a new business, buying new inputs, processing products, etc. Change in output due to change in process, product or investment is considered as incremental change. Incremental principle states that a decision is profitable if revenue increases more than costs; if costs reduce more than revenues; if increase in some revenues is more than decrease in others; and if decrease in some costs is greater than increase in others.

2. **Equi-marginal Principle:** Marginal Utility is the utility derived from the additional unit of a commodity consumed. The laws of equi-marginal utility states that a consumer will reach the stage of equilibrium when the marginal utilities of various commodities he consumes are equal.According to the modern economists, this law has been formulated in form of law of proportional marginal utility. It states that the consumer will spend his money-income on different goods in such a way that the marginal utility of each good is proportional to its price, i.e.,

$$MUx / Px = MUy / Py = MUz / Pz$$

Where, MU represents marginal utility and P is the price of good.

Similarly, a producer who wants to maximize profit (or reach equilibrium) will use the technique of production which satisfies the following condition:

$$MRP1 / MC1 = MRP2 / MC2 = MRP3 / MC3$$

Where, MRP is marginal revenue product of inputs and MC represents marginal cost.

Thus, a manger can make rational decision by allocating/hiring resources in a manner which equalizes the ratio of marginal returns and marginal costs of various use of resources in a specific use.

3. **Opportunity Cost Principle:** By opportunity cost of a decision is meant the sacrifice of alternatives required by that decision. If there are no sacrifices, there is no cost. According to Opportunity cost principle, a firm can hire a factor of production if and only if that factor earns a reward in that occupation/job equal or greater than it's opportunity cost. Opportunity cost is the minimum price that would be necessary to retain a factor-service in it's given use. It is also defined as the cost of sacrificed alternatives. For instance, a person chooses to forgo his present lucrative job which offers him Rs.50000 per month, and organizes his own business. The opportunity lost (earning Rs. 50,000) will be the opportunity cost of running his own business.

4. **Time Perspective Principle:** According to this principle, a manger/decision maker should give due emphasis, both to short-term and long-term impact of his decisions, giving apt significance to the different time periods before reaching any decision. Short-run refers to a time period in which some factors are fixed while others are variable. The production can be increased by increasing the quantity of variable factors. While long-run is a time period in which all factors of production can become variable. Entry and exit of seller firms can take place easily. From consumers point of view, short-run refers to a period in which they respond to the changes in price, given the taste and preferences of the consumers, while long-run is a time period in which the consumers have enough time to respond to price changes by varying their tastes and preferences.

5. **Discounting Principle:** According to this principle, if a decision affects costs and revenues in long-run, all those costs and revenues must be discounted to present values before valid comparison of alternatives is possible. This is essential because a rupee worth of money at a future date is not worth a rupee today. Money actually has time value. Discounting can be defined as a process used to transform future dollars into an equivalent number of present dollars. For instance, $1 invested today at 10% interest is equivalent to $1.10 next year.

$$\mathbf{FV = PV*(1+r)^t}$$

Where, FV is the future value (time at some future time), PV is the present value (value at t0, r is the discount (interest) rate, and t is the time between the future value and present value.

2.6.2 Application of Economics to Business decisions- Example

We have discussed above how economics can contribute to business decision making. Business decision making is essentially a process of selecting the best out of alternative opportunities open to the firm. The process of decision making comprises four main phases:

a) Determining and defining the objective to be achieves;

b) Collections and analysis of business related data and other information regarding economic, social, political and technological environment and foreseeing the necessity and occasion for decision making;

c) Inventing, developing and analysing possible courses of action; and

d) Selecting a particular course of action, from the available alternatives.

This process of decision making is, however, not as simple as it appears to be. Step (ii) and (iii) are crucial inbusiness decision making. These stepsput managers' analytical ability to test and determine the appropriateness and validity of decisions in the modern business world. Modern business conditions are changing so fast and becoming so competitive and complex that personal sense, intuition and experience alone may not prove sufficient to make appropriate business decisions.

2.6.3 Other Economic Principles Relevant to Managerial Decisions

Some other key economic principles that are relevant to managerial decisions are:

1) Division of Labour

I put the division of labour first mainly because Adam Smith did argue that division of labour is the key cause of improving standards of living. Modern economics doesn't do much with the concept of division of labour, but two closely related concepts are important:

Returns to Scale: Returns to scale may be increasing, constant or decreasing. Increasing returns to scale is the case that leads to special results, and division of labor is one cause (arguably the main cause) of increasing returns to scale.

Virtuous Circles in Economic Growth: For Smith, a major consequence of division of labour and resulting increasing productivity was a "virtuous circle" of continuing growth. Modern "virtuous circle" theories have more dimensions, but division of labour and increasing returns to scale are among them.

2) Market Equilibrium

The market equilibrium model could be broken down into several principles-the definitions of supply, demand, quantity supplied and demanded and equilibrium, at least-but these all complement one another so strongly that there is not much profit in taking them separately.

However, there are many applications and at least four important subsidiary principles:

Elasticity and Revenue: These ideas are a key to understanding how market changes transform society.

The Entry Principle: This tells us that, when entry into a field of activity is free, profits (beyond opportunity costs) will be eliminated by increasing competition. This has a somewhat different significance depending on whether competition is "perfect" or monopolistic.

Cobweb Adjustment: This might give the explanations when the market does not move smoothly to equilibrium, but overshoots.

Competition vs. Monopoly: Why economists tend to think highly of competition, and lowly of monopoly.

3) Diminishing Returns

Perhaps the best-known of major economic principles, the Principle of Diminishing Returns is much more reliable in short-run than in long-run applications, so the Long Run/ Short Run dichotomy is an important subsidiary principle. Modern economists think of diminishing returns mainly in marginal terms, so marginal analysis and the equi-marginal principle are closely associated.

4) Game Equilibrium

Game theory allows strategy to be part of the story. One result is that we have to allow for several kinds of equilibriums.

Non-cooperative equilibrium

(a) Prisoners' Dilemma (dominant strategy) equilibrium

(b) Nash (best response) equilibrium, (but not all Nash equilibrium are dominant strategy equilibrium),

Cooperative equilibrium

Oligopoly

5) Measurement Principles

Economics is multidimensional, and that creates some difficulties in measuring things like production, incomes, and price levels. Some of the problems can be solved more or less fully.

Value Added and Double Counting*:* One for which we have a pretty complete solution is the problem of double counting: the solution is, use value added.

"Real" Values and Index Numbers*:* Since we measure production and related quantities in dollar terms, we have to correct for inflation. Index numbers are a pretty good workable solution, but there are some problems and criticisms.

Measurement of Inequality*:* Another issue is that the "average income" may not mean very much, because nobody is average and income is unequally distributed. Even if we cannot correct for that we can get a rough measure of the relative inequality and see where it is going.

6) Medium of Exchange

Money is whatever is generally acceptable as a medium of exchange. That means a bank, or similar institution, can literally create money, so long as people trust the bank enough to accept its paper as a medium of exchange. We might call this magical fact the Fiduciary Principle.

7) Income-Expenditure Equilibrium

Like the market equilibrium principle, but even more so, this model pulls together a number of subsidiary principles that complement one another and together constitute the "Keynesian" theory of aggregate demand. The implications of this theory are less controversial than the word "Keynesian" is -controversy has to do more with the details than the applications.

Among the subsidiary principles are

1. Coordination Failure
2. The income-consumption relationship
3. The Multiplier
4. Unplanned inventory investment
5. Fiscal Policy
6. The Marginal Efficiency of Investment
7. The influence of money on interest
8. Real Money Balances
9. Monetary Policy

8) Surprise Principle

People respond differently to the same stimuli if the stimuli come as a surprise than they would if the stimuli do not come as a surprise. This new economic principle plays the key role with respect to aggregate supply that "Income-Expenditure Equilibrium" plays with respect to aggregate demand.

Rational Expectations*:* People don't want too many unpleasant surprises. If they use the information available to them efficiently, then they won't be surprised in the same way very often. This can lead to:

(a) Policy ineffectiveness

(b) Permanence

(c) Path Dependence