A study of

Managerial Economics

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Preface

It is not an exaggeration to say that Managerial Economics is of immense importance in some honours, post-graduate and professional courses. It also offers great assistance to executive in the performance of such managerial functions as the planning of marketing strategies, the working out of demand forecasts, the tackling of inventory problems and in making project appraisals, etc.

While books on Managerial Economics brought out by foreign authors offer a good theoretical framework, their applicability or practicability in the Indian context is nil. It is true that some Indian authors take great pains in introducing the practical problems which pertain to the Indian context. But the various aspects covered by them are apparently not dealt with in an exhaustive way because students are often obliged to refer to more than one book. In the present work, pains have been taken to cover the course in a comprehensive manner, so that the book may be immense value to honours students and to those who go in for M.B.A. and D.B.M., Company Secretaries courses.

Moreover, it includes some practical illustrations and some original research carried out by the author. To this extent, it may serve as a reference book for practising executives.

In this task, my wife, D. Kamala, has been of immense help to me. She stimulated me with her ideas, patiently listened to me when I read over the manuscript to her, and offered valuable suggestions.

I am also indebted to my son, D.N. Rao, for patiently going through the manuscript again and again and make the necessary corrections, to draw the various diagrams, etc.

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Baroda
March, 1981 **D. Gopalakrishna**

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Introduction

Managerial Economics generally refers to the integration of economic theory with business practice. While economics provides the tools which explain the various concepts such as demand, supply, price, competition, etc.—managerial economics applies these tools to the management of business. In this sense, managerial economics is also understood to refer to business economics or applied economics. However, as the science of economics advanced and offered definitions in a more refined way, it touched upon the concepts and problems of managerial economics as well. For instance, Wicksteed thinks that economics is the "study of those principles of which the resources of a community should be so regulated and administered as to secure the communal ends without waste." The same line of thinking is evident in Stigler. "Economics," he says, "is the study of principles governing the allocation of scarce means among competing ends when the objective of allocation is to maximise the attainment of ends."[1] It is obvious from these definitions that some element of business or managerial thinking has influenced the economists. In any case, interest in business problems came to the surface some three decades ago. In this connection, Ansoff says : "Since the early 1950s, confronted with the growing variability and unpredictability of the business environment, business managers have become increasingly concerned with finding rational and foresightful ways of adjusting to an exploiting environmental change."[2] We may, therefore, say that the problems of the business world attracted the attention of academicians from 1950 onwards, and gave rise to a separate treatment of business problems. As a result, managerial economics came into being.

1. Stigler, G. J., *The Theory of Price*, 1947, p. 12.
2. Ansoff, H. I., *Business Strategy*, p. 11.

What exactly is meant by managerial economics? In its simpler terms, it means the application of economic theory to the problems of management. Spencer and Siegelman defined managerial economics as "the integration of economic theory with business practice for the purpose of facilitating decision-making and forward planning by management."[3]

It is obvious from this that the problems of management are of two kinds. Firstly, it is a problem of decision-making and, secondly, it is a problem of forward planning. Managerial economics, therefore, is economic theory applied to the problems of management to arrive at reasonably sound decisions on the strategies to be pursued in the present and in the future. The decision-making process is a difficult task. Sometimes, it is the manager alone who takes the decisions ; at other times, a group of persons in a firm do so. However, decision-making is always a complex problem. We shall now try to understand this problem.

Decision-making has two aspects. The first one concerns with optimal allocation. We shall discuss this first. We know that resources are scarce. If they are available freely and in abundance, there will be no problem at all. We also know that these scarce resources can be put to alternate uses. Let us suppose that a manager is confronted with the problem of media-planning. What is meant by this media-planning? There are many firms today which advertise their products or services. An advertisement can be released either to a newspaper or to the radio, cinema, or to some other medium. The manager will have a fixed amount of money at his disposal for purposes of advertisement. Therefore, he has to adjust his advertisement campaign within the limits of his budget. Now, the problem is whether he should release the advertisement to a newspaper or whether he should use some other medium. Suppose he decides to release an advertisement to a newspaper. The advertisement then will be limited only to newspaper readership. In other words, illiterates will not be able to read the advertisement. This means that the manager has ignored the illiterates. On the other hand, if he decides to get his message across on the radio, the question that arises is : How many persons will be exposed to the advertisement?

This question may be posed in another way. How many persons will be reached by this advertisement? The manager, therefore, will have to consider the following two factors while planning for media.

3. Malcolm P. McNair and Richard S. Meriam, *Problems in Business Economics*, p. 1.

(*i*) Limited finance.

(*ii*) The different media through which the advertisement can be released.

(*iii*) The maximum number of persons who can be reached by the advertisement.

Now let us consider the second aspect that is uncertainty. This generally arises when planning the future production. In this case, he will have to consider the conditions that might prevail in the market in the future, say, in five years from now onwards. In other words, the problem now is the problem of a reasonably accurate forecast of sales. But no one can say with any degree of certainty that the forecast will hold good in the future, for no one can be certain about the future course of events. As the course of events cannot be predicted, we say that the course of events in the future is uncertain. This is what is meant by uncertainty. Every businessman will have to take this fact of uncertainty into account ; and it is this uncertainty which makes the decision-making function or process very difficult. Let us take an example, say, of the footwear industry. A pair of *chappals* or shoes with a certain design which comes into the market today may be outdated after a short time because fashions may change very rapidly. Or let us take the example of the dress-making industry. As fashions change very often, the manager of a dress-making industry will have to keep abreast of the changing fashions.

Some time ago, narrow pants or the drain pipes were very fashionable in the student community. Later, drain pipes were relegated to the background and bell bottoms became the fashion. Even here, the "bell" was preferred in varying dimensions—between 22 inches and 36 inches. Ladies in metropolitan cities like Bombay, Calcutta, Delhi and Madras, as well as in Class I cities with a population of one lakh to ten lakhs, also went in for bell bottoms. In these circumstances, how can a manager take a decision about the future designs of the garments or of footwear when fashions change rapidly ? This is the problem of uncertainty about the future.

But why, one may ask, should a businessman plan for the future ? This reminds one of a Chinese proverb, which says that a person who cannot see beyond the day, will have good wine to drink in the morning and green wine for hangover in the evening, and rainwater to drink for the rest of his day. If a businessman does not think about the future, he will meet with the same fate. That is the reason why the element of uncertainty has a vital role to play in decision-making.

The problem of forecast, then, is the problem of forward planning. When a manager plans for the future, he has to make an accurate forecast of the position of raw materials, the prices of the factors of production, the market prices of his products, the demand for them, etc.

Economic theories throw some light on these problems and point in the direction of the right kind of action to be taken. Economics has developed some tools to analyse market conditions, demand, supply, etc. These tools are of great help to the managerial economist in his decision-making process. This decision-making may relate to the volume of production in the future ; that is how much should be produced, say, next year ; and this involves a study of demand, the elasticity of demand, the extent of the market, the competing substitutes that are available, etc.

Another area is inventory decision. Inventory means the stock of goods. Now quantities of raw materials have to be kept in stock to ensure that production is not held up because of their non-availability at any particular time. The production department may like to keep large stocks of raw materials. On the other hand, the finance department may like to reduce the stock of raw materials. The manager, therefore, has to take a decision. What is the quantity of raw materials which should be kept in stock ? Consider, for example, the case of a firm which wants to manufacture a new product, and which has some idle capacity. The manager has to take a decision in the light of some facts and figures. The accountant tells him that the raw materials required per unit would cost, say, Rs. 5. The labour required would cost him, say, Rs. 3 ; the fixed costs would be Rs. 2. Now the total cost of production per unit would, therefore, be Rs. 10. Suppose, now, the product sells in the market at Rs. 9. It would appear, then, that the manufacture of the new product is not economically worthwhile. But this is not so, because the marginal cost is only Rs. 8 (only the cost of raw materials and labour per unit are to be taken into account and not the fixed costs because they would be incurred even when production does not take place). Therefore, if the marginal cost of production is Rs. 8 and the market price is Rs. 9, it is profitable to go ahead with the manufacture of the new product. It is here that economics becomes very useful to the manager, in the sense that an understanding of what the marginal cost is helps him to arrive at the right decision. Therefore, we conclude that the concepts of economics are extensively used in managerial economics ; that is, both micro economics and macro economics are pressed into service.

Micro economics is useful because it deals with the allocation of resources, etc. Macro economics is useful in the sense that the theories of income, employment, business cycles, etc., are of immense significance to the management. But it is micro economics which is particularly useful to the manager.

Applied Economics : We shall now examine why managerial economics is considered to be applied economics. Economics has developed several concepts, and managerial economics makes use of some of them. For example, the production function, which has been developed in economics, is usually put to managerial use. The use of the production function would help in achieving the maximum output with a particular combination of inputs. When the prices of inputs increase, a least-cost combination can be worked out. In this way, the production function can be put to managerial use. Again, the concept of opportunity cost has been contributed by economics to managerial economics, for it can be put to managerial use. The concept of prices, too, is similarly used. Economics tells us how prices are fixed. For this purpose, the total cost of production is taken into account. Now managerial economics makes use of it in the pricing of products. In this sense, managerial economics is called applied economics.

Statistics : Managerial economics makes use of other disciplines as well. Statistics, for example, supplies several tools to managerial economics. Suppose forecasting has to be done. For this purpose, trend projections are used. Similarly, the multiple regression technique is used. In managerial economics, measures of the central tendency like the mean, the median and the mode, and measures of dispersion, correlation, regression, least-square estimators, etc., are widely used.

Mathematics : Mathematics, too, plays a significant role in managerial economics, especially when several economic relationships are to be estimated. Then, a knowledge of linear and quadratic equations, simultaneous equations, logarithms, co-ordinate geometry, calculus, etc., is absolutely essential.

Operations Research : Operations research and managerial economics are related to a certain extent. For example, to arrive at decisions, game theory is used. Operations research has developed the techniques of inventory control, and these techniques are used in managerial economics.

Accounting : Accounting also contributes a lot to managerial economics. Take for example, the profit-and-loss statement of a firm, which helps the manager to identify the specific areas of loss and to arrive at suitable decisions. The whole range of accounts, in fact, offers the manager data for decision-making and forward planning.

Scope of Managerial Economics : The scope of managerial economics is so wide that it embraces almost all the problems and areas of the manager and the firm. It deals with demand analysis and forecasting, production function, cost analysis, inventory management, advertising, price system, resources allocation, capital budgeting, etc. While an in-depth treatment is given to these aspects in the relevant chapters, a cursory treatment of these aspects has been attempted here, merely to explain the scope of the subject.

Demand Analysis and Forecasting : It analyses carefully and systematically the various types of demand which enable the manager to arrive at a reasonable estimate of demand for the products of his company. He takes into account such concepts as income elasticity and cross elasticity. When demand is estimated, the manager does not stop at the stage of assessing the current demand but estimates future demand as well. This is what is meant by demand forecasting.

Production Function : We know that resources sometimes are scarce and also have alternate uses. Inputs play a vital role in the economics of production. The factors of production, otherwise called inputs, may be combined in a particular way to yield the maximum output. Alternatively, when the prices of inputs shoot up, a firm is forced to work out a combination of inputs so as to ensure that this combination becomes the least-cost combination. In this way, the production function is pressed into service by managerial economics.

Cost Analysis : Cost analysis is yet another function of managerial economics. For instance, the determinants of costs, the methods or estimating costs, the relationship between cost and output, the forecast of cost and profit—these are very vital to a firm. Managerial economics touches these aspects of cost-analysis, an effective knowledge and application of which is cornerstone for the success of a firm.

Inventory Management : As has been explained already, an inventory refers to a stock of raw materials which a firm keeps. Now the problem is how much of the inventory is the ideal stock. If it is high, capital is unproductively tied up, which might, if the stock of inventory is reduced, be used for other productive purposes. On the other hand, if the level of the inventory is low, production will be hampered. Therefore, managerial economics will use such methods as ABC analysis, a simple simulation exercise and also a mathematical model with a view to minimising the inventory cost. It also goes deeper into such aspects as the need for inventory control ; it classifies inventories and discusses the costs of carrying them.

Advertising : It may sound strange when we say that advertising is an area which managerial economics embraces. While the copy, illustration, etc., of an advertisement are the responsibility of those who get it ready for the press, the problems of cost, the methods of determining the total advertisement costs and budget, the measuring of the economic effects of advertising—these are the problems of the manager. To produce a commodity is one thing ; to market it is another. Yet the message about the product should reach the consumer before he thinks of buying it. Therefore, advertising forms an integral part of decision-making and forward planning.

Price System : It has already been pointed out that the pricing system as a concept was developed by economics and is widely used in managerial economics. The central functions of an enterprise are not only production but pricing as well. While the cost of production has to be taken into account when pricing a commodity, a complete knowledge of the price system is quite essential to the determination of the price. For instance, an understanding of how a product has to be priced under different kinds of competition for different markets is essential to the pricing of those commodities. An understanding of the pricing of a product under conditions of oligopoly is also essential. Pricing is actually guided by considerations of cost plus pricing and the policies of public enterprises. Finally, there is such a thing as price leadership and non-price competition. It is evident from these facts that the price system touches upon several aspects of managerial economics and aids or guides the manager to take valid and profitable decisions.

Resources Allocation : This point, too, was touched upon earlier. Scarce resources obviously have alternate uses. How best can these scarce resources be allocated to competing needs ? The aim, of course, is to achieve optimisation. For this purpose, some advanced tools, such as linear programming, etc., are used to arrive at the best course of action for a specified end. Generally speaking, two kinds of problems are of the utmost importance and concern to the manager. First, how should he arrive at an optimum combination of inputs in order to get the maximum output ? Secondly, when the prices of inputs increase, what type of substitution should he resort to ? Or, alternatively, what type of combination of inputs should he work out in order to ensure the least-cost combination ?

Capital Budgeting : This is another area which calls for a thorough understanding on the part of the manager if he is to arrive at meaningful decisions. Capital is scarce, and it costs something. Now the problem is how to arrive at the cost of capital ; how to ensure that capital becomes rational ; how to face up to budgeting problems ; how to arrive at investment decisions under conditions of uncertainty ; how to effect a cost-benefit analysis, etc. These areas cannot be ignored by any manager.

It is obvious from the foregoing discussion that managerial economics is applied economics. It makes use of the tools which have been developed not only by economics but by other disciplines as well. The subject matter of managerial economics covers two important areas, namely, decision-making and forward planning. These two areas are essential to every stage of planning, production, marketing, etc. Managerial economics, therefore, plays a very vital role in the successful business operations of a firm.

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Objectives of the Firm

Economic theory underscores the fact that each firm in the industry operates under competitive conditions. Under competitive conditions, each firm tries to operate more efficiently than the other to withstand competition and to drive the weak and inefficient firms to the wall. The indicator of efficiency is profits. The tacit assumption here is that each firm has one man as the owner and entrepreneur, and that his whole and sole aim is to maximise the profits. As time passed by, the one-man firms were increasingly challenged and replaced by partnership organisations and giant corporations. As a result, the functions of one owner and manager could not be easily discharged because, in the modern world, owners or shareholders are different from managers. In other words, shareholders do not look after the day-to-day business affairs of their firm. It is the manager who looks after them. This process of change from one-man firms to corporations raises some very pertinent questions. If the functions of shareholders and the managers are different, what are those functions ? Who performs what ? Samuelson refers to this process and the emergence of giant firms as the *managerial revolution*. He asks : "Who makes corporate decisions ? Primarily, the increasingly important class of professional managers. In company after company, the original founder has been replaced by a new type of executive, usually having a different surname. He is necessarily more the bureaucrat (who is) often interested as much in preserving the status quo as in taking risks. Generally speaking, there will be no clash of goals between the management and the stockholders."[1] It is obvious, then, that with the emergence of modern firms, the responsibilities of the shareholders and the managers have been bifurcated. Secondly, these

1. Paul A. Samuelson, *Economics*, 1970, p. 91.