

# **MECHANICAL ENGINEERING**

- **Industrial Management**
- **Industrial Engineering**
- **Production Technology**
- **Electrical and Electronics Engineering**
- **Mechanics of Materials**
- **Heat Power Engineering**
- **Computer Applications**
- **Fluid Mechanics and Machinery**
- **Computer Integrated Manufacturing**
- **Design of Machine Elements**

# INDUSTRIAL MANAGEMENT

## Principles of Management

The Principle of management are the activities that “plan, organize and control the operation of the basic elements (People), materials, machines, money and markets

## Management

Management is a process of achieving the objectives of an organisation by directing and controlling the various activities of the involved man power.

### Frederick W. Taylor

Ferderick W. Taylor is called as the father of scientific management. He started his carrier as a labour in Midvale steel company of USA in the year 1878. He held different positions in the company and later become the chief engineer in 1884. He wrote many management books related to industries. ‘The principle of Scientific Management’ is one of the important management books written by F.W. Taylor.

According to F.W.Taylor, Scientific Management involves the following procedures.

1. Observation
2. Measurement
3. Experimented Comparison
4. Formulation of Procedure.

### Henri Fayol

Henri Fayol was a French industrialist. He was a graduate in mining engineering. He joined as an engineer in a coal mining company in the year 1860. Later, he became the managing director of the company. He retrieved the company from near bankruptcy to set it as a leading coal mining company in France.

Based on his hand work and a successful managing experience, he wrote a book titled “General and Industrial Management”. It contained his general management principles. He categorized all the activities of industrial undertakings into six groups. They are,

1. Technical activities (production related)
2. Financial activities (Capital related)
3. Commercial activities (buying material and selling products)
4. Security activities (protection of properties)
5. Accounting activities (Statistics and Stock Taking)
6. Managerial activities (plan and control)

## JOB EVALUATION METHODS

Inequitable salary relationships affect adversely employee motivation and morale with severe loss to the organisation’s economy and effectiveness of operations. The general principle underlying job evaluation aiming at “equal pay for substantially equal work” and its corollary of variation in rates of base pay in proportion

to substantial differences in the difficulty, responsibility and qualifications requirements of the work performed is eminently fair to employees. It is also entirely compatible with prevailing economic and political philosophy.

Grouping of positions in an organisation into relatively few groups of similar positions or classes simplify the job of managing people in many respects and helps to develop a rational wage structure for different categories of employees in an organisation.

## JOB EVALUATION METHODS AND JOB RANKING

After job analysis and preparation of job descriptions comes the essential stage of job evaluation, namely, the systematic comparison of jobs in order to establish a job hierarchy. The techniques which have been commonly used tend to fall into one of the two main categories :

- ❖ Non analytical, and
  - ❖ Analytical
- Non analytical methods are :

- a) Job ranking;
- b) Job classification.

Analytical methods are :

- a) Point rating or assessment;
- b) Factor comparison.

The simplest and least formal of all job evaluation systems is known as the Ranking Method. Under this method no effort is made to break a job down into its elements or factors, but the aim is rather to judge the job as a whole and determine the relative values by ranking one whole job against another whole job. This is usually done by using a narrative position description, but in many cases even this is omitted. With or without information concerning the job at hand, an individual or group of individuals rank the jobs in the order of their difficulties or value to the Company. In order to achieve proper utilisation of the ranking system, one must also consider other facets of the job, such as :

- ❖ Decisions – difficulty, judgement required.
- ❖ Complexity – range of tasks to be carried out or skills to be used.
- ❖ Knowledge and skills – what the job holder is required to know and be able to do.
- ❖ Physical effort required to carry out the job.

This procedure is followed for jobs in each department and an attempt is then made to equate or compare jobs at various levels among the several departments. When this is completed, grade levels are defined and salary groups formed.

A ranking committee consisting of well-informed executives who in relatively short time, rank several hundred jobs in various departments. While applying this technique one may try to follow the procedure given below :

- 1) Analyse and describe the jobs, bringing out those aspects which are to be used for purposes of comparison.
- 2) Identify key or bench-mark jobs : the most and least important jobs, a job midway between the two extremes, and others at the higher or lower intermediate points.
- 3) Rank the other jobs around the bench-mark jobs until all jobs are placed in their rank order of importance.
- 4) Divide the ranked jobs into grades by grouping jobs together with common features such as similar duties, skills or training requirements. In effect, this means that the grades are now defined by the jobs that have been placed in them. In future, new jobs can be graded or

existing jobs regraded with reference to the established gradings on a job-to-job basis.

It is advisable to use the statistical technique of paired comparisons. The assumption is that it is always easier to compare one job with another than to consider a number of jobs and attempt to build up a rank order by multiple comparisons. While using the technique of paired comparison one must compare each job separately with every other job. If a job is considered to be more important than the one with which it is being compared, it receives two points; if it is thought to be equally important, it receives one point; and if it is regarded as less important, it receives no point. A matrix can be built showing the scores for each job against all other jobs being ranked. Finally, one can then total the scores as shown below:

Job	A	B	C	D	E	Total Score
A	–	0	0	1	2	3
B	2	–	0	2	2	6
C	2	2	–	2	2	8
D	1	0	0	–	1	2
E	0	0	0	1	–	1

In this example, Job A is compared with Jobs B to E. It is considered to be less important than Job B and C and received no points in both cases; equally important to Job D and received one point; and more important than Job E and received two points. The total score is three. The same procedure is adopted for Jobs B to E. The higher the score the higher the rank.

In a great many instances, the rankings are not based on job descriptions but on the raters' general knowledge of the position. It is difficult to group together jobs which are similar or to separate jobs which are dissimilar, unless carefully prepared job descriptions have been developed. The lack of position descriptions, is of course, not the fault of the system. The very simplicity of the system leads to neglecting of some of the tools which would make it more defensible. In most cases very liberal rate range limits must be provided to correct errors in judgement. This method might serve the purposes of a small organisation with easily defined jobs but would probably be most unsuitable for a large company with a complex organisation structure. Yet, it has its own advantages and disadvantages:

#### Advantages

- ❖ Easily understood and easy to administer.
- ❖ Sets a better rate than the arbitrary rate based purely on judgement and experience.

#### Disadvantages

- ❖ The classification is in general terms and only an overall assessment is possible. There are no definite standards of judgement.

- ❖ In a complex industrial organisation, it is not possible to be familiar with all the jobs and thus general descriptions must not enable correct assessment of the relative importance of all the jobs.
- ❖ The grading is very much influenced by the existing salary rates.
- ❖ It does not indicate the degree of difference between jobs, but only indicates that one job is more or less important than another one.

### JOB CLASSIFICATION OR GRADE DESCRIPTION

This method is similar to ranking as in both the methods neither points nor money values are used to classify jobs. No complicated procedures are involved; once the structure and definition of grades are fixed, the evaluation process is comparatively quick and simple.

However, classification differs from ranking as here the order of operations is reversed. First of all, the grades are determined and then the jobs are graded by reference to their content. Figuratively, the method may be described as a series of carefully labelled shelves in a bookcase. The primary task is to describe each of the classes so that no difficulty is experienced in fitting each job into its proper "niche". Jobs are then classified by comparing each job to the descriptions provided.

In this method the most difficult and important operation is defining the grades; it should be done so as to bring out perceptible differences between levels of skill, responsibility, etc. Before defining the requirements of the various grades it is usual to select those factors

which constitute essential aspects of the jobs. Skills, knowledge, experience and responsibility required are generally used as basic factors, but the choice and number of factors depend on the nature of the organisation's activities. It should be noted, however, that whilst the classification method may rely on selected general factors, the evaluation itself is carried out on the basis of whole jobs – they are not broken down into their component elements. The factors are used to provide general guidance for the decisions but are unweighted and unscored.

The classification method has historically been the one most widely used for salaried jobs, particularly in government and service occupations, although there is also some evidence of its use in the industry.

The classification method proceeds by a number of steps which may vary slightly from one plan to another, depending on circumstances. However, these different steps always involve the two essential stages of :

- 1) establishing grades and definitions; and
- 2) classifying jobs in these grades.

The first stage, leading to grade definition, is usually fairly long, as the definition is the key reference point according to which jobs are classified. The grade definitions should enable a balanced distribution of jobs to be made between the various grades. Accordingly, deriving them is quite a delicate operation, only possible after job analysis and once the future structure has been determined.

In typical cases the classification method generally comprises the steps of :

- 1) job analysis;
- 2) grouping jobs by their content;
- 3) establishing the number of structure of grades and preparing grade definitions; and
- 4) evaluating and classifying jobs.

Once grade definition is completed, evaluation and classification consist of comparing job descriptions one after another with the grade definitions and grading the jobs accordingly. The jobs are considered as a whole. This is a fairly simple operation where the grade definitions are exact and detailed but where the definitions are in general and abstract terms, the evaluation committee has considerable latitude for interpretation.

One way of facilitating grading is to select benchmark jobs for each grade in accordance with its special requirements. The evaluation committee will then have operational points of comparison. As evaluation proceeds, grading of individual jobs becomes easier because the jobs already graded extend the opportunities for comparison and verification. Once all the jobs are graded, the salary level for each grade can be fixed. (The stages of the classification method are fairly simple in a small enterprise, but where the method is applied to large number of employees many problems arise). This method also has some advantages and disadvantages:

#### **Advantages**

- a) Comparatively simple and easily administered.
- b) Since written job descriptions are used evaluation of jobs tend to be more accurate than under ranking system.

#### **Disadvantages**

- a) Classification is in general terms and only an overall assessment is possible.
- b) It is very difficult to make comprehensive class specifications for a complex organisation. The specifications tend to overlap specially in the case of senior jobs, and it is difficult to decide which class a particular job belongs.
- c) Placing of jobs in classes is very much influenced by the existing salary rates.

#### **POINT RATING**

Point rating is probably now the most common method used for job evaluation in many countries. It employs clearly defined factors and allots numerical points.

The points rating scheme is based on an analysis of separately defined characteristics or factors which are assumed to be common to all the jobs. One has to assume that differences in the extent to which the characteristics are found in the jobs will measure differences between the levels of the job. Therefore, when the factors in the points scheme are selected one should ensure that they are considered as most important in determining the relative degrees of difficulty or responsibility for the work of others working conditions, resources controlled (managerial and supervisory jobs), contacts (managerial and clerical jobs), and physical effort (manual jobs).

Each one of the above factor has a range of points allocated to it so that a maximum number of points is available. The relative importance of "weighting" of a factor can be determined by the maximum number of points given to it. Different point rating plans may select different factors and weigh each factor differently. For each factor, one must divide the total range of points into degrees according to the level at which the factor is present in the job. One can evaluate the jobs by comparing job descriptions containing analyses of the extent to which the factor is present in the job with the factor degree definitions. One must grade the jobs for each factor and give a factor score in accordance with the points value attached to each factor degree. Then add up the scores for each factor to produce a total score and allocate them into job grades according to the points range determined for each grade.

The points rating procedure has to be clearly defined from the very start. By and large, its steps fall into two distinct stages, namely preparing an evaluation plan and schedule (by defining and weighting factors) and grading jobs by reference to this schedule.

### Preparing an Evaluation Plan

The preparation of the evaluation plan involves the following steps :

- i) Selecting and defining factors;
- ii) Dividing the factors into degrees;
- iii) Weighting the factors;
- iv) Allocating points to each degree; and
- v) Validating the factor plan.

#### i) Selecting and defining factors

While selecting factors it is generally not necessary to introduce or conceive of an entirely new set of factors. In fact, it may be disadvantageous to choose appropriate factors from widely used in similar enterprises.

Specific factors are generally selected based on an examination of bench-mark jobs. Selecting representative sample of bench-mark jobs should cover all the major occupations and levels of responsibility to be covered by the scheme.

#### ii) Dividing the factors into degrees

Once the factors are selected they must be divided into degrees to make them operational. Prepare a preliminary definition of each factor and divide it into degrees of levels each of which is also defined. It is evident that the degree must be clearly defined and graduated. There is no hard and fast rule as to the number of degrees, which is largely a matter of common sense. Too many degrees will complicate the evaluation process unnecessarily, whilst a scheme having only two or three degrees will not sufficiently differentiate jobs from each other. It is useful to restrict the number of levels to five or six. It is not always necessary for each factor to have the same number of degrees, but it is important that the degrees should enable all jobs from the highest to the lowest to be placed in an order of importance that everybody will recognise.

#### iii) Weighting the factors

It is unlikely that each factor will be of equal significance. If, for example, four generic factors such as skill, effort, responsibility and working conditions are chosen, the relative importance of each of them will vary a great deal depending on the work done and occupations concerned. Generally speaking, skills are

more important than effort in technical occupations, and responsibility is the most important factor in managerial jobs. Therefore, the relative importance of each of the factors selected has to be determined – in other words, the factors must be weighted. There is no scientific or readymade method for weighting factors. It is generally done pragmatically and will depend on knowledge of the work of the enterprise.

Deciding on the weights to be attached to the factors is a critical decision and should always be made in accordance with company circumstances. It is dangerous to accept weightages given in a packaged scheme as these may produce results which are quite misleading. Weighting will also depend on the firm's objectives and personnel policy – for example, the importance of working conditions as a factor may well depend on that policy. One way of arriving at a preliminary weighting is to rank factors in order of importance and allot each of them a percentage arrived at by discussion in the evaluating committee or between the analyst and the persons involved. In addition, some of the implications of different weighting patterns can be considered by preliminary testing on bench-mark jobs. In this way the relative importance of the factors selected can gradually be established.

#### iv) Allocating points to each degree

Once the relative importance of the factors has been determined a preliminary way and the factors suitably divided into degrees, each degree must be assigned a numerical value. These are the values that will be used in determining the total point values of jobs.

The total points assigned to each factor having been established in percentage terms in the preceding step, it remains to ascribe point values to degrees within the range of points decided on. The actual number of points is a matter of convenience – the maximum number could just as well to 500 be 5000 – but it is preferable to use high figures in order to avoid decimal points and establish a significant progression with each degree.

The point values ascribed to the degrees may follow and arithmetical, geometrical or variable progression. Table below illustrates the difference between these three forms by an example of the "skills" factor.

**Methods of points progressions for the "skills" factor**

Progression	Sub-factors	Degrees (points)				
		1	2	3	4	5
Arithmetical progression	Education	15	30	45	60	75
	Experience	20	40	60	80	100
Geometrical progression	Education	15	30	60	120	240
	Experience	25	50	100	200	400
Variable progression	Education	15	20	30	45	75
	Experience	20	30	45	65	100



The choice of a method of points progression is also a matter of preference. The advantage of arithmetical progression is that it can be simply and easily explained to the employees. Geometrical progression is sometimes preferred because it gives a wider points range at higher levels. Variable progression can be used where there is sufficient difference when moving between degrees. Experience shows, however, that employees are not easily convinced that geometrical or variable progression is fair.

#### **v) Validating the factor plan**

The factor plan plays a decisive role in all point rating schemes. As a general rule, once it is officially adopted, no major amendment may be made to it. Therefore, it is essential that proposed plans should be carefully tested on a number of job descriptions. These test samples must comprise a sufficient number of jobs in order to verify whether the plan results in the desired spread of points and an acceptable hierarchy. If necessary, the weighting or definitions of degrees must be amended and the test repeated several times until it gives a completely satisfactory result. At this stage, all the factors and sub-factors must be precisely defined and the meaning of all terms clarified. The tested factor plan is then submitted to the evaluating committee or other decision-making organ for adoption.

Once the factor plan is adopted, it is usual to prepare an evaluation handbook explaining the procedure to be followed and summarising all the elements required for evaluation, in particular the definition of the selected factors and the points allotted. This handbook, or a summary of it, is usually distributed to all staff covered by the job evaluation scheme.

In the point rating method the evaluation process involves allotting point values to each job by consulting the factor plan. The evaluation committee or assessor examines the job descriptions and identifies the degrees of each factor required by them. It is therefore important that the job description should be well planned and so written that the degrees for each factor can easily be determined. This operation is relatively straightforward because each factor is examined in turn, and comparatively little room is left for subjective judgement. Nevertheless, abstract factors such as effort, responsibility or initiative may give rise to some difficulties and, for this reason, it is preferable to examine a group of similar jobs together. Furthermore, if the evaluation is made by several assessors independently, the number of points allotted by each may be compared to ensure that results are consistent. Every evaluation should be checked by a second assessor or by the evaluation committee.

When all the jobs have been evaluated and have had points attributed to them, the jobs are listed in points order, thus obtaining a job hierarchy. The next step is to convert this measurement into a salary bracket. In essence, this is simply a matter of bracketing up the total salary range into subdivisions corresponding to the number of classes of jobs arrived at. However, one needs

to look into several other factors before one can evolve a right salary policy. To arrive at a wage structure, the job hierarchy has still to be translated into wage rates, either directly by assigning a money value to the points, or by grading.

#### **Advantages and Disadvantages**

The point rating method also has its advantages and disadvantages:

##### **Advantages**

- a) The graphic and descriptive types of rating scales used have been accepted as most reliable and valid. Agreement among rates is usually quite close.
- b) Compensable factors are not limited to any particular number. These factors which the parties decide as important can be used.
- c) Job classes, which is the aim of all job evaluation systems are easily set up. Job classes are simply determined in terms of arbitrary point ranges or on agreed point ranges.

##### **Disadvantages**

- a) It is difficult to develop a point rating scheme. Defining factors and their degrees in such a fashion that all rates will have the same meaning needs considerable amount of skill.
- b) Assigning proper weightages to each factor and then assigning point values to each degree without being unfair to either the easy or the difficult jobs, requires careful and detailed study.
- c) The point system is difficult to explain. The concept of factors, degrees relative weights and points and relating points to money value cannot be easily interpreted to employees. If the workers do not understand the system clearly it may have adverse effect.
- d) Point rating scheme is certainly a time consuming process. Collecting job descriptions, defining degrees and factors, allocating degrees to each factor of each job, co-relating them with points and then ultimately with money value unanimously by evaluation committee is a long process. Considerable clerical work is also involved in preparing the job descriptions, final table of jobs evaluated, degrees assigned and points scored.

#### **THE FACTOR OF COMPARISON METHOD**

This method was originally developed in 1926 as an offshoot of point rating. This method therefore incorporates some of the principles of point rating but differs substantially from it in its use of bench-mark jobs and its method of comparing jobs and fixing wage rates.

The first task in applying this method is to select and describe clearly the factors to be used. The choice of factors is generally much more limited than in point rating. For manual workers, the following factors are generally recommended :

- i) Mental requirements;
- ii) Skill requirements;
- iii) Physical requirements;
- iv) Responsibilities; and
- v) Working conditions.

For clerical, technical and supervisory staff, all the factors mentioned above except working conditions are generally recommended.

### Steps

The factor comparison method involves the following steps :

- 1) Selecting bench-mark jobs;
- 2) Ranking bench-mark jobs by factors;
- 3) Allocating money values to factors; and
- 4) Ranking the other jobs, and wage fixing.

### 1) Selecting bench-mark jobs

The jobs selected as a bench-mark jobs must satisfy a number of conditions. Firstly they should be capable of clear descriptions and analysis in terms of the factors used; secondly they must be representative of hierarchy, thirdly when the rates for the bench-mark jobs are to be used as the standard for fixing the wages, these rates should be regarded as appropriate by all concerned.

### 2) Ranking bench-mark jobs by factors

Once a number of bench-mark jobs are chosen they are ranked successively by reference to each of the factors chosen. When the ranking is done by a committee each member must make his or her own ranking and the results then being averaged. A typical example of ranking of jobs by factors under the comparison method is given in Table below.

### Ranking Jobs by Factors Under the Factor Comparison Method in a Transport Department of a Travel Agency

Job	Skill	Mental requirements	Physical requirements	Responsibility requirements	Working condition
Helper	1	1	2	1	4
Mechanic	2	2	3	2	3
Driver	3	3	4	3	3
Transport Manager	4	4	5	5	2
Escort	5	5	1	4	1

### 3) Allocating money values to factors

The factor comparison method may also be used for fixing up salary in money units by ranking the jobs according to a procedure different from the one shown above. The salary rate for each bench-mark job is broken down and distributed among the factors in the proportions in which these are considered to contribute to the total price paid for each bench-mark job in the form of its wage rate. For example, if helper is a bench-mark job and its wage rate is 20 money units, it may be decided to assign nine of these to skill, five to mental requirements, two to physical requirements, three to responsibility and one to working conditions. Similarly, if the wage rate for another bench-mark job,

for example that of a mechanic, amounts to 18 money units, eight of these may be allotted to skill, three to working conditions, and so on. When the rates for all bench-mark jobs have been divided in this way the jobs have implicitly been ranked again with respect to each of the factors. In an example given, the helper ranks above the mechanic as regards skill requirements, but below the mechanic if the jobs are ranked on the basis of working conditions.

After the results have been averaged by a committee in the manner described above, the allocation of wage rates and the ranking by factors of the jobs covered for Table above might work out as indicated in Table below.

### Allocation of Money Values to the Different Factors and Ranking of Jobs Under the Factor Comparison Method

Job	Wage rate in money units	Skill		Mental requirements		Physical requirements		Responsibility		Working condition	
		Money Value attributed	Ranking of Job	Money Value attributed	Ranking of Job	Money Value attributed	Ranking of Job	Money Value attributed	Ranking of Job	Money Value attributed	Ranking of Job
Helper	20	9.0	1	5.0	1	2.0	3	3.0	1	1.0	5
Mechanic	18	8.0	2	4.0	2	1.0	5	2.0	2	3.0	3
Driver	16	6.0	3	3.0	3	3.0	2	1.5	3	2.5	4
Transport Manager	14	4.0	4	2.0	4	1.5	4	1.0	4	5.5	1
Escort	12	2.0	5	1.0	5	4.0	1	0.5	5	4.5	2

The two rankings of the bench-mark jobs are undertaken independently of each other and need not coincide. Their respective results as illustrated by Tables above are compared in Table below.

It will be noted that there are differences in ranking received in Table shown. These differences

have to be removed either by increasing or decreasing the money value of the different factors for the jobs concerned or by examining the job contents again. If it is not possible to reconcile the ranking of a particular job, it is eliminated from the list of bench-mark jobs.

**Comparison of Rankings by Factors and Money Values Under the Factor Comparison Method**

Job	Skill		Mental requirements		Physical requirements		Responsibility		Working condition	
	Ranking by factor	Ranking by money value	Ranking by factor	Ranking by money value	Ranking by factor	Ranking by money value	Ranking by factor	Ranking by money value	Ranking by factor	Ranking by money value
Helper	1	1	1	1	2	3	1	1	4	5
Mechanic	2	2	2	2	3	5	2	2	3	3
Driver	3	3	3	3	4	2	3	3	5	4
Transport Manager	4	4	4	4	5	4	5	4	2	1
Escort	5	5	5	5	1	1	4	5	1	2

**4) Ranking other jobs**

On the basis of job descriptions, each job is analysed and compared with the bench-mark jobs in terms of each of the factors separately.

**Advantages and Disadvantages**

The advantages and disadvantages under the Factor Comparison Method are as follows:

**Advantages**

- ❖ Factor comparison method permits a more systematic comparison of jobs than the nonanalytical methods,
- ❖ Evaluation is easier than by the point method, as a set of similar jobs are compared and ranked against each other,
- ❖ Analysis of bench-mark jobs is very comprehensive,
- ❖ In a scheme that incorporates money values, determination of wage rates is automatic, and
- ❖ Reliance of the method on bench-mark jobs guarantees that the scheme is tailor-made and that the ranking necessarily reflects the actual structure while eliminating anomalies.

**Disadvantages**

- ❖ This method is comparatively complicated to apply and it is difficult to explain to workers,
- ❖ The wage rates for the bench-mark jobs are presumed to be correct and definitive and all other rates are determined by reference to them, and
- ❖ It goes against the common belief that the procedures of evaluating jobs and fixing their wages should be kept separate.

## MOTIVATING TECHNIQUES

**IMPORTANCE OF MOTIVATION**

Probably, no concept of human resource management receives as much attention of academicians, researchers, and practising managers as motivation. The increased

attention towards motivation is justified by several reasons.

- ❖ Motivated employees are always looking for better ways to do a job: This statement can apply to corporate strategies, and to production workers. When people actively seek new ways of doing things, they usually find them. It is the responsibility of managers to make employees look for better ways of doing their jobs. An understanding of the nature of motivation is helpful in this context.
- ❖ A motivated employee, generally, is more quality oriented: This is true whether we are talking about a top manager spending extra time on data gathering and analysis for a report, or a clerk taking extra care when filing important documents. In either case, the organisation benefits, because individuals in and outside the organisation see the enterprise as quality conscious. A clear understanding of the way motivation work, helps a manager make his employees quality oriented.
- ❖ Highly motivated workers are more productive than apathetic workers: The high productivity of Japanese workers and the fact that fewer workers are needed to produce an automobile in Japan than elsewhere is wellknown. The high productivity of Japanese workers is attributable to many reasons, but motivation is the main factor.
- ❖ Every organisation requires human resource, in addition to financial and physical resources for it to function: Three behavioural dimensions of human resource are significant to the organisation: (a) people must be attracted not only to join the organisation but also to remain in it; (b) people must perform the tasks for which they are hired, and must do so in a dependable manner; and (c) people must go beyond this dependable role performance and engage in some form of creative, spontaneous, and



innovative behaviour at work. In other words, for an organisation to be effective, it must come to grips with the motivational problems of stimulating both the decision to participate and the decision to produce at work.

- ❖ Motivation as a concept represents a highly complex phenomenon that affects, and is affected by, a multitude of factors in the organisational milieu: A comprehensive understanding of the way in which an organisation functions requires that increasing attention be directed towards the question of why people behave as they do, on their jobs.
- ❖ Yet another reason why increasing attention is paid towards motivation can be found in the present and future technology required for production: Increased use of technology results in greater efficiency, higher productivity and better standard of living to the people.

### **MOTIVATING STEPS**

Jucius has observed that the following steps be adopted in motivation:

- ❖ **Sizing Up:** This involves ascertaining motivational needs. All employees need motivation but of varying kinds and in varying degrees.
- ❖ **Preparing a Set of Motivating Tools:** This requires a selection of specific tools of motivation. An executive, from personal experience, from the experiences of others, and with the help of the personnel department, may draw up a list of devices that may motivate different types of people under different circumstances.
- ❖ **Selecting and Applying Motivation:** The executive should decide the words, the tone of voice and the gestures to be used and make necessary rehearsal for their proper use. Besides, it has also to be considered where and when motivation is to be applied. The place and timing for this purpose are important.
- ❖ **Feedback:** This involves the finding whether an individual has been motivated; if not, some other device may be applied.

While establishing the steps of motivation, an executive should be guided by certain rules. According to Jucius, these rules are:

- ❖ **Self-interest and Motivation:** People are by nature, selfish. When a person realises that his own interests are best served by the attainment of an organisation's goals, is likely to be motivated.
- ❖ **Attainability:** It is necessary to establish goals that are attainable and when such goals are achieved, it leads to employee satisfaction. Unattainable goals frustrate people.
- ❖ **The Human Element:** Motivation appeals to emotions and feelings. The executive, who is most successful as a motivator, can trace success invariably to the skill in dealing with peoples' feelings which can bring out the best in people because it makes them

feel good, feel significant, feel worthwhile, and feel that they are growing.

- ❖ **Individual Group Relationship:** Motivation must be based upon group as well as individual-centred stimuli.
- ❖ **Managerial Theory:** Management must base its motivational efforts on sound theory.

### **TYPES OF MOTIVATION**

If a manager wants to get work done by employees, may either hold out a promise of a reward for them for doing work in a better or improved way or instil fear into them to do the desired work. In other words, may utilise a positive or negative motivation. Both these types are widely used by managements. Positive motivation includes praise and credit for work done, competition, pride, delegation of responsibility, appreciation, and pay. Positive motivation leads to a good team spirit, co-operation and feeling of happiness. Negative motivation is based upon force and fear. Fear causes persons to act in a certain way because they are afraid of the consequences if they don't. Fear motivation is a "push" mechanism. Imposition of punishment frequently results in frustration among those punished, and an unfavourable attitude to the job. In spite of these demerits, negative motivation has been used to achieve the desired behaviour in some cases. There is no management which has not used the negative motivation at some time or the other. However, in recent years the trend has been towards the use of positive motivation.

Extrinsic motivation is concerned with external motivators which employees enjoy — pay, promotion, status, fringe benefits, holidays, retirement plans and health insurance schemes. By and large, these motivators are associated with financial rewards. Intrinsic motivation, on the other hand, is concerned with the feeling of having accomplished something worthwhile, i.e., the satisfaction one gets after doing one's work well. Praise, responsibility, recognition, esteem, power and status are examples of such motivation.

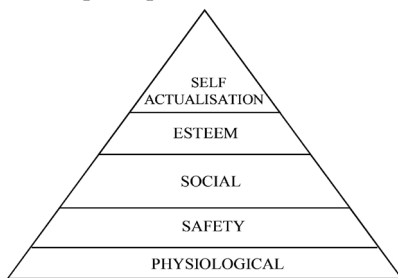
### **THEORIES OF MOTIVATION**

There is no shortage of models, strategies and tactics for motivating employees. All the theories can broadly be classified as content theories and process theories.

**Maslow's Theory of Hierarchy of Needs:** People go to work in order to satisfy their needs and aspirations. These needs are not constant but they change according to circumstances status, environment, society, groups, and so forth. From Prof. A.H. Maslow (1943), we have a theory of motivation where he identified a hierarchy of needs as shown below.

Maslow argued that as one's need is met, then the individual moves on to the next need. First of all, the individual has the basic physiological needs such as food, shelter, clothing, and works in order to satisfy these needs. Once these needs are satisfied, the individual moves to a higher plane of needs. Secondly, an individual

has safety needs such as security and protection — the need to provide a safe and secure physical and emotional environment, an environment that is free from threats to continued existence. Once these needs are met, the individual moves on to satisfy the third type of needs called “social needs” or “belongingness needs.” These needs relate to one’s desire for social acceptance and friendship. The fourth type is self-respect and self-esteem. The esteem needs focus on one’s desire to have a positive image to receive recognition, attention and appreciation from others for one’s contribution. The last type of needs are those of self-fulfilment and self-actualisation for realising the fullest stature. People who have become self-actualised are self-fulfilled and have realised their full potential. Self-actualisation is an individual’s motivation to transform the perception of self into reality.



**McGregor’s Theory X and Theory Y:** Prof. Douglas McGregor has presented two opposite sets of assumptions about employees. These have been represented by Theory X and Theory Y. Theory X represents standard bureaucratic and authoritarian attitude towards employees and is based on certain assumptions such as: (i) the average person dislikes work and, whenever possible, will avoid it; (ii) most people are not ambitious, have little desire for responsibility and prefer to be directed; (iii) to get people to work, it is necessary to use strict control, threats, constant pressure, coercion, persuasion, and even punishment; (iv) most people have little capacity for creativity in solving organisational problems; and (v) people actually like to be directed and supervised very closely.

McGregor drawing heavily on Maslow’s hierarchy of needs, concluded that the “theory X assumptions about human nature, when universally applied, are often inaccurate and that the management approaches that develop from these assumptions may fail to motivate many individuals to work towards organisational goals.” He observes: “Management by direction and control may not succeed because it is a questionable method for motivating people whose physiological and safety needs are reasonably satisfied and whose higher level needs are becoming predominant.” He, therefore, developed an alternative theory of human behaviour called Theory Y. Theory Y assumes that people are not by nature lazy and unreliable. They enjoy work, show initiative and imagination in self-direction and self-control. Some assumptions of Theory Y are: (i) Work is a natural activity, like playing and rest, if the conditions are favourable.

(ii) Close supervision and threats of punishment are not the only ways to get people to do things. (iii) Motivation occurs at the social esteem and self-actualisation levels, as well as at the physiological and security levels. (iv) People can be self-directed and be creative at work if properly motivated.

**Herzberg’s Two-Factor Theory:** A significant development in motivation research was made by Frederick Herzberg (1959) and associates who distinguished between motivational and maintenance factors in the work situation. Maintenance of hygiene factors are those which belong to the company policies and administration, supervision, inter-personal relations, working conditions, pay, job security, personal life, status. Herzberg propounds that these factors help in removing discomfort, dissatisfaction and discontent on the part of the employees but are not motivators as traditionally perceived by management. These potent dissatisfiers are called maintenance factors on the job because they are necessary to maintain a reasonable level of satisfaction in employees. They are also known as hygiene factors because they support employees’ mental health. But in themselves, they are not motivators according to Herzberg and his team. The real motivators that primarily build strong motivation and high job satisfaction among employees are achievement, recognition, advancement, work itself, possibility of growth, and responsibility. According to Herzberg, the motivating factors are intrinsic to the job, while the maintenance and hygiene factors are extrinsic to it.

According to Dumette, Campbell and Hakel (1967), Herzberg’s Motivation Hygiene Theory has accomplished three important objectives:

- ❖ It has discovered those features of job situation that make the difference between satisfaction and dissatisfaction.
- ❖ Unlike the tradition of most previous research it emphasises those job features that lead to change in feelings towards the job.
- ❖ It developed a taxonomy of job situations consisting of satisfying and dissatisfying features. Satisfying features which the employees would like to attain and the dissatisfying features that they would like to avoid.

Herzberg’s theory has, however, been criticised by many authors. For example, Keith Davis has observed that a limited testing of the model on blue-collar workers suggests that some items normally considered as maintenance factors are frequently considered motivational factors by the blue-collar workers. Some authorities doubted whether the factors leading to satisfaction and dissatisfaction are really different from each other. In less developed countries, it is likely that workers will designate some of the maintenance factors or hygiene factors as motivators, since they are yet to meet some of their lower order needs.