CHAPTER I
INTRODUCTION

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CHAPTER I
INTRODUCTION

1.1 Introduction

1.1.1 Government of every nation is obliged to provide decent standard of living to its people and thereby improving quality of life.

Society is interested in getting goods and services in the following areas:

1) Food and nutrition
2) Clothing
3) Housing
4) Health facilities
5) Educational facilities
6) Transport and communication services, and so on

The extent to which government fulfills its obligation to the society depends not only on the resources available, but also efficiency of exploitation of these resources which in turn depends on technology employed, skill-education and training of human resources, etc. In case of Indian efforts in this direction, plan development outlays may be considered as the indicators of resources employed for achieving these objectives.

Details of the plan outlays by various heads of development are given below:-
<table>
<thead>
<tr>
<th></th>
<th>1st Plan</th>
<th>2nd Plan</th>
<th>3rd Plan</th>
<th>3 Annual Plans</th>
<th>4th Plan</th>
<th>5th plan estimates</th>
<th>6th plan targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>290</td>
<td>549</td>
<td>1089</td>
<td>1107</td>
<td>2300</td>
<td>5229</td>
<td>12869</td>
</tr>
<tr>
<td>Irrigation</td>
<td>583</td>
<td>430</td>
<td>665</td>
<td>471</td>
<td>1354</td>
<td>3913</td>
<td>10350</td>
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<tr>
<td>Power</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Village and small industries</td>
<td>42</td>
<td>187</td>
<td>241</td>
<td>126</td>
<td>243</td>
<td>611</td>
<td>1780</td>
</tr>
<tr>
<td>Organised industries &amp; mining</td>
<td>55</td>
<td>933</td>
<td>1726</td>
<td>1510</td>
<td>2364</td>
<td>9129</td>
<td>20407</td>
</tr>
<tr>
<td>Transport &amp; Communications</td>
<td>518</td>
<td>1261</td>
<td>2112</td>
<td>1222</td>
<td>3080</td>
<td>6331</td>
<td>15546</td>
</tr>
<tr>
<td>Social Services</td>
<td>472</td>
<td>355</td>
<td>1492</td>
<td>976</td>
<td>2935</td>
<td>6893</td>
<td>17132</td>
</tr>
<tr>
<td>Total Public Sector</td>
<td>1960</td>
<td>4672</td>
<td>8577</td>
<td>6625</td>
<td>15779</td>
<td>40097</td>
<td>97500</td>
</tr>
<tr>
<td>Private Sector</td>
<td>1800</td>
<td>3100</td>
<td>4100</td>
<td>N.A.</td>
<td>8980</td>
<td>27048</td>
<td>74710</td>
</tr>
</tbody>
</table>

(Source: Tata Services Ltd., Economics and Statistics Dept.)
1.1.2 In spite of such heavy investments, fifty percent of Indian population is below poverty line. One way of improving standard of living of these people will be to increase plan outlays on development needs, the other way being utilising resources already committed and resources those will be committed in future, in more productive way. However, one can imagine the magnitude of the additional resources required for achieving desired results if first option is to be exercised i.e., to provide additional resources at the existing productivity level. This will obviously lead to higher cost, higher inflation and correspondingly lower growth of national economy if due emphasis on productivity is not given. Higher productivity is not the 'end' in itself, but a means to reach the 'end' i.e., promoting social progress and strengthening the economic foundations. The level of productivity in any country determines its national wealth and standard of living of the people. Hence the second option of improving productivity assumes great significance because it offers advantages such as lower cost, lower inflation, higher investible surplus, growth of economy at a higher rate, thereby improving standard of living.
The importance of productivity is further illustrated in case of industrial Sector Comparison between European and American Industries.

1.1.3 The contribution of productivity in the Industrial Sector, first became evident in 1950s in the analysis of the productivity gap between European and American Industries. Studies - e.g., by the Stanford Research Institute and by the Organisation for Economic Co-operation (OEC) - showed clearly that the productivity differential between Western Europe and the United States was not a matter of Capital investment. In many European industries productivity was as much as two thirds below that of the corresponding American Industry, even though capital investment and equipment were equal.¹

Productivity at the national level depends on productivity of different Sectors, which further depends on productivity of different industries and Individual Units. Productivity of the unit depends on cumulative productivity of different departments and sections. This chain of cumulation of productivity from section to national level can be visualised in the chart number 1.1

Chart no. 1.1 A chart showing cumulative effect of productivity.

[Source: Productivity And Economic Growth, National Productivity Council]
At this stage it is worthwhile to look into the performance of national economies of selected countries in the field of industrial production with reference to annual growth rates. For this purpose, details of indices of industrial production and growth rate are tabulated, and presented below :-
# TABLE NO. 1.2

## Index Numbers of Industrial Production

(Average)

<table>
<thead>
<tr>
<th></th>
<th>1970 : 100</th>
<th></th>
<th></th>
<th></th>
<th>Annual Growth Rate 1970-74</th>
</tr>
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<tbody>
<tr>
<td>India</td>
<td>101</td>
<td>108</td>
<td>109</td>
<td>-</td>
<td>2.9</td>
</tr>
<tr>
<td>Australia</td>
<td>102</td>
<td>103</td>
<td>118</td>
<td>111</td>
<td>2.8</td>
</tr>
<tr>
<td>Canada</td>
<td>106</td>
<td>113</td>
<td>123</td>
<td>126</td>
<td>6.0</td>
</tr>
<tr>
<td>France</td>
<td>104</td>
<td>112</td>
<td>120</td>
<td>123</td>
<td>5.3</td>
</tr>
<tr>
<td>Germany (W)</td>
<td>102</td>
<td>106</td>
<td>113</td>
<td>112</td>
<td>2.9</td>
</tr>
<tr>
<td>Israel</td>
<td>110</td>
<td>123</td>
<td>129</td>
<td>135</td>
<td>7.9</td>
</tr>
<tr>
<td>Italy</td>
<td>100</td>
<td>104</td>
<td>114</td>
<td>120</td>
<td>4.7</td>
</tr>
<tr>
<td>Japan</td>
<td>103</td>
<td>110</td>
<td>127</td>
<td>124</td>
<td>5.8</td>
</tr>
<tr>
<td>Korea Rep.</td>
<td>115</td>
<td>132</td>
<td>179</td>
<td>230</td>
<td>23.5</td>
</tr>
<tr>
<td>Mexico</td>
<td>103</td>
<td>113</td>
<td>123</td>
<td>130</td>
<td>6.8</td>
</tr>
<tr>
<td>Pakistan</td>
<td>88</td>
<td>101</td>
<td>110</td>
<td>113</td>
<td>3.6</td>
</tr>
<tr>
<td>Philippines</td>
<td>111</td>
<td>121</td>
<td>133</td>
<td>130</td>
<td>6.9</td>
</tr>
<tr>
<td>Singapore</td>
<td>119</td>
<td>141</td>
<td>165</td>
<td>172</td>
<td>14.7</td>
</tr>
<tr>
<td>Sweden</td>
<td>101</td>
<td>104</td>
<td>111</td>
<td>118</td>
<td>4.3</td>
</tr>
<tr>
<td>U.K.</td>
<td>100</td>
<td>102</td>
<td>110</td>
<td>106</td>
<td>1.6</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>100</td>
<td>108</td>
<td>118</td>
<td>117</td>
<td>4.1</td>
</tr>
<tr>
<td>U.S.S.R.</td>
<td>108</td>
<td>115</td>
<td>123</td>
<td>134</td>
<td>7.6</td>
</tr>
</tbody>
</table>

£ Figures relate to average of 12 months beginning July of the year stated

* 1970-73

(Source: Statistical Outline of India, Tata Services Ltd. Economics and Statistics Dept.)
1.2 Production and Productivity

1.2.1 Production and Productivity should not be confused. These words have distinct meanings. Production in a manufacturing unit can be increased by raising the volume of input i.e., employing more labour, installing more machinery, using more raw materials, regardless of the cost of production. Increase in production does not necessarily mean increase in productivity though higher productivity will lead to higher production, at the given inputs or same production at lower inputs.

The term production means only volume of output, but productivity is not merely volume of output, but output in relation to the cost or inputs or resources employed.

1.2.2 Production in the two plants may be the same, however, the productivity may differ e.g., two units A and B manufacture identical toys. Their daily production is 1000 toys each, and manpower employed at units A and B is 40 and 50 workers respectively.

Here production in both the units is same, but productivity is 25 toys per man day at unit A and 20 toys per man day at Unit B, which is obviously not the same.
1.3 **Productivity and Labour Productivity**

1.3.1 The word productivity suggests the ratio between the output of wealth produced and the input of resources to produce that wealth. In any industry inputs mean materials, money, machines, motive power, manpower etc. Output can be measured in terms of value of goods and services produced. In industry raw materials are converted in finished goods. Conversion process takes place when raw materials are converted into goods of higher value and better utility. These are sold as finished goods. Productivity aims at performing this conversion efficiently and it generates economic gains many times more than the cost of effort put in to raise productivity. This can be done by increasing value of output and reducing the cost of inputs.

1.3.2 In a broad sense increasing productivity implies efficient and optimum use of available resources of production i.e. land, labour, capital and management. It suggests eliminating wastes of every type. It implies a constant effort to find better, cheaper and easier way of producing goods and services. It aims at the maximum utilization of resources with the purpose of yielding maximum possible output at the lowest cost.
1.3.4 Historically the term 'productivity' is believed to have been used for the first time in 1776 by the economist Quesney. For a long time its meaning remained rather vague. Towards the end of the 19th century it was understood as the 'faculty to produce'. In the beginning of the 20th century, the term began to be used in a more precise sense. In its modern sense, it refers to the relationship between the result and the means employed, i.e. between the product and factors used for obtaining it.

Peter Drucker therefore defines productivity as "that balance between all factors of production that will give the greatest output for the smallest effort".

Productivity of Labour

1.3.5 The productivity of labour is the ratio between the output and the number of man hours worked. Symbolically it may be expressed as

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1 Peter Drucker - People and Performance Allied Publishers Pvt. Ltd., 1977
PL = O/NMH

Where PL = Productivity of labour

O = Output in terms of units of quantity or value or standard time for actual output

NMH = Numbers of manhours spent on production or value of the manhours

Manhours = the number of workers employed on production x the number of hours worked

It should be possible to measure it by dividing the output by the quantity of raw materials used, or by the kilowatts of electric power consumed.

Productivity of other factors

1.3.6 Following the definition of productivity, as the ratio of output to input, we can compute the figure of productivity for the other factors of production.

Thus -

(a) Productivity of machine = \[
\frac{\text{Total production in length, weight etc.}}{\text{Machine hours worked}}
\]

(b) Productivity of material = \[
\frac{\text{weight or volume or number or length of finished goods}}{\text{weight, volume, number or length of raw material used}}
\]

(c) Productivity of land = \[
\frac{\text{Total production}}{\text{Area of land used}}
\]
1.4 Importance of Productivity

1.4.1 If productivity is low, plenty of resources will be vanished away by the high cost of exploiting these resources. There will be an unnecessary import of goods due to low productivity in the home country.

1.4.2 To some extent low productivity is a part of the vicious circle of poverty in which many developing countries are trapped. Poor standard of living leads to bad health, lack of education, bad housing, bad transportation from and to work place, poor working conditions which reduce workers' productivity and this in turn reduces capacity of society to improve living standards. Low standard of living affects the state of mind badly. Motivation is low and will to work is reduced.

1.4.3 Developed countries are often engaged in fierce competition in the world market. They are conscious about the relationship between changes in wages and salaries and trends of productivity. However, many developing countries still rely very largely on the export of raw material and import of industrial goods. Here the critical importance of productivity is overlooked.
1.4.4. West Germany and Japan were defeated in the world war II and most of the industries were destroyed. But they are now successfully challenging their victors in the world market for industrial goods. Their share in world production as well as the values of currencies are increasing day by day.

The main cause of higher productivity was the movement of very large numbers of people from areas and employments of low productivity e.g. marginal subsistence farming in Japan's mountainious north into high-productivity employment in industry. Without such massive migration the productivity gains of these growth areas would probably have been quite modest. But these migrations are over. Now there is no much population left in marginal farming. Now productivity is achieved by making existing workers more productive in the existing jobs.

Japan has very meagre material resources. Yet by paying continuous attention towards improving the efficiency of manpower, has attained a very high rate of economic growth.

1.4.5 In the present competitive world economy, a country has to keep pace with other countries in respect of techniques and processes which necessarily affect productivity. Increase in productivity constitutes an important contributing factor to the expansion of economy.
If we can offer better quality goods at competitive prices we can stand against foreign goods in the world market. This can be done by raising productivity i.e. lowering cost of production.

1.4.6 It is widely accepted that productivity is the key to higher living standards. Reduction in cost of production and that of selling price leads to expansion of markets and larger profits to industries, which leads to more employment and prosperity.

The level of productivity is the central determinant factor of standard of living. Without a high level of productivity, the standard of living may be still low in spite of abundant natural resources, productive capital in the form of roads, ports, health and educational facilities which are necessary for attainment and maintenance of a high living standard.

1.5 Scope of Productivity Concept

1.5.1 Productivity is primarily an attitude of mind, an attitude of welcoming a change for the better; an attitude of looking at things afresh so as to explore to scope for improvement, an attitude of making the optimum use of available resources towards the achievement of a specified aim. Only after a proper climate has been created through the right attitude of mind can the concepts and techniques of productivity be applied in functional areas.
1.5.2 It must be carefully noted that profitability is not a measure of productivity. Even a product made in the most inefficient way can be sold for a profit, if there is a demand and if there is no competition. Productivity is a function of the cost price of a commodity or a service. The cost price, in turn is determined by the summation of the cost of each individual resource pressed into service.

1.5.3 The application of productivity techniques and concepts is generally over three broad fields: Human relations, Industrial management and Industrial Engineering. The primary concern of productivity is with the most precious resource - The HUMAN.

1.5.4 During world war II, there was such an acute shortage of manpower that the UK and the USA channelised all their productivity efforts into effecting a continuous economy in manpower by resorting to large scale mechanisation and automation. In developing countries, the shortage is of skilled manpower, materials and equipment. The emphasis of productivity in developing economies must, therefore, necessarily be on lower consumption of vital and scarce materials and fuller utilisation of available equipments and also skilled manpower. The message of productivity must be interpreted realistically and intelligently to suit the pressing and particular needs of a society.
1.5.5 Productivity urges a reappraisal of the aims, objectives and goals. If the aims are not right, then productivity can be of no avail. After the reappraisal of the aim, productivity paves the way for the analysis of physical process of implementing the aim in order to evolve the optimum method of performance.

1.6 Why Labour Productivity

1.6.1 Of all the factors of production, labour is selected as the unit of input, for the following reasons:

Labour occupies a central position in the industrial order and is particularly appropriate for a society in which, in Marshall's words, "Man is both, the end and the agent of production." It is through its dual role that productivity of labour becomes an important indicator of the standard of living.

1.6.2 Dr. L. Rostas maintains that labour productivity is the most appropriate concept for measuring productivity.

We have made it clear in our terminology that we regard productivity of labour as a general efficiency in the use of labour. We have also stated that productivity of labour is influenced by the combined effect of a large number of separate though interrelated factors such as the amount and quality of equipment, technical improvements, managerial efficiency, the flow of

1 Dr. L. Rostas, Alternative Productivity Concepts in Productivity Measurement - Vol.I.
European Productivity Agency.
1.6.3 While other factors of production have limitations, the human factor has unlimited potential. This is the only activating resource, others are passive. Its quality can be improved by intervention of training and motivation.

1.6.4 Labour is an element of cost in all branches and sectors of productive activity though its precise importance varies from industry to industry. ‘Human Capital’ is the basic element of any development plan of a country.

1.6.5 Labour as a factor of production is easily measurable in terms of man-hours spent on production.

1.6.6 The human factor is most important, because it is the operators and their supervisors who ultimately determine the productivity of the system. The people operate the machines, the machines are totally dependent on people for their performance. And people ensure system efficiency by co-operating with them.
1.7  Misconceptions in Labour Productivity

1.7.1  The concept of labour productivity has not been clear to many people leading to various misconceptions. First misconception is productivity aims at harder work. However, this is not true. It is not through intensification of labour's burden by increasing work loads or attaining greater speed up that increase of productivity is sought. Production is increased through more productive work. It is an attack on waste and it takes in its stride the objective of improving working conditions, avoidance of fatigue and drudgery.

1.7.2  Second misconception is increase in productivity leads to unemployment. Labour productivity has created an impression that in order to obtain high productivity, it is necessary to retrench labour i.e. high productivity will lead to displacement, unemployment and redundancy in labour force.

However experience of other countries and also ours has belied this fear. Increase in productivity and reduction in prices expand sales, wider markets are created which leads to more demand, larger volume of manufacture and consequent expansion of employment. Higher purchasing power in the hands of people again creates more demand and more employment.
In 18th century, muslin type of cloth was made on handloom requiring very high skills. This type of cloth was exclusively used by rich people in England. Industrial revolution made it possible to manufacture muslin on machines. This led to tremendous increase in labour productivity leading to reduction in prices. This brought muslin within the reach of common man. Thus muslin market expanded giving rise to additional employment.

1.7.3 Third misconception is that in underdeveloped and developing countries, where labour is surplus, labour productivity has no relevance.

In developing and underdeveloped countries, the surplus labour is unskilled labour, which is of no direct use to the industries. Industries need skilled and semi-skilled type of labour which is not easily available. This can be seen from the training courses industries have to arrange to fulfil their own needs at additional cost, spread over years.

Whenever industries need specific type of skill it is not easily available in the market, even if industries are willing to pay attractive returns.
1.7.4 In developing and underdeveloped countries, other productive resources, i.e. capital - machinery and material are scarce and very expensive. Labour is supposed to convert raw material into finished goods with the help of machinery. Unless labour is productive, the process of conversion will be inefficient, leading to high cost of production, hence labour productivity also covers utilisation of scarce resources which is very important and relevant to the underdeveloped and developed countries than it is important to developed countries.