

Efficiency and Capacity Utilization:

Meaning of the Efficiency Concept:

The main objective of our study is the economic behavior of the firm and industries; we will therefore examine the term efficiency from their point of view and call it industrial efficiency. Industrial efficiency has many dimensions; they are:

:Productive efficiency

:Business or Economic efficiency.

Let us define these concepts further

before taking up the others. Productive efficiency has been defined by Farrell in terms of two main components. Technical efficiency and factor price efficiency. The former is a purely technical term. It may have any one of the following meanings:

a) We can say that a machine or appliance or organization is technically efficient if it is adequate to the demands made on it, or it lives up to the claims made for it. For example, reliability and quickness of a postal system in its deliveries.

The technical efficiency maybe assessed on the basis of some quantities standard of performance such as the degree to which a domestic heating appliance converts the potential heat contained in a unit of fuel into units of actual heat .Technical efficiency may mean doing a job in the cheapest possible way, that is, production of a given level of output from the lowest possible combination of inputs. As far as the second and third concepts of the technical efficiency are concerned, we may say that they are linked together, since avoidance of loss or wastage is one way to maximizing output from the given set of inputs; but there may be conflict between the first and the third one, e.g., proof plating of garden gates but according to the third it is not. In practice, however, we may keep the satisfying attributes of a product at a fixed level and then define the technical efficiency as the degree of economy in input utilization used to produce a given level of output of the product. The second element of the productive efficiency, i.e. factor price efficiency, measures the skill in achieving the best combination of the inputs by taking into account the irrelative prices. This is very important when one input can be substituted for another in the process of production. The desirability of the productive efficiency cannot be questioned. However, it maybe difficult to achieve it since the planning and for thoughts of managers responsible for production may not be perfect, the coordination of the complex operations maybe difficult and inadequate, and the knowledge of the best in the current practices as well As of the factor prices, etc., may not be precise. All these are essential requirements for achievement of the productive efficiency.

The propositions on which the concept of economic efficiency depends are; resources at the disposal of the firm are scarce they can be put on alternative uses Men, machines, materials, money and the time are the scarce resources from which, one can produce, say, product or product or product . If one product say is preferred,than the alternative foregone is the cost of product of in terms of the familiar concept of opportunity cost. Given the scarcity of resources, and their alternative uses, it is quite

natural for a rational firm to get the best from them. Based on this fact, we may define the concept of economic efficiency as follows:

An economic system is economically efficient if it is technically efficient and if it succeeds in rationing out its scarce resources, and the scarce products of these resources, in the most desirable way. The meaning of the economic efficiency varies according to whose view point we are considering and what is the goal chosen for maximization. Further, as mentioned above, technical efficiency is a pre-requisite for economic efficiency. This is because technological aspects, being exogenous variables in the economic system, govern the choice making process. For the entire economic system of a community, economic efficiency means efficient selection of goods to be produced, efficient allocation of resources in the production of these goods and efficient choice of the methods of production, and efficient allotment of the goods produced among the consumers

Measurement of the Efficiency Levels:

Measurement means quantification which is essential in industrial economics in order to make it empirically relevant. There is no unique method of measurement for the industrial efficiency or its components. For example, one can measure the technical efficiency through some physical indicators such as capital-output ratio, capital-labor ratio or actual cost \pm standard cost ratio, etc. The overall efficiency of the firm, whether we take the productive efficiency or economic efficiency, may be difficult to measure precisely. Three methods are generally use for this purpose. Use of some type of optimization model such as the linear programming, Use of the ratios like total productivity or profitability ratios and so on Use of econometric methods The use of econometric methods for measuring industrial efficiency is most elegant and scientific in nature. Based on economic reasoning models are specified to measure technical and business efficiency of the firms and the industries separately. Quantitative estimation of the parameters and other properties of the models provide fairly reliable estimates of the efficiencies both for the firms and industries. The exercise of measuring such efficiencies with the help of the econometric methods is not of course and easy task. It requires skills and strong data base. The estimation of technical efficiency is normally done by using the production function, the conceptual framework for which has been provided by MJ Farrell. A more realistic approach to estimate technical inefficiency is to uses to chastic production function. This helps to distinguish symmetric and a symmetric disturbances bearing upon a production plan. In other words, it is assumed that production possibilities vary randomly from firm to firm in response to exogenous factors unrelated to technical inefficiency and so that they operate on or beneath their stochastic production possibility frontiers. The approach of using stochastic

production frontiers has been suggested by a number of economies such as Aigner et al., Schmidt and Lovell, Stevenson and Greene. Business or Economic efficiency is another important aspect of industrial efficiency. Its measurement by using econometric techniques is as complex as that of the technical efficiency.

Productivity Concept:

Productivity in general, is defined as a ratio of what comes out of a business to what goes into business. I.e. it is the ratio of μ outcome to the μ efforts of the business. Thus the productivity be the value of goods divided by the value of inputs. It will be a measure of total factor productivity of the firm. If we take a specific input in the denominator to compute productivity, we will then get a different type of productivity ratio. Say total output in physical or value terms divided by the value or physical units of capital would be giving us capital productivity and similarly, if labor is used in the denominator then it would be called labor productivity. Thus the ratios do not reflect the contribution of one alone but something more than that. They are use ratios for the total factor productivity or industrial efficiency of the firm.

Measurement of Productivity:

Let us try to understand how to measure the labor productivity for time being. There is no unique index to measure labor productivity. It depends on how to measure the volume of output and labor input itself. For labor the most unambiguous measurement is man hours of work. Alternatively one may use the total number of workers as a measure of labor input. Some one may also prefer total expenditure on labor input to measure it. Among all these three alternative measures of labor the first one i.e., man-hours is widely used in practice at factory as well as industry level. To measure the output, there are some alternative ways, such as :

- A) Physical unit stones, meters etc.,
- B) in terms of value at current or constant prices of the products
- C) a standard unit just as Coal equivalent for energy industries. One has to be very careful output for the purpose of computing labor productivity. It maybe gross turnover or gross output or net output. For productivity, we should emphasize on μ what comes out of labor when it is employed rather than on value added or net output.

Once we measure the output and the labor input, we can then compute the lab or productivity by taking the ratio i.e., output divided by labor or its inverse as one prefers to define productivity. Empirical studies which are relevant in the context of industrial economics. The most important and comprehensive treatment of the subject has been presented in the book of Dunlop and Diatchenko. It contains their valuable contributions by different economists dealing with the concepts and measurement of productivity, international comparison of productivity, wages and productivity links, and technical,

managerial and organizational factors affecting productivity. In the Indian context the National Productivity Council often produces empirical material on labor productivity.

Capacity Utilization Concept:

Capacity utilization means out of total installed capacity how much percent is utilized by a firm. If a firm failed in utilizing its capacity up to maximum level results in excess capacity. For any manufacturing firm, excess capacity is defined as a state, when the output level below the installed capacity of production. For the entire manufacturing industry, excess capacity is a state, when the aggregate demand falls below the level needed for full utilization of available resources installed. Accordingly, the excess capacity is defined as the difference between potential output and prevailing output. In a competitive situation, the measure of excess capacity using profit approach can be defined as the firm performs below the normal capacity i.e., their economic profits fall below the normal reported earnings. Hence, in this case, negative profits and excess capacity imply each other.

In a monopolistic situation, the relationship between excess capacity and negative economic profit does not hold good, as the firm may increase their profits despite their inefficiencies, because of their market power. Thus for a monopolistic or non-competitive firm, negative profits imply excess capacity, while the converse is not always true. In such a situation, the relation between excess capacity and the profitability depends on the distribution of monopoly power among the firms in the industry and its monopoly stability over time.

Measurement of Capacity Utilization:

Though exact data on the extent of under-utilization of capacity are not available, yet whatever data are known reveal that the situation in this respect is quite serious. For instance, even in the best year of the public enterprises a number of public sector units had substantial unutilized capacity. Capacity utilization in Rourkee steel plant and Indian Iron & Steel Co. Ltd., was only 64 per cent and 62 per cent respectively can be considered as an example for under utilization of capacity. Further, during 1995-96 nearly 22 per cent public sector enterprises operated in the capacity utilization range of 50 to 75 per cent and about 22 per cent functional below 50 percent utilization of rated capacity.

Industrialization and Economic Development:

Industrialization plays a vital role in the economic development of underdeveloped countries. As the historical record shows, the developed countries of the world broke the vicious cycle of poverty by industrializing, rather than focusing on agricultural or the production of national resources.

Currently, Pakistan, as a developing country, wants to achieve a higher standard of living for its people. For this reason, it is pursuing policies that support privatization and deregulation of the economy.

Industry plays a complex role in economic development, but these are some of its most important effects.

1. Increase in National Income

Industrialization allows countries to make optimal use of their scarce resources. It increases the quantity and quality of goods manufactured in that country, which makes a larger contribution to gross national product (GNP).

2. Higher Standard of Living

In an industrialized society, workers' labor is worth more. In addition, because of higher productivity, individual income increases. This rise in income raises the standard of living for ordinary people.

3. Economic Stability

A nation that depends on the production and export of raw material alone cannot achieve a rapid rate of economic growth. The restricted and fluctuating demand for agricultural products and raw materials—along with the uncertainties of nature itself—hampers economic progress and leads to an unstable economy. Industrialization is the best way of providing economic stability.

4. Improvement in Balance of Payments

Industrialization changes the pattern of foreign trade in the country. It increases the export of manufactured goods, which are more profitable in foreign exchange. But at the same time, processing the raw material at home curtails the import of goods, thereby helping to conserve foreign exchange. The export-orientation and import-substitution effects of industrialization help to improve the balance of payments. In Pakistan in

particular, the exports of semi-manufactured and manufactured goods resulted in favorable trends.

5. Stimulated Progress in Other Sectors

Industrialization stimulates progress in other sectors of the economy. A development in one industry leads to the development and expansion of related industries. For instance, the construction of a transistor radio plant will develop the small-battery industry. (This is an example of backward linkage.) In another case, the construction of milk processing plants adds to the production of ice cream as well. (This is forward linkage.)

6. Increased Employment Opportunities

Industrialization provides increased employment opportunities in small- and large-scale industries. In an industrial economy, industry absorbs underemployed and unemployed workers from the agricultural sector, thereby increasing the income of the community.

7. Greater Specialization of Labor

Industrialization promotes specialized labor. This division of work increases the marginal value product of labor. In other words, specialized labor is more profitable. The income of a worker in the industrial sector will be higher on average than that of a worker in the agricultural sector.