CHAPTER 1

INTRODUCTION TO PRODUCTIVITY AND INCENTIVES
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National productivity of a country projects the standard of living of its people. The higher the national productivity, the better its standard of living will be. A gain in productivity is achieved by producing more output with the same input or the same output with lesser input. Such savings in resources by consuming less or increase in profits by producing more, in turn, raises the standard of living of the community.

A business organisation has to have some resources like land, capital, men, technology, machines and equipments, and information as input to the operations system in order to produce the needed goods, services, and information, as output, to the customers. Such an organisation then continues to operate as long as it enjoys profit and the customers' satisfaction. High profits may be earned by investing more and more only if money is no bar and proper utilisation of resources is not a matter of concern. Customer's satisfaction, on the other hand, may be achieved by producing the product of desired quality at a reasonable price and delivering it to the customers when needed. But enterprises operating in a competitive and dynamic business environment cannot afford to achieve these two goals without proper utilisation of the scarce
resources and coping with the technological upgradation. It is for this purpose that managers should define, measure, monitor, and improve their organisations' performance as a indicator of their competitiveness. Performance is a broad concept and according to Scott Sink (1983) is comprised of at least seven criteria: efficiency, effectiveness, quality, quality of work life, innovation, profitability, and productivity. These performance components differ in their meanings and measurement and are, therefore, considered in a diverse manner by different managers and organisations according to their needs. Efficiency estimates "how fast" a task is completed and, according to Peter Drucker (quoted in Stoner, 1987), refers to "doing things right". He refers effectiveness to "doing the right things" as an estimate of "how well" the task is completed. Although these two parameters of performance measure the pace and worth, respectively, of a task done by an individual person or system but do not give any idea about competitiveness of the same because factors like work environment, which influence performance, do not figure in these estimates. Other criteria too, apart from productivity, indicate only the individual's or system's success but not competitiveness.

1.1 Productivity Defined:

Productivity is that criterion of performance which not only indicates a system's own progress but also compares it with that of the competitors.
Productivity is a combination of efficiency and effectiveness and, therefore, refers to "doing right things well". Before elaborating this concept further let us have a look at some of the definitions, or their excerpts, of productivity as given by various authors and researchers.

- Productivity is the measure of how well resources are brought together in organisations and utilised for accomplishing a set of results. (Mali, 1978).
- Productivity is the ratio of output to input. (ILO, 1979).
- Productivity is the quality or state of being productive. (Riggs, 1984).
- Productivity is the measure of how well an operations system function. (Stoner, 1987).
- Productivity is the ratio of outputs produced per unit of resources consumed, compared to a similar ratio from some base period. (Hicks, 1994).

Having an insight into the concept and explanations of productivity available in literature, as discussed above, it can be concluded that productivity implies effective and efficient use of resources in producing products of the desired quality expressed as output per unit of input.
1.2 Productivity Viewed from Different Perspectives:

Productivity is defined differently according to the purpose and for various combinations of inputs, outputs, and organisations. Four major views of productivity, which are most commonly accepted, are explained here. (Mali, 1978).

(1) **National Productivity**: Country as a whole is the organisation and all resources, tangible and intangible, are considered combinedly for input whereas all economic goods and services produced are taken together as the output.

   \[
   \text{Total National Productivity} = \frac{\text{GNP}}{(\text{Labour} + \text{Capital})}
   \]

(2) **Industry Productivity**: Productivity in industries is similar to that at national level with the difference that here organisation is the industry and input and output are related to that industry only.

(3) **Firm or Organisational Productivity**: It is defined as 1 & 2 above but for an individual firm or organisation.

(4) **Individual worker's Productivity**: Here productivity is defined considering only the performance of individual workers.
These four interpretations of productivity are spatially related to each other as individuals constitute an organisation; organisations of similar kinds form an industry; and different types of industries build an organisation.

1.3 Total and Partial Productivity:

When productivity ratio is determined for an organisation with reference to all outputs and all inputs, the ratio is called Organisational productivity. Total productivity, or Total factor productivity. This is expressed as:

$$ \text{TFP} = \frac{\text{Goods + Services}}{\text{Labour + Capital + Materials + Energy}} $$

If this ratio is determined with reference to all outputs and partial input then the ratio is called Partial productivity e.g. capital productivity, machines productivity, and labour productivity. Productivity index, the ratio of current year's productivity to the productivity of the base year, indicates percent gain or loss in productivity over the period. These are expressed as:

- Capital productivity = Output/Capital
- Labour productivity = Output/Labour hours
- Machine productivity = Output/Machine hours
- Productivity index = Productivity(current year)/Productivity(base year)
1.4 Productivity Management:

Low productivity means high inflation which results in reduced profits. This in turn reduces investment and finally such low investment leads to decreased productivity. So as not to fall in this vicious circle of low productivity, organisations should measure and attempt to improve partial and total productivity on a continuous basis. Benefits from productivity improvement are many, the major being a higher standard of living. But since the measurement of productivity in its real sense is not that easy there are also factors which tend to reduce productivity. A comprehensive programme to manage productivity, therefore, needs to be designed. And it is, of course, the responsibility of operations management and the top management of the organisation. Gerstanberg of General Motors Corporation (1982) said, "increased productivity results mostly from sound planning, from wise investment, from technology, from better techniques, from greater efficiency- in short, from the better exercise of the functions of management (DelMar, 1985).

Productivity management, as defined by Sardana and Pran (1991), is a formal management process involving all levels of management and employees with productivity improvement as the ultimate objective. Five steps of managing productivity are given as productivity planning, productivity measurement, productivity evaluation, productivity improvement, implementation and control.
It is said that a well defined problem is half solved. In the planning phase, one should consider all factors which affect the organisation's functioning, its strengths and weaknesses, and finally arrive at selection of performance objectives and the strategies to measure and improve the same.

1.5 Productivity Measurement and Improvement:

As discussed earlier productivity can be measured either at organisational level taking into account all the outputs and inputs or partially considering different inputs resources with all the outputs separately. A popular measure of productivity is labour productivity i.e. the quantity produced per labour-hour. Measuring the output in service industries is rather difficult than in manufacturing industries and for this reason productivity measurement in service industries is more difficult than the manufacturing industries. In fact, nature of work in all types of organisations contain both quantitative and qualitative factors and hence measurement of productivity requires a joint assessment of quantitative and qualitative performance. Depending upon the nature of organisations and their objectives, different methods of productivity measurements are employed.

After measuring the productivity, evaluation of the results and identifying the room for improvement, if any, is the next step in a productivity management programme.
A misconception about productivity improvement among the work force is that it leads to unemployment. Also they have least interest in improving the enterprises' productivity unless rewarded for the same. For these two important reasons workers in any organisation resist any proposed change in the system to enhance productivity.

### 1.6 Techniques of Productivity Improvement:

Productivity improvement techniques are those techniques which require little or no capital but contribute to an increase in productivity. Techniques of productivity improvement could be classified into two categories:

(a) Incentive-based techniques (generally employed for labour productivity)

(b) Non-incentive techniques (generally employed for process productivity)

Any short-term or long-term policy of an organisation to reward its workers for increased productivity is referred to as an incentive-based technique of productivity enhancement. Incentives may be either financial or non-financial. The non-monetary means through which workers are motivated to increase the productivity like appreciation of their work by the management are classified as non-financial incentives. The financial incentive schemes, on the other hand, suggest sharing of the profit with the workers so that they earn some extra money for their effectiveness and efficiency. Since the emphasis of the present
work is on labour productivity, the incentive-based techniques are discussed in
detail in section 1.10.

The non-incentive category of techniques include human factors, innovation, learning curve, management, by objectives, materials management, operations research, quantity and quality management, technology, upgradation, value analysis and work study. These approaches are briefly explained in the following paragraphs.

Human factors (or ergonomics) is the discipline that deals with designing and development of man-machine systems considering human capabilities and limitations to perform in a particular work environment. Such systems increase the proficiency of the people at work.

Innovative managers and workers can always help the organisation improve its productivity. Innovation, in simple words, is making the strange familiar. The ability of people to create and develop new ideas makes room for improvement.

Learning at workplace reduces the efforts to be put in by the individuals to produce the same or a better output. A learning curve, also known as experience curve, describes the rate of reduction in the unit cost of production over the time that a worker spends on the job. Experience curves are used to measure the performance improvement.
Yet another practice in use for improvement of productivity is that of management by objectives (MBO) or goal setting. In a system following MBO, the annual objectives are written and agreed upon between each manager and his superior so that the managerial performance can be measured in terms of these objectives. At the end of each year the performance is evaluated and measures are taken for eliminating or reducing the fall-outs.

Material is said to be the most expensive direct resource of any organisation. In some cases, this contributes 50 to 60 per cent of the total direct expenditure. Use of proper material at the right time and at the right place is, therefore, considered as a promising factor in productivity improvement.

Operations research (OR) is a multi-disciplinary approach of optimising the objective functions of management like cost and profit. Complex problems of optimisation are converted into models and solved using mathematical and statistical tools. Various models covered under the umbrella of OR include linear programming, integer programming, decision-making models, and queueing models.

Productivity can also be improved by effectively managing the quantity and quality of the resources being used as input to the production system. Economic order quantity (EOQ), Materials requirements planning (MRP), and Just-in-time (JIT) manufacturing are some important techniques of inventory management.
Apart from inspection, statistical quality control (SQC) is an effective method of quality check for input resources. The recently conceived philosophy of total quality management (TQM) encompasses all possible efforts to improve qualitatively the overall performance of organisations.

Technology is that set of processes, tools, methods, procedures, and equipment used to produce goods or services (Schroeder, 1993). For having an edge over the competitors, business organisations need continuous upgradation of their technologies by choosing the appropriate ones and rejecting those consuming more or producing less. Technology upgradation is possible through either indigenously developed alternatives or technology transfer.

Value analysis is a cost reduction technique and is defined as a systematic approach of identifying and eliminating or reducing the unnecessary costs. A product or process is analysed in terms of its primary and secondary functions and the cost. Such analyses often result in the design of equivalent, but less costly, products and hence improve the productivity.

Work study is concerned with the concept of labour control and has been contributing as an important element in attaining the objective of productivity. The first component of work study is to economise the body movements of workers while performing a specific job. The method of doing a task is thus standardised and measured in terms of the time to complete the task. This
standardisation of time, the second component of work study, helps in job
evaluation, man-power planning, determination of wages and working out
incentive plans.

The last step of productivity management programme is the
implementation and control of all changes and improvements proposed for
productivity improvement.

1.7 Factors Tending to Reduce Productivity:

Some important factors responsible for low productivity in an organisation
on the part of designers, manufacturers, managers and workers are given below
(ILO, 1979):

(1) Work content added due to following features of the product:

- Design
- Incorrect quality standards
- Lack of standardisation

(2) Work content added due to following features of the process or method:

- Bad design of the plant layout
- Use of improper machines and tools
• Uneconomical working methods of the workers

(3) Ineffective time added due to the management inefficiency:

• Failure in standardising the product
• Failure in effective operations planning and control
• Failure in providing better working conditions

(4) Ineffective time added due to the workers inefficiency:

• Lateness and slow working
• Carelessness causing rework
• Carelessness causing accidents

1.8 Factors affecting Productivity Improvement:

There are four interrelated variables which influence organisational changes as a measure of productivity improvement, namely, Tasks, Structure, Technology, and People (DelMar, 1985). Tasks are the objectives that organisations sets out to achieve. Technology is an organisation's inventory of equipment, processes, methods and plant. Structure, refers to the organisational arrangement of authority, responsibility, delegation, communication channels, and the span of management. Individuals are the people who make up an
organisation with their individual attitudes, expectations, and value systems. One or more of these variables need to be manipulated in order to achieve increased productivity.

A continuous change in the organisational behaviour has been emphasised by Hicks (1994) in order to achieve continuous improvement in its productivity over time.

The International Labour Organisation in its book on work study (1979) makes all sections of the community responsible for taking actions to achieve increase in productivity. Governments, for example, are supposed to create conditions favourable to the efforts of employers and workers to raise productivity. This is to be achieved by having a balanced programme of economic development taking the necessary steps to maintain employment. Efforts could also be made for providing employment to those who may became redundant as a result of productivity improvement programme in individual enterprises.

The other two sections of the community -- employers and workers, are, however, more vital to affect productivity improvement in industries. The management of an organisation must create conducive environment with the workers' cooperation and good will to enhance the productivity.
1.9 Benefits of Improved Productivity:

In fact, benefits of enhanced productivity of any organisation are shared by all associated with the organisation either directly or indirectly, and the nation as well. The benefits in terms of the four different perspectives are listed below:

(a) National Perspective

- Faster economic growth and higher standard of living of the community
- Increased employment opportunities by starting new industries

(b) Management Perspective

- Increased demand of products
- Increased opportunities of further investments
- Increased profits

(c) Customers Perspective

- Reduced prices

(d) Workers Perspective

- Increased wages and salaries
- Improved quality of work life
1.10 Incentives:

In any enterprise productivity is a goal of management and not of the workforce unless motivated through some means to achieve such a goal. Workers want some socio-economic benefits as reward for the extra efforts put in to improve the productivity. Such socio-economic factors which can motivate them for performing more efficiently and effectively are identified under the name incentives. Negative tactics, like punishment are also sometimes adopted by managers to motivate their workers for maintaining a certain level of output and productivity. However, incentive generally means reward and not punishment.

Incentives are classified as financial and non-financial. The choice of financial, non-financial or a suitable combination of both depends upon the nature of work and the type of workers.

Incentive plans are designed differently by various organisations according to their needs. Some major objectives of incentive schemes are however common and listed below (Krishna, 1983):

- Increased production
- Reduced waste of resources
- Improved quality
- Reduced downtime of equipment
• Less accidents, and
• Reduced absenteeism

The mechanism of incentives as they work to motivate workers is explained in the following section with reference to some basic theories of motivation.

1.11 Behavioural Underpinning of Incentives:

Motivation of all sections of employees is necessary to achieve the productivity targets. Some employees need motivation to a greater extent than others. This is so because employees differ in their characteristics as individuals. An employee may work at a satisfactorily acceptable level even without any apparent externally induced motivation. Another employee may perform only at a barely acceptable level in the absence of explicit motivation. However, there is always a group of employees that needs it more than the others because of their certain individual characteristics which make them to perform only at marginal levels. Most theories of motivation are, therefore, based on the principle of hedonism which states that individuals behave in a manner so as to seek pleasure and to minimise displeasure. This philosophical approach provides some basis for identifying why individuals act the way they do, and not for understanding why people choose a particular behaviour over other (Szilagyi et al, 1980).
Popular theories of motivation relevant to incentives are briefly discussed below:

(a) **Maslow's Hierarchy of Human Needs**: Maslow's hierarchy of needs has probably received more attention from managers than any other theory of motivation because it has direct implications for managing human behaviour in organisations (Stoner, 1987). Maslow viewed human motivation as a hierarchy of the following five needs:

1. **Physiological** - includes the need for air, water, food, and sex.
2. **Security** - includes the need for safety, order, and freedom from fear or threat.
3. **Belongingness and love (Social needs)** - include the need for love, affection, feelings of belonging, and human contact.
4. **Esteem** - includes the need for self respect, self esteem, achievement, and respect from others.
5. **Self actualisation** - includes the need to grow, to feel fulfilled and to realise one's potential.

Physiological needs of employees must be satisfied by a wage sufficient to feed, shelter, and protect them and their families satisfactorily. A safe working environment must be provided before managers offer incentives designed to
provide employees with esteem, feeling of belonging, or opportunities to grow.

Security needs require job security, freedom from feelings of arbitrary treatment, and clearly defined regulations.

Sense of belonging and being loved can be satisfied if working in a friendly environment and the employees should feel that they are an integral part of the organisation. Employees should also having a feeling of self recognition and self respect at their workplace.

Esteem needs are satisfied when they feel their job performance as the achievements and get recognition and appreciation from the management.

When all other needs are satisfied, according to Maslow, employees will become motivated by the need for self actualisation which means personal growth in their work either by producing high quality work or being creative in their ideas. It is up to managers how to manage and motivate their work force by identifying their needs at times and the means to satisfy them. Incentives can motivate people only when their needs of that time are satisfied.

In many organisations, there are disincentives to increase productivity and the workers actively seek to restrict output. Disincentives occur when workers believe that increased productivity may lead to lay-offs, job reassignment, and work speedups (Schroeder, 1993). Under these
circumstances, wage incentive plans are one way to make it clear that both parties will benefit from improved productivity.

(b) Motivation-Hygiene Theory: This theory, proposed by Frederick Herzberg, investigates what people want from their jobs. The original experiment on some 200 accountants and engineers revealed two distinct types of motivating factors: satisfiers and dissatisfiers. The dissatisfiers or hygiene factors include salary, job security, company policies, and working conditions. Whereas work content, achievement, and recognition etc. were found among satisfiers or motivation factors (Szilagyi, 1980). The theory, in simple words, concludes that for avoiding dissatisfaction of people on their jobs and making them satisfied both financial and non-financial incentives are significant.

(c) Alderfer's ERG Theory: ERG theory is a revised hierarchy of needs describing existence, relatedness, and growth as three groups of core needs (Robbins, 1991). Comparing the ERG theory with that of Maslow's, Robin found this theory as being more consistent with our knowledge of individual differences among people. According to him, variables such as education, family background, and cultural environment can alter the importance or driving force that a group of needs holds for a particular individual.

The existence group includes the needs for pay, benefits and physical working conditions. All those needs that involve inter-personal relationships with
others in the work place belong to the relatedness group of needs. Growth needs are those needs that involves a person’s efforts toward creative or personal growth on the job.

Worker’s motivation through incentives can easily satisfy these groups of needs, particularly the existence group, which in turn improves the productivity.

(d) Equity Theory: Equity theory of motivation is concerned with the individual’s perception to discrepancy between the amount of rewards they receive and their efforts. The greater the discrepancy the more individuals are motivated to reduce incentives, minimise this gap and make people more satisfied to improve productivity.

(e) Reinforcement Theory: This theory emphasizes the role of operant conditioning which reinforces the behaviour of people to behave in a desired way so that the organisational goals can be achieved optimally. The four fundamental principles of reinforcement theory-measurable behaviour, contingencies of reinforcement, reinforcement schedules and the value and size of the reinforcer - serve as the foundation of this approach to motivation (Szilagyi, 1980). Financial incentives are found effective reinforcers that enable employees to be productive and satisfied with their work.
Despite of such theories and research findings that relate productivity with incentives, management are usually reluctant to install wage incentive plans.

Mitchell Fein explains three reasons for this resistance (Schroeder, 1993):

(1) Some managers are concerned that incentives will diminish their ability to control the operations and over a period of time the incentives will deteriorate, causing labour problems.

(2) Some managers believe that productivity improvement is largely created by management efforts; there is no need to share productivity gains.

(3) Management's rights advocates believe that improvement is best shared periodically as increases in wages and benefits.

In spite of all such arguments, the need to share productivity gains with labour through incentives has been found to be the most powerful and economical management tool to get the productivity enhanced.

1.12 Non-financial Incentives:

People do not always get motivated through monetary benefits and rewards. Depending upon the society, the type of people and the kind of needs they want to meet, non-monetary or social rewards also become equally important, if not more, as compared to the monetary rewards. The Maslow's need hierarchy probably presents the most elaborated profile of human needs.
After the fulfilment of physiological and security needs employees look forward to satisfying their higher need levels. The physiological and security needs of people can be satisfied by providing them with financial incentives. Beyond these non-financial incentives are likely to act as catalyst in the motivation process.

Some commonly employed non-financial incentives are management's recognition and appreciation of employees' efforts through certificates, etc., invitation to some of them to participate in decision-making, and promoting them to next higher levels as reward for their productivity.

1.13 Financial Incentives:

There are two general types of financial incentive plans: individual and group. The individual plans include time rate (day work), measured daywork, piece rate (piece work), piece rate with minimum pay, and gain-sharing, whereas, group incentive plans include Scanlon plan, Improshare, and profit sharing.

1.13.1 Time Rate Plan: According to this simplest wage scheme, a worker is paid on the basis of the number of hours he works and the hourly rate fixed for the job arbitrarily or negotiated with the Union. Using this method of payment a worker's daily earnings would be:
\[ E = RH \times HW \]

Where:

- \( E \) = earnings (Rs./day)
- \( RH \) = hourly rate (Rs./hr)
- \( HW \) = hours worked (hours/day)

1.13.2 **Measured Day Work Plan**: This is very similar to the time rate plan except that the hourly rate is fixed using work measurement techniques instead of fixing it arbitrarily. Further the rate is revised from time to time on the basis of the number of units produced per past period of time.

1.13.3 **Straight Piece Rate Plan**: Payment is made at a constant amount per unit of output. Piece rate is set on the basis of the standard time determined using work measurement techniques, the type of work and its worth. Standard time has been defined as the time required by an average worker, working at a normal pace, to complete a specific task, using a defined method, under specified working conditions, with adequate allowance for personal fatigue, and delay times (ILO, 1979; Riggs, 1984; Aft, 1985). The method in symbolic form is explained below.
\[ E = RP \times O \]

\[ E = (RH \times \text{std. time per unit}) \times O \]

where:

\[ RP = \text{piece rate (Rs./ piece)} \]

\[ O = \text{number of units produced} \]

\[ E,RH = \text{same as in 1.13.1} \]

If this income comes out to be lesser than the minimum compulsory wage, set by the law, then that minimum shall be paid to the worker.

Riggs has explained this scheme in another form, giving the equation that follows:

\[ E = RH \times (A/T) \]

Where:

\[ E = \text{earnings per hour (in rupees)} \]

\[ RH = \text{hourly rate (Rs./hr.) as established for the task} \]

\[ A = \text{standard time of the task (hrs./unit)} \]
\[ T = \text{time taken by the worker per unit (hrs./unit)} \]

then,

\[ \text{Earnings (rupees)} = E \times \text{number of hours worked} \]

Straight piece rate system is widely used where jobs are of a repetitive nature and the task is under the worker's direct control i.e. there is no effect on the workers performance by any other worker or machine.

To take into account the factors which may affect the workers performance but are not under his control, another piece rate plan with a minimum guaranteed wage is employed as explained next.

1.13.4 Piece Rate with a Minimum Wage: In this incentive scheme 100 per cent or some per cent of a daywork is guaranteed.

\[ RH = \frac{(DG/x)}{DH} \text{ Rs./hr.} \]

Where:

\[ DG = \text{day work guarantee (Rs./day)} \]

\[ DH = \text{day hours (usually 8 hours)} \]

\[ x = \text{per centage of the day work guaranteed (in decimal form)} \]

The daily earnings are now determined using the equations as in 1.13.3.
RP = RH * std. time per unit, and

E = RP * O. (If E < DG then DG is paid to the worker)

The piece rate (RP) is calculated as usual. With the help of the standard time per unit for the operator paced part of the task and the operator’s day rate (RH). Total number of units produced during eight hours (man- machine combined) is represented by O.

1.13.5 Earned Hours Plan: The number of units produced in a day are converted into the hours earned by the worker and when multiplied by the hourly rate gives the earnings of the day.

\[ E = EH \times RH \]

Where:

\[ EH \text{ (earned hours)} = (\text{std. time per unit}) \times \text{(number of units)} \]

Calculations, under this incentive scheme, are similar to those explained in 1.13.4 when considering 100 per cent or some other per cent of daywork guaranteed and the operator- machine combined tasks.

1.13.6 Gain Sharing Plan: A gain-sharing or bonus incentive plan determines earnings using a variable rate- one base rate for production up to standard, and
another (higher) rate for production over standard. This way the gain in production over standard is shared between the worker and the management. The equations generally used for calculating the earnings is given below:

\[ E = (SRP \times SO) + (O - SO) \times IRP \]

where:

- \( SRP \) = standard rate per piece (Rs)
- \( SO \) = standard output per shift (units)
- \( O \) = actual output per shift (unit)
- \( IRP \) = increase rate per piece (Rs)

Group incentive schemes are applicable for tasks of interactive nature and people work together as a team to give the desired output. Indirect labour and management also are benefited under such group incentive schemes. The sections that follow describe some group incentive plans.

1.13.7 Scanlon Plan: This incentive plan is based on the ratio of payroll to production of the plant. This ratio measures the plant's productivity. For example, during the year preceding the adoption of a Scanlon plan, the payroll for a company was Rs. X, and the sales for the same period was Rs. Y, then the
ratio \( X/Y \) (Say, \( Z \)) will be used for computation of future incentive plan as explained below.

Assume that the first month's payroll and sales, after the productivity programme has been implemented, are \( X \) 1 and \( Y1 \) respectively. The new ratio is then \( X1/Y1 = Z1(\text{say}) \), the expected monthly payroll of this month based on the ratio \( Z = Z(Y1) \), then the difference (savings) would be:

\[
\text{Savings} = Z(Y1) - X1 = S
\]

A percentage of this savings, usually 75 to 80, is deposited with a fund to be distributed to all employees as bonus and the balance to the company. This balance can be utilised, when the ratio \( X/Y \) increases indicating a decrease in productivity for further improvements.

1.13.8 Improshare (Improving productivity through sharing): Improving productivity through sharing is an incentive plan, developed by Mitchell Fein, that works on a fifty-fifty basis to share any gain in productivity (in terms of time) between management and the employees, the bonus is calculated as follows:

Total hours worked per week, \( TH = WF*H \)

Produced hours per week, \( PH = DLS * O \)

Base Productivity Factor, \( BPF = TH/PH \)
Where:

\[
WF = \text{ workforce size (number of employees)}
\]

\[
H = \text{ hours spent at work per week per employee}
\]

\[
O = \text{ number of units produced during the base week}
\]

\[
DLS = \text{ hours of direct labour required per unit under normal conditions (standard time)}
\]

Then, the factor to adjust the time standard to reflect the overall required time, called the improshare standard, is given by:

\[
\text{IMPS(hours)} = \text{BPF} \times \text{DLS}
\]

Improshare earned hours, \( \text{IMPEH} = \text{IMPS} \times \text{units produced} \)

Here by the ‘units produced’ is meant those units which are produced by the same workforce during a week after the productivity improvement programme has been implemented.

Total hours gained, \( \text{THG} = \text{IMPEH} - \text{TH} \)

Bonus hours gained by the employees, \( \text{BHG} = 0.5 \times \text{THG} \) (because total gain is to be divided into two parts on fifty-fifty basis)

The bonus is then expressed as a percentage of total hours (TH).
Bonus = BHG/TH*100 %

The bonus thus calculated would be added to every employee’s base wage.

1.13.9 Profit Sharing: Profit sharing is another type of group incentive plan where the total profits earned during a specified period are shared between management and the work force in a ratio agreed upon by the two parties. Such a plan highlights increased productivity as a common goal of both parties rather than ‘increased production’ as the target of workforce and ‘increased productivity’ that of the management.

Incentive plans are many and only a few from each category, individual and group, are discussed above. Further, each incentive scheme, be it individual or group type, has its own merits and demerits. Organisations, however, design and implement their own incentive plans for the employees. Two important conditions are, however, satisfied by the plan. First, the plan is to be well understood and agreed upon by both the parties in advance and second, it is to work well within the frame work of labour laws.

Having presented an overview of various aspects of Productivity Management and Incentive schemes it can be concluded that productivity does not only evaluate the performance of an individual or an organisation but also compares it with the competitors. Moreover, a continuous improvement in
productivity is essential which can be achieved by motivating people using different methods including financial incentives.

Section 2.1 of the chapter that follows further elaborates the relationship between productivity and financial incentives.
REFERENCES


