

MEASURING PRODUCTIVITY AND ITS RELATION TO PROFITABILITY IN THE IRANIAN INDUSTRY

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Abstract-Measuring a productivity scale as a head stocking system provides a condition where the decision-makers realize where they are and what are their positions there. They develop reliable data to improve the process of utilization of available possibilities and assets and contribute to improve the production growth of goods and services at different levels [2]. this study is in the form of examining and measuring of productivity with its relation to profitability in an industrial production of food substances and drugs packing company in Iran such that the outcrops of this study may produce especially practical uses in the industrial sector.

Keywords- added value, profitability, productivity, industrial sector manpower.

Introduction

Increasing the level of productivity is one of the basic ways to gain access to a further production and bring welfare to all individuals in the society. According to an inextricable definition, productivity serves to convert the inputs to outputs where the outputs take the shapes of goods produced by manufacturers such as those of vehicles and refrigerators; inputs include manpower, energy, material, assets, data and purchasable items.

Recognition of factors affecting the increase of productivity and mountain growing it are the objectives and responsibilities of managers.

In fact, providing a good condition to heighten a performance level tops the tasks of productivity management. At the same time, it contributes to the establishment of a proper relationship between productivity and other strategic objectives of an organization. Measuring both the available level and higher one productivity cause the lifecycle of a firm to prolong [4].

The objectives if these studies are:

- Reviewing productivity measurement methods
- Systematically assessing a firm's profitability and productivity and determining the strengths and weaknesses of an organization
- Checking the changes in the profitability and productivity of a firm, analyzing how a process of productivity can influence profitability, reviewing factors affecting the productivity and collimating these factors in the firm's profitability.

Factors that help increase the level of productivity

- a. Improving the quality of an operator, man or otherwise, through training and improving and other attempts will heighten the level of productivity.
- b. An ameliorated relation between a manager and personnel, proper steering, recovery of relations manager and personnel, proper way of leadership and right application of humanistic relations are very effective in increasing the productivity of collective activities.
- c. Using the supervision and proposals of personnel, offer chances to personnel to involve to govern a department, provide or devise a plan to include the proposals of personnel and establish quality control groups to include the proposals of personnel and establish quality control group or teams by using the best politics in order to step up motives and attachment of personnel to their places of work and increase their levels of productivity.
- d. The outcomes of technology: technological changes and modifications of technical tricks, assets and labor decrease considerably the costs of production and consequently give a raise of productivity.
- e. A rise in an investment rate in machinery and equipment, replacing capitals in the forms of machinery and equipment for workers help increase a product in virtue of any main hour work.
- f. Saving of production on a large level and the size of a production unit serves to affect basically the productivity.

Not only what were noted above, but also a varied quality of raw material, use of concepts and new systems and politics in an industrial management such as production system at time of (jit), enjoying a proper MIS, ergonomic, employing the maximum strength of a production unit, avoiding all production bottlenecks and etc. can undoubtedly affect the productivity.

An organization productivity

Bernolig and some other theorists have highlighted the interests of productivity in institutes as provided in Fig 1. [4]

All organization is bound to heighten the level of their productivity to develop and succeed in the future. Thus, to increase the rate of productivity, we must start work at first step by measuring the level of productivity. To do this in any organization, first we must formulate the required standards in the organization to increase the rate of productivity. Once this is done, the required influencing indicators in the productivity area are identified and chosen.

At the second step, the scientific methodologies that are employed to measure the rate of productivity are assessed. By far many scientific models and methodologies such as those of addition/ subtraction and value added with Craig-Harris model, that of Taylor-Davies that of the national Iranian productivity organization and many other models each of which has its own advantages and disadvantages.

The national Iranian productivity organization model

To be allowed to compare the productivity indices of different organizations and institutes and even at the levels of different economic sectors, we need to formulate and apply uniformed indices. This model has tried to give greater clarity to the concept of productivity, economic senses as concern it, collection of substantial indices to measure and scale the productivity of industrial units and how they may be analyzed in the process. Following here to be the objectives altogether:

- I. Measure and analyze all shifts, modifications and rates of productivity in the key areas as chosen from economic/managerial point of view – to understand better the basic reliable as affect the productivity and other variables that are impressed by it.
- II. Make an allowance for a technical and economic steering to develop an industry sector by using the outcomes of accurate and detailed computation of productivity indices by managers and planners based on all scientific scales and rules.
- III. Select and enlarge economic standards of productivity and adopt analytical methods to be used to educate and train the personnel who are in charge of using them.
- IV. Determine figures and data that are currently accessible, determine what other data are

needed to analyze a productivity rate level and effectively analyze them both now and in the future.

- V. Make an allowance for a comparison of productivity indices at department industrial teams, sub- sections and higher levels, feel a need to use it in different ways in order to find what caused problems to analyze them and finding strengths and weaknesses to gain access to opportunities to improve them.
- VI. Calculate the productivity incises at different levels of industrial units and industry sector based on international scales and standards and allow for some comparative surveys of productivity indices as exist in other countries.

Any one of the practical indices such as work productivity, capital and etc. that are obtained by dividing an output such as that of an added value to an input such as the number of employees or assets, severe only as a factor to represent a feature of an economic and technical performance of an industrial unit and cannot be alone used to measure a general efficiency of an industrial unit and comparison of units. Thus, a generalized productivity index was used to measure a general efficiency of industrialized units. For that purpose, different indices opened up the only good pattern of which is that of a general productivity index devised by Dr. Kendrick as provided by the following equation.

$$T.F.P = \frac{AV}{aK + bL}$$

Where T.F.P is general productivity index,

K means an added value,

L means capital,

a means workforce (with its cost),

b means a capital drawing coefficient in the expenses of industrial unit.

Since the computation of the total productivity index in the production factors are faced with difficulties due to limited data and calculation restrictions, an attempt was made to use selected indices to measure and analyze productivity in this frame of time.

$$\frac{\text{Added value (AV)}}{\text{Total value of data (TI)}}$$

→ are used to measure and compare the total productivity of industrial units

Methodology

The statistical community in this study is a production/ industrial unit that are employed to package food substances and drugs. Collection of data is made by means of a libration method and through documents. In addition, some additional recorded data from financial, procurement, industrial marketing and interview units were also gathered.

The research method in this study is that of descriptive and the model of the national Iranian production organization was used to measure both the productivity and profitability the equation of which is as below:

$$\text{whole productivity index} = \frac{\text{Added value}}{\text{Total value of data}}$$

During the time when we corporation operation levels and the rates of profitability and productivity obtained from financial statements of account of three past periods, an assessment was made the main purpose of which was (and is) to determine areas of problems by providing indices of productivity to monitor continually the whole organization in order to establish an agenda for recovery of a good productivity system. Using a profitability standard does not alone provide a basis to evaluate the performance of a whole organization and makes difficult to see whether and why a profitability rate may change in due course for example, whether profitability was made possible because of a higher version of productivity or depended largely on other parameters.

Discussion

Having compared the rates of our studied corporation's productivity and profitability over three years, it is realized that profitability over years 1995,96 and 97 had rates of 65%, 90% and 48% respectively and the productivity of it was wholly over those three years 67%, 89% and 16% respectively[see Table 1]. This means that both profitability and productivity of it over three years are co-directional. Fig. 2 compares the rates of changes in both productivity and profitability over these years of study.

Given a positive relationship that exists in the corporation in the onward movement of profitability and productivity, one can come to the conclusion that a profitability rate is accompanied by that of a productivity; that is to say, any modifications caused by a profitability process accounts for those which exist in the productivity and if the corporation takes any step to heighten the level of its productivity, it can achieve a higher profitability; that is to say, both productivity and profitability are increasing at the same positive rate and represent a well- consolidated and stable position where what are recommended are to maintain and stabilize policies and try all what can do to heighten profitability and productivity.

The corporation has also created a collection of drastic changes in its structural management as well- as removed all existing barriers of raw material clearing through customs and alias to be allowed to steer the available stocks such as raw material, workforce, capital and technology in their proper courses and achieve a good profitability level by raising its value-added products as well as finally gain higher success by this unique of strategy.

Conclusion

- a. This study has made it clear that the basic cause that had decreased the corporation's productivity was a lower rate of production over

years, 1995 and 1996 the basic cause of which was mentioned to be a log in delivering raw material in the production line. Likewise given an increased rate of productivity from workforce in 1996 and having detected the contributing factors we will be able to realize the immediate effects that the rewarding system, managerial skills and higher levels of training acquired by personnel have a productivity rate. These systems also had greater effects on the increased rate of productivity from manpower in the corporation. Given what was said above, one can perceive that the corporation can identify effective factors on production and workforce and once removed these barrier, it can enjoy a higher rate of production on a productivity scale and steer more its personnel for it. The achievement of which depends largely on accurate production planning and proper scheduling taking the available restrictions into consideration; that is to say, in the event the corporation may foresee and schedule all cases in which raw material is entered, it would be able to do all these as demanded by a market and achieve higher level of productivity by integrating personnel with work hours, machinery and technology.

- b. It was found by considerations that the corporations has for long years been able to exercise a series of changes in the senior managers to trace its strategy to additionally increase the rate of production and gaining access to higher productivity and get to superior successes.
- c. Therefore, in addition to a need to provide a management for a current cash flow and profitability of corporation, a productivity management must inevitably exist to pro long the life of a firm. A productivity management within a firm can promote only at a time when internal comparisons are made between different parts of the firm and it can be successful to know its strengths and weaknesses. However, this domestic comparison between different modes of firms is not possible in practice because of limited data that are collected by firms in underdeveloped countries. What a sound and constructive competition needs is an open system to recover financial data and encourage firms to exchange these data.

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Table 1

	1995	1996	1997
productivity	67%	89%	16%
profitability	65%	90%	48%

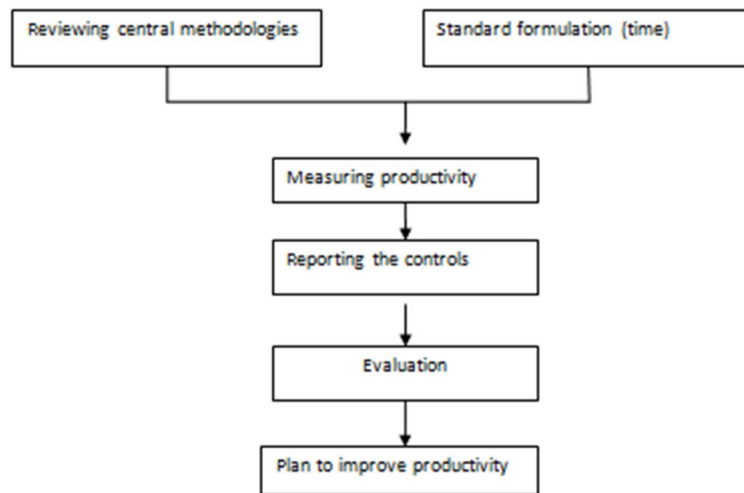


Fig.1

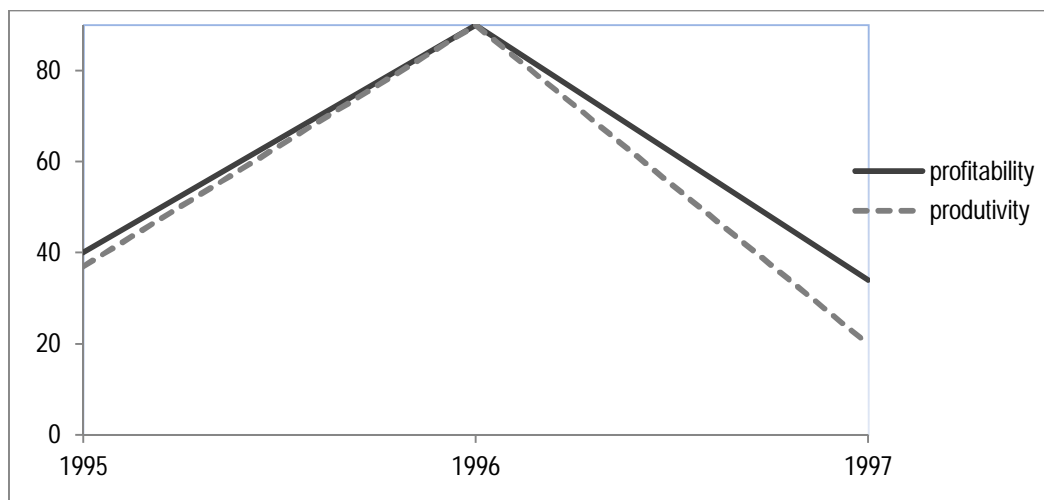


Fig.2