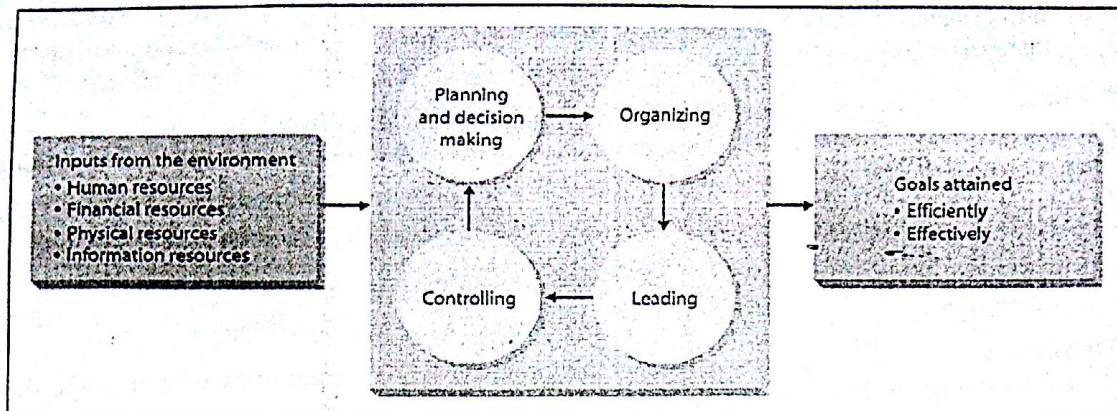


## What Is Management?

Management is a set of activities (including planning and decision making, organizing, leading, and controlling) that directed at an organization's resources (human, financial, physical, and informational) with the aim of achieving organizational goals in an efficient and effective manner.

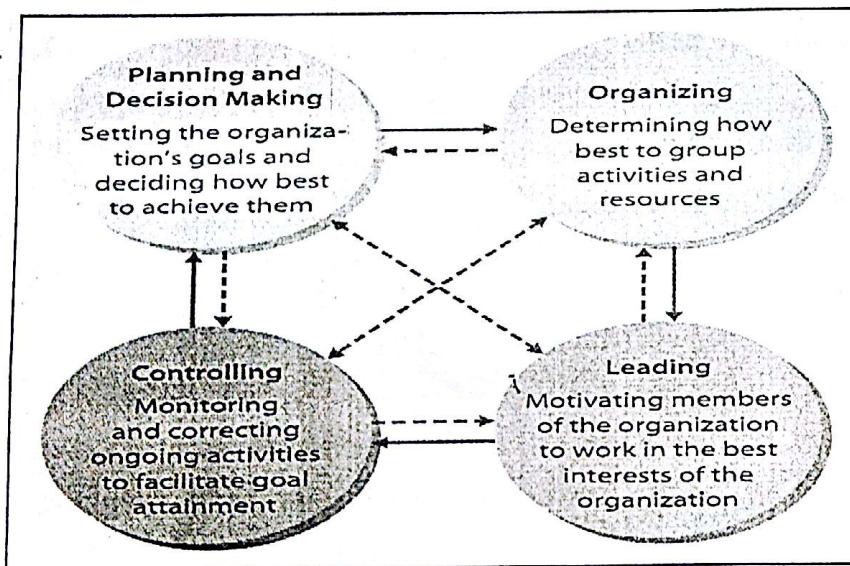


**Efficiency:** By efficient, we mean using resources wisely and in a cost effective way. For example, a firm like Toyota Motor Corporation, which produces high quality products at relatively low costs, is efficient.

**Effectiveness:** By effective, we mean making the right decisions and successfully implementing them. For example, Toyota also makes cars with the styling and quality to inspire consumer interest and confidence.

## The Management Process / Functions

The manager's primary responsibility is to carry out the management process. The following Figure will illustrate the basic definitions and interrelationships of the basic managerial functions:



### Planning and decision-making:

- Planning is deciding in advance what is to be done. It is the future course of action. While making plan it is to consider that a particular task, who will do, where it will be done, how it will be done, what materials, human, physical, information and other resources will be required and where it will be found. Planning is the first and foremost task of management. It includes establishing goals and standards, developing rules and procedures, developing plans and forecasting.
- On the other hand, Decision-making is the act of choosing one alternative from among a set of alternatives. It is the process of recognizing and defining the nature of a decision situation, identifying alternatives, evaluating alternatives, choosing the "best" alternative, and putting it to practice.

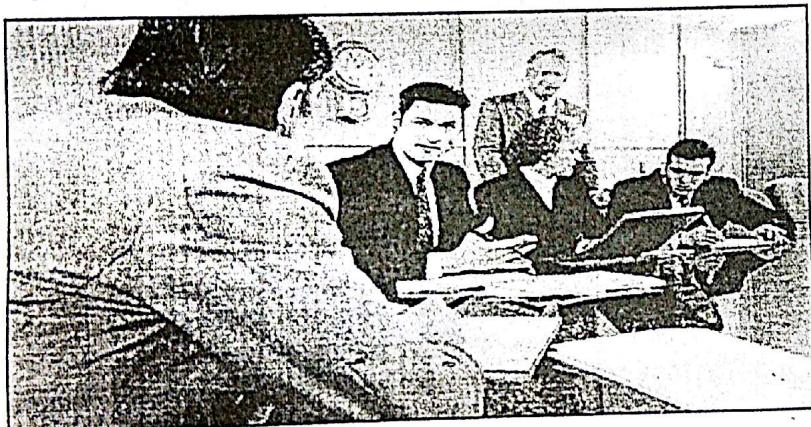
**Organizing:** It is the second task of management. Organizing means determining how activities and resources are to be grouped. The basic elements of organizing include job design, departmentalization, authority relationships, span of control, and line and staff roles.

**Leading:** Leading means the set of processes used to get members of the organization to work together to further the interests of the organization. Leading involves a number of different activities and processes such as, motivating employees, leader's efforts to influence others, managing interpersonal relations and communication, and managing work groups and teams.

**Controlling:** Controlling means monitoring organizational progress toward goal attainment. It is the last task of management. It includes a series of activities such as determining standard, measurement of actual performance, identifying deviation if any, and taking corrective actions if any deviation is found.

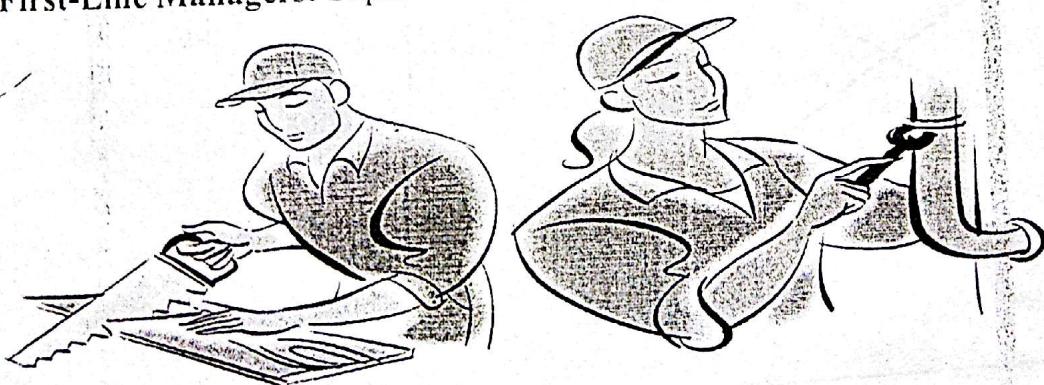
### Kinds of Managers

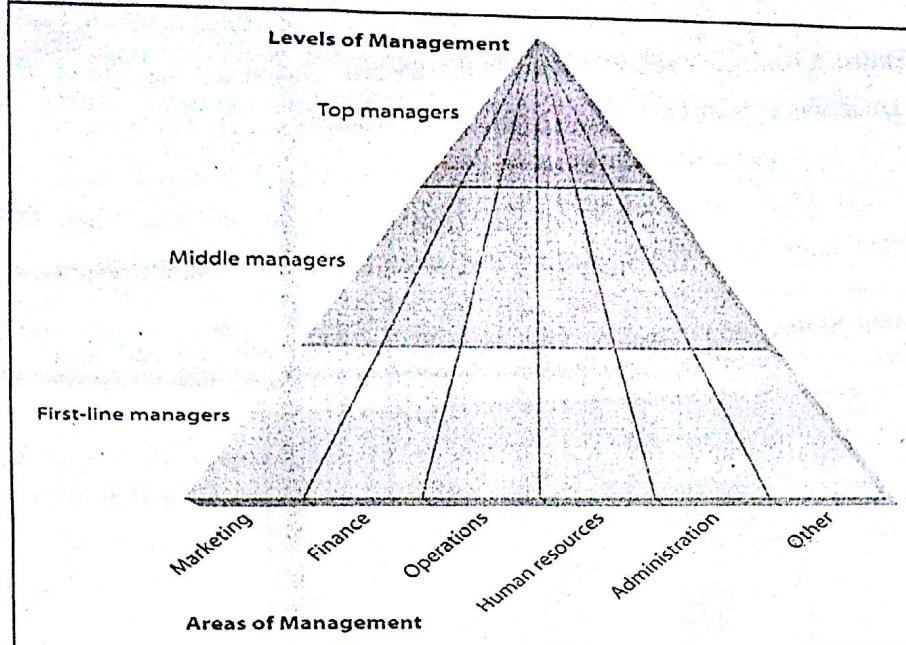
**Top Managers:** Top level managers make up the small group of executives who manage the overall organization, the strategic level. The titles found in this kind include president, vice president, chief executive officer etc. Their functions and responsibilities are diverse and varied including making strategy, policies & plans and so on. They determine the fate of the organization. They represent the organization with other organizations, government representatives, and foreign countries and so on.



**Middle Managers:** Middle manager is probably the largest group that implements the strategies developed at the top and coordinates and supervise the activities of the first line managers. The titles include operations managers, divisional head, regional managers etc.

**First-Line Managers:** Supervise and coordinate the activities of operating employees.





**Figure: Kinds of Managers by Level and Area**

#### Managing in Different Areas of the Organization

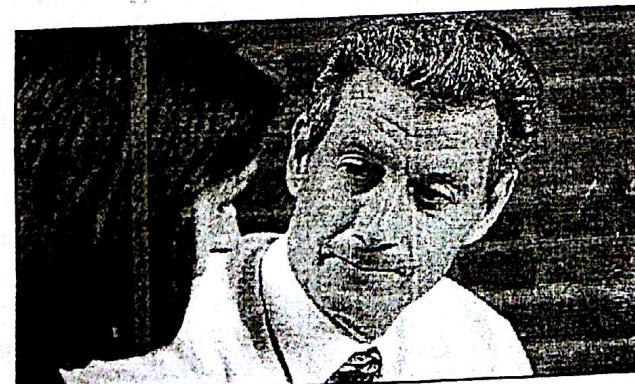
- Marketing Managers
- Financial Managers
- Operations Managers
- Human Resource Managers
- Administrative Managers
- Specialized Management

#### The most fundamental management skills are:

1. **Technical Skills:** Necessary to accomplish or understand the specific kind of work being done. These skills are especially important for first line managers.



2. **Interpersonal Skills:** The ability to communicate with, understand, and motivate both individuals and groups. Be able to get along with: Subordinates, Peers, and Those at higher levels.



**3. Conceptual Skills:** A manager's ability to think in the abstract. The mental capacity to:

- Understand organizational goals and its environment.
- How the organization is structured.
- Viewing the organization as system.

**4. Diagnostic Skills:** Skills that enable a manager to visualize the most appropriate response to a situation.

**5. Communication Skills:** A manager's abilities both to effectively convey ideas and information to others and to effectively receive ideas and information from others.



**6. Decision-making Skills:** A manager's ability to correctly recognize and define problems and opportunities and to then select an appropriate course of action to solve problems and capitalize on opportunities.

**7. Time-management Skills:** The manager's ability to prioritize work, to work efficiently, and to delegate appropriately.

### Principles of Administrative Management

Henri Fayol, father of administrative/modern management, has distinguished fourteen principles of management which are now widely accepted and form the core of most management teaching, education and practice. These are outlined below and discussed later.

**1. Division of labor:** It is the principle of job specialization, where each job is broken down into small parts and then assigns the responsibility to the competent person. It will enhance the employee's expertise about the particular job.

**2. Authority and accountability:** It clearly defines the rights and responsibility of manager. It defines the area of action, initiative and responsibility of each manager.

**3. Discipline:** Members in an organization need to respect the rules and agreements that govern the organization. To Fayol, discipline will result from good leadership at all level of organization, fair agreements, and judiciously enforced penalties for infractions.

**4. Unity of command:** It is the safeguard against dualism of control. Each employee must receive his or her instructions about a particular operation from only one person. Fayol believed that if an employee was responsible to more than one superior, conflict in instruction and confusion of authority would result.

**5. Unity of direction:** Those operations within an organization that have the same objectives should be directed by only one manager. For example, the personnel department in a company should not have two directors each with a different hiring policy.

**6. Superiority of general interest over individual interests:** In any undertakings the interests of employees should not take precedence over the interests of the organization.

**7. Remuneration:** Adequate remuneration secures a committed work force and sustains employee's interest and participation. Compensation for work done should be fair to both employees and employer.

**8. Centralization:** Decreasing the role of subordinates in decision making is centralization; increasing their role is decentralization. Fayol believed that manager should retain final responsibility but they also need to give their subordinates enough authority to do their jobs properly.

**9. Scalar chain:** Scalar chain is the principle of the observance of the chain of command, which discourages level jumping unless and until serious situation occurs.

**10. Order:** Materials and people should be in the right place at the right time. In particular people should be in the jobs best suited for them.

**11. Equity:** Equity is the law of the social world, which alone secures loyalty of employees and their cooperation. Manager should be both friendly and fair to their subordinates.

**12. Stability and security:** It is a basic motivation for attention to work, interest and sustained efforts of the employees. To Fayol a high employee turnover rate is not good for efficient functioning of an organization.

**13. Initiative:** Subordinates should be given freedom to conceive and carry out their plans even some mistakes result.

**14. Esprit de corps:** It means cooperation and fellow feeling. It means everybody helps everybody else in a close spirit of teamwork.

### Principles of scientific Management

On the basis of his experiments, Taylor developed a set of scientific management principles which are as follows:

1. Develop a science for each element of a worker's job that replaces rule of thumb. Use scientific method rather than intuition and experience to determine the work methods and tools. Ensure that each motion or movement of workers is the most efficient possible. Lay down standard time, standard methods, tools and working conditions for each task.

2. Functional specialization should be a part of every job. Every worker should be a specialist in what he did and should know his job well.

3. Scientific selection, training and development of workers. Tests should be used to identify the right person for each job. A worker should be given job for which he is most suitable.

4. Planning and scheduling of the work to ensure availability of materials and other resources at the right place, right time, and in proper condition.

5. Standards with respect to methods and time for each task should be established. Workers movements and the time needed to complete every movement should be scientifically studied. Jobs should be redesigned incorporating highly efficient motions with specific time required for each step in a task.

6. Wage incentives should be an integral part of each job. Workers should be paid a bonus if they complete the task before the standard time. Different wage rates should be paid for different jobs.

7. Close co-operation between management and workers to accomplish work in accordance with scientific method. Management can secure higher profits only when workers performs their jobs with maximum efficiency. Similarly, workers can expect higher wages only when management adopts an enlightened attitude toward them. Instead of fighting on sharing the gains of productivity, the two sides should work together to maximize productivity so that each can get a larger share. Both stand to gain by maximizing output. There should be a mental change in both parties from conflict to cooperation.

8. A more equal division of responsibility between management and workers. Planning should be separated from doing. Planning being the responsibility of management and doing being the responsibility of workers.

## Performance Management

### Q: Comparing Performance Appraisal and Performance Management

#### ➤ Performance appraisal

- Evaluating an employee's current and/or past performance relative to his or her performance standards.

#### ➤ Performance management

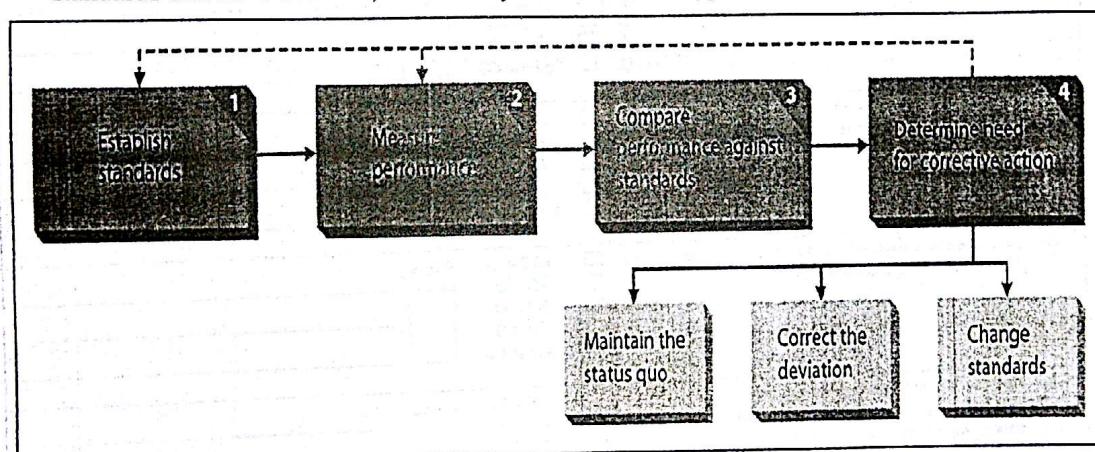
- The process employers use to make sure employees are working toward organizational goals.

### Q: Why appraise performance?

- Appraisals play an integral role in the employer's performance management process.
- Appraisals help in planning for correcting deficiencies and reinforce things done correctly.
- Appraisals, in identifying employee strengths and weaknesses, are useful for career planning
- Appraisals affect the employer's salary raise decisions.

### Q: Steps in Appraising Performance

1. **Defining the job:** Making sure that you and your subordinate agree on his or her duties and job standards.
2. **Appraising performance:** Comparing your subordinate's actual performance to the standards that have been set; this usually involves some type of rating form.



3. **Providing feedback:** Discussing the subordinate's performance and progress, and making plans for any development required.

### Q: What to measure?

- Work output (quality and quantity)
- Personal competencies
- Goal (objective) achievement

### Q: How to measure?

- Graphic rating scales
- MBO

## Q: Performance Appraisal Methods

**Graphic rating scale:** A scale that lists a number of traits and a range of performance for each that is used to identify the score that best describes an employee's level of performance for each trait.

Performance Appraisal					
Employee Name _____			Title _____		
Department _____		Employee Payroll Number _____			
Reason for Review:	<input type="checkbox"/> Annual	<input type="checkbox"/> Promotion	<input type="checkbox"/> Unsatisfactory Performance		
	<input type="checkbox"/> Merit	<input type="checkbox"/> End Probation Period	<input type="checkbox"/> Other _____		
Date employee began present position	/	/			
Date of last appraisal	/	/	Scheduled appraisal date	/	/
Instructions: Carefully evaluate employee's work performance in relation to current job requirements. Check rating box to indicate the employee's performance. Indicate N/A if not applicable. Assign points for each rating within the scale and indicate in the corresponding points box. Points will be totaled and averaged for an overall performance score.					
RATING IDENTIFICATION					
O—Outstanding—Performance is exceptional in all areas and is recognizable as being far superior to others.	I—Improvement Needed—Performance is deficient in certain areas. Improvement is necessary.				
V—Very Good—Results clearly exceed most position requirements. Performance is of high quality and is achieved on a consistent basis.	U—Unsatisfactory—Results are generally unacceptable and require immediate improvement. No merit increase should be granted to individuals with this rating.				
G—Good—Competent and dependable level of performance. Meets performance standards of the job.	N—Not Rated—Not applicable or too soon to rate.				
GENERAL FACTORS	RATING SCALE			SUPPORTIVE DETAILS OR COMMENTS	
1. Quality—The accuracy, thoroughness, and acceptability of work performed.	O	<input type="checkbox"/>	100-90	Points	<input type="checkbox"/>
	V	<input type="checkbox"/>	90-80		<input type="checkbox"/>
	G	<input type="checkbox"/>	80-70		<input type="checkbox"/>
	I	<input type="checkbox"/>	70-60		<input type="checkbox"/>
	U	<input type="checkbox"/>	below 60		<input type="checkbox"/>
2. Productivity—The quantity and efficiency of work produced in a specified period of time.	O	<input type="checkbox"/>	100-90	Points	<input type="checkbox"/>
	V	<input type="checkbox"/>	90-80		<input type="checkbox"/>
	G	<input type="checkbox"/>	80-70		<input type="checkbox"/>
	I	<input type="checkbox"/>	70-60		<input type="checkbox"/>
	U	<input type="checkbox"/>	below 60		<input type="checkbox"/>
3. Job Knowledge—The practical/technical skills and information used on the job.	O	<input type="checkbox"/>	100-90	Points	<input type="checkbox"/>
	V	<input type="checkbox"/>	90-80		<input type="checkbox"/>
	G	<input type="checkbox"/>	80-70		<input type="checkbox"/>
	I	<input type="checkbox"/>	70-60		<input type="checkbox"/>
	U	<input type="checkbox"/>	below 60		<input type="checkbox"/>
4. Reliability—The extent to which an employee can be relied upon regarding task completion and follow-up.	O	<input type="checkbox"/>	100-90	Points	<input type="checkbox"/>
	V	<input type="checkbox"/>	90-80		<input type="checkbox"/>
	G	<input type="checkbox"/>	80-70		<input type="checkbox"/>
	I	<input type="checkbox"/>	70-60		<input type="checkbox"/>
	U	<input type="checkbox"/>	below 60		<input type="checkbox"/>

**Management by Objectives (MBO):** Involves setting specific measurable goals with each employee and then periodically reviewing the progress made.

1. Set the organization's goals.
2. Set departmental goals.
3. Discuss departmental goals.
4. Define expected results (set individual goals).
5. Performance reviews.
6. Provide feedback.

## Q: Potential Rating Scale Appraisal Problems

1. **Unclear standards:** An appraisal that is too open to interpretation. The following is an example of A Graphic Rating Scale with Unclear Standards.

	<b>Excellent</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>
Quality of work				
Quantity of work				
Creativity				
Integrity				

2. **Halo effect:** Occurs when a supervisor's rating of a subordinate on one trait biases the rating of that person on other traits.
3. **Central tendency:** A tendency to rate all employees the same way, such as rating them all average.
4. **Strictness/leniency:** The problem that occurs when a supervisor has a tendency to rate all subordinates either high or low.
5. **Bias:** The tendency to allow individual differences such as age, race, and sex to affect the appraisal ratings employees receive.

#### **Q: How to Avoid Appraisal Problems?**

1. Learn and understand the potential problems and the solutions for each.
2. Use the right appraisal tool. Each tool has its own pros and cons.
3. Train supervisors to reduce rating errors such as halo, leniency, and central tendency.
4. Have raters compile positive and negative critical incidents as they occur.

#### **Q: Who Should Do the Appraising?**

- The immediate supervisor
- Peers
- Rating committees
- Self-ratings
- Subordinates
- 360-Degree feedback

## **Evaluating Faculty for Promotion and Tenure Classroom Teaching Appraisal by Students**

Teacher \_\_\_\_\_ Course \_\_\_\_\_

Term \_\_\_\_\_ Academic Year \_\_\_\_\_

Thoughtful student appraisal can help improve teaching effectiveness. This questionnaire is designed for that purpose, and your assistance is appreciated. Please do not sign your name.

Use the back of this form for any further comments you might want to express.

**Directions:** Rate your teacher on each item, giving the highest scores for exceptional performances and the lowest scores for very poor performances. Place in the blank space before each statement the rating that most closely expresses your view.

Exceptional	Moderately Good	Very Poor	Don't Know				
	7      6      5      4      3      2      1		X				
_____	1. How do you rate the agreement between course objectives and lesson assignments?						
_____	2. How do you rate the planning, organization, and use of class periods?						
_____	3. Are the teaching methods and techniques employed by the teacher appropriate and effective?						
_____	4. How do you rate the competence of the instructor in the subject?						
_____	5. How do you rate the interest of the teacher in the subject?						
_____	6. Does the teacher stimulate and challenge you to think and to question?						
_____	7. Does he or she welcome differing points of view?						
_____	8. Does the teacher have a personal interest in helping you in and out of class?						
_____	9. How would you rate the fairness and effectiveness of the grading policies and procedures of the teacher?						
_____	10. Considering all the above items, what is your overall rating of this teacher?						
_____	11. How would you rate this teacher in comparison with all others you have had in the college or university?						

*Form: Classroom Teaching Appraisal by Students*

## **Definition of Motivation**

Generally speaking, Motivation is a psychological feeling or power. It is latent in human behavior.

In a broad sense, Motivation is the processes that account for an individual's intensity, direction, and persistence of effort toward attaining a goal.

### **Key Elements:**

1. Intensity: how hard a person tries
2. Direction: toward beneficial goal
3. Persistence: how long a person tries

According to Hellman and Horn stein, "Motivation is the individuals desire to work"

In fine, motivation means an individuals needs, desires and concepts that cause him or her to act in a particular manner.

## **Importance of motivation**

- ❖ Obtaining job satisfaction
- ❖ Increase productivity
- ❖ Favorable group behavior
- ❖ Increase sales and profit
- ❖ Change becomes possible
- ❖ Maximum efficiency and success are attained.
- ❖ It increase team spirit
- ❖ Reduce strike, boycott, go slow, lockout
- ❖ Reduce labor turnover and absenteeism

Clarance Francis said, "You can buy a man's time, you can buy a man's physical presence at a given place, but you cannot buy his initiate, loyalty and enthusiasm."

## **Sources of motivation**

### Financial means of motivation

- ❖ Fair wage
- ❖ Bonus
- ❖ Promotion
- ❖ Accommodation facilities
- ❖ Transportation facilities
- ❖ Medical facilities
- ❖ Education facilities
- ❖ Insurance facilities
- ❖ Participation in profit

### Non-Financial means of motivation

- ❖ Job security
- ❖ Praise, recognition and reward
- ❖ Feed back
- ❖ Too much competition
- ❖ Participation in management
- ❖ Opportunity for promotion
- ❖ Goodwill

- ❖ Training facilities
- ❖ Comfortable and attractive working conditions
- ❖ Co-worker with same mind and sense
- ❖ Good supervision
- ❖ Good relationship among workers
- ❖ Sound management
- ❖ Treating personnel problems with sympathy

### Hierarchy of Needs Theory (Maslow)

There is a hierarchy of five needs—physiological, safety, social, esteem, and self-actualization; as each need is substantially satisfied, the next need becomes dominant.

**Physiological:** Includes hunger, thirst, shelter, and other bodily needs.

**Safety:** Includes security and protection from physical and emotional harm.

**Social:** Includes affection, belongingness, acceptance, and friendship

**Esteem:** Includes internal esteem factors such as self-respect, autonomy, and achievement; and external esteem factors such as status, recognition, and attention.

**Self-actualization:** The drive to become what one is capable of becoming; includes growth, achieving one's potential, and self-fulfillment

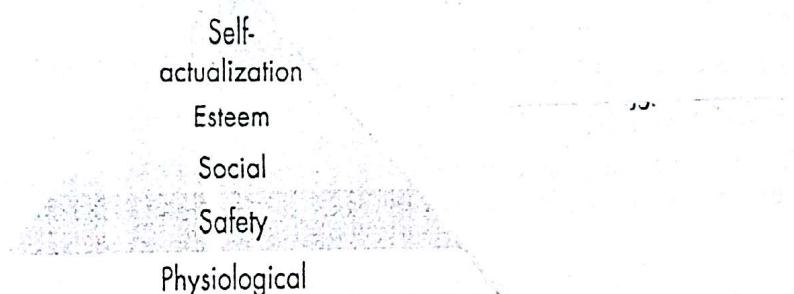


Figure: Maslow's Hierarchy of Needs

#### Assumptions of Maslow's Hierarchy:

- Individuals cannot move to the next higher level until all needs at the current (lower) level are satisfied.
- Individuals therefore must move up the hierarchy in order.

#### How to Apply?

If you want to motivate someone, according to Maslow, you need to understand what level of the hierarchy that person is currently on and focus on satisfying the needs or above that level.

### Two-Factor Theory (Frederick Herzberg)

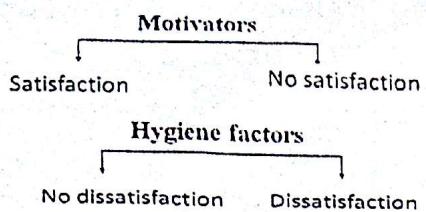
Psychologist Frederick Herzberg proposed the two-factor theory. This theory is also known as motivation-hygiene theory. That is, one factor is motivational or intrinsic and another factor is hygiene or extrinsic.

Motivational factors include advancement, recognition, responsibility, and achievement. These factors are related to job satisfaction. Hygiene factors include company policy and administration, physical working conditions, pay, supervision, relations with others and job security. These factors are associated with dissatisfaction.

Herzberg said that the opposite of satisfaction is not dissatisfaction as was traditionally believed.

#### Contrasting view satisfaction and dissatisfaction

## **Herzberg's view**



When hygiene factors are adequate, people will not be dissatisfied; neither will they be satisfied. If they are not adequate, people will be dissatisfied.

On the other hand, if motivator factors are adequate, people will be satisfied. If they are inadequate, people will get no satisfaction but not dissatisfaction.

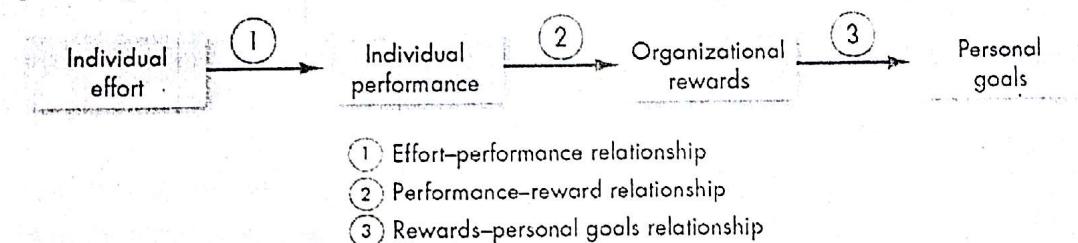
### **Criticisms:**

1. No overall measure of satisfaction was used. A person may dislike part of his or her job yet still think the job is acceptable.
2. This theory is applicable to the developed countries but is not applicable to the developing countries.
3. This theory is applicable only for the professional, managerial, and higher-level employees.

Regardless of criticisms, Herzberg's theory has been widely read and few managers are unfamiliar with his recommendations.

## **Expectancy Theory**

Victor Vroom developed the expectancy theory. Expectancy theory argues that an employee will be motivated to exert a high level of effort when he or she believes that effort will lead to a good performance appraisal; that a good appraisal will lead to organizational rewards such as a bonus, a salary increase, or a promotion; and that the rewards will satisfy the employee's personal goals. The theory therefore focuses on three relationships.



Expectancy theory helps explain why a lot of workers are not motivated on their jobs and does only the minimum necessary to get by. According to this theory, employees need to answer in the affirmative if their motivation is to be maximized.

- First, if I give a maximum effort, will it be recognized in my performance appraisal? The organizational performance appraisal system may be designed to assess non-performance factors such as loyalty, initiative, or courage, which means more effort will not result in a higher evaluation. Another possibility is that employees rightly or wrongly perceive that his boss does not like him. As a result he expects to get poor appraisal regardless of his effort.
- Second, if I get a good performance appraisal, will it lead to organizational reward? Many employees see the performance-reward relationship in their job as weak because pay is allocated to employees based on factors such as seniority, cooperative, or "kissing up" to the boss.
- Finally, if I'm rewarded, are the rewards ones that I find personally attractive? The employee works hard in hope of getting a promotion but gets a pay rise instead. Or the employee wants a more interesting and challenges job but receives only a few words of praise. Or the employee puts extra effort to be relocated to the company's Dhaka office but instead is transferred to Rajshahi office.

# Training and Developing Employees

## Q: What is Training?

Training is the process of teaching new employees the basic skills they need to perform their jobs.

## Q: The Training and Development Process

1. Needs analysis
  - Identify job performance skills needed, assess prospective trainee's skills, and develop objectives.
2. Instructional design
  - Produce the training program content, including workbooks, exercises, and activities.
3. Validation
  - Presenting (trying out) the training to a small representative audience.
4. Implement the program
  - Actually training the targeted employee group.
5. Evaluation
  - Assesses the program's successes or failures.

## Training Methods

### ➤ On-the-job training (OJT)

- Having a person learn a job by actually doing the job.
- OJT methods
  - Coaching or understudy
  - Job rotation
  - Special assignments

#### Advantages of OJT methods

- Inexpensive
- Immediate feedback

### ➤ Apprenticeship training

- A structured process by which people become skilled workers through a combination of classroom instruction and on-the-job training.

### ➤ Effective lectures

- Use signals to help listeners follow your ideas.
- Don't start out on the wrong foot.
- Keep your conclusions short.
- Be alert to your audience.
- Maintain eye contact with the trainees.
- Make sure everyone in the room can hear.
- Control your hands.
- Talk from notes rather than from a script.
- Avoid long talks

### ➤ Programmed Learning

- A systematic method for teaching job skills involving:
  - Presenting questions or facts
  - Allowing the person to respond
  - Giving the learner immediate feedback on the accuracy of his or her answers

#### Advantages of Programmed Learning

- Reduced training time
- Self-paced learning
- Immediate feedback
- Reduced risk of error for learner

### ➤ Distance and Internet-Based Training:

Distance and Internet-Based Training is of three types as follows:

1. **Teletraining:** A trainer in a central location teaches groups of employees at remote locations via TV hookups.
2. **Videoconferencing:** Interactively training employees who are geographically separated from each other—or from the trainer—via a combination of audio and visual equipment.
3. **Training via the Internet:** Using the Internet or proprietary internal intranets to facilitate computer-based training.

### What Is Management Development?

Management development means any attempt to improve current or future management performance by imparting knowledge, changing attitudes, or increasing skills.

### What is Succession Planning?

Succession planning is a process through which senior-level openings are planned for and eventually filled.

- Anticipate management needs
- Review firm's management skills inventory
- Create replacement charts
- Begin management development

### Managerial on-the-Job Training Methods

- ✓ **Job rotation**
  - Moving a trainee from department to department to broaden his or her experience and identify strong and weak points.
- ✓ **Coaching/Understudy approach**
  - The trainee works directly with a senior manager or with the person he or she is to replace; the latter is responsible for the trainee's coaching.
- ✓ **Action learning**
  - Management trainees are allowed to work full-time analyzing and solving problems in other departments.

### Off-the-Job Management Training and Development Techniques

- ✓ **Role playing**
  - Creating a realistic situation in which trainees assume the roles of persons in that situation.
- ✓ **Behavior modeling**
  - Modeling: showing trainees the right (or "model") way of doing something.
  - Role playing: having trainees practice that way
  - Social reinforcement: giving feedback on the trainees' performance.
  - Transfer of learning: Encouraging trainees apply their skills on the job.
- ✓ **Corporate universities**
  - Provides a means for conveniently coordinating all the company's training efforts and delivering Web-based modules that cover topics from strategic management to mentoring.
- ✓ **Executive coaches**
  - An outside consultant who questions the executive's boss, peers, subordinates, and (sometimes) family in order to identify the executive's strengths and weaknesses.
  - Counsels the executive so he or she can capitalize on those strengths and overcome the weaknesses.

### Managing Organizational Change and Development

- ✓ **What to change?**
  - Strategy: mission and vision
  - Culture: new corporate values
  - Structure: departmental structure, coordination, span of control, reporting relationships, tasks, decision-making procedures
  - Technologies: new systems and methods
  - Employees: changes in employee attitudes and skills

## Overcoming Resistance to Change

### ➤ What causes resistance?

- All behavior in organizations is a product of two kinds of forces--those striving to maintain the status quo and those pushing for change.

### ➤ Lewin's Change Process

- Unfreezing: reducing the forces striving to maintain the status quo.
- Moving: developing new behaviors, values, and attitudes. sometimes through structural changes.
- Refreezing: reinforcing the changes.

## How to Lead the Change?

1. Establish a sense of urgency.
2. Mobilize commitment through joint diagnosis of problems.
3. Create a guiding coalition.
4. Develop a shared vision.
5. Communicate the vision.
6. Help employees to make the change.
7. Generate short-term wins.
8. Consolidate gains and produce more change.
9. Anchor the new ways of doing things in the company's culture.
10. Monitor progress and adjust the vision as required.

## Inventory Control

### What are the costs for holding inventory?

Costs associated with holding high level of inventory:

- Interest or Opportunity Cost
- Storage and Handling Costs
- Taxes, Insurance, and Shrinkage

Costs associated with holding low level of inventory:

- Customer Service
- Ordering Cost
- Setup Cost
- Labor and Equipment Utilization
- Transportation Costs
- Payments to Suppliers

### Types of Inventory

There are four types of inventory for an item. They are as follows:

1. Cycle Inventory
2. Safety Stock Inventory
3. Anticipation Inventory
4. Pipeline Inventory

The four types can not be identified physically; that is, an inventory manager cannot look at a pile, but they differ conceptually.

1. **Cycle Inventory:** The portion of total inventory that varies directly with lot size is called cycle inventory. Determining how frequently to order, and in what quantity, is called lot sizing. Two principles apply:

- i. If a lot is ordered every five weeks, the average lot size must equal five weeks demand.
- ii. The longer the time between orders for a given item, the greater the cycle inventory must be.

2. **Safety Stock Inventory:** Safety stock inventory is surplus inventory that protects against uncertainties in demand, lead time, and supply. Safety stock is desirable when suppliers fail to deliver the desired quantity on the specified date, or when manufactured items have significant amounts of scrap or rework. Safety stock inventory ensures that operations are not disrupted when such problems occur.

3. **Anticipation Inventory:** Inventory used to absorb uneven rates of demand or supply, which business often face, is referred to as anticipation inventory. Seasonal demand pattern may lead to use anticipation inventory. Uneven demand may lead a manufacturer to stockpile anticipation inventory during periods of low demand so that output levels do not have to be increased much when demand peaks. Anticipation inventory also can help when suppliers are threatened with a strike or have severe capacity limitations.

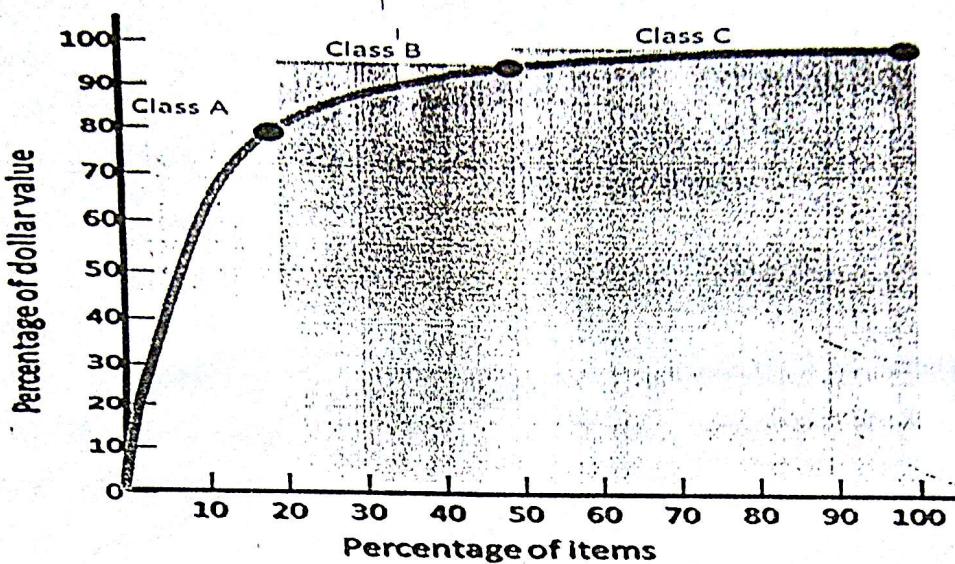
4. **Pipeline Inventory:** Inventory moving from point to point in the materials flow system is called pipeline inventory. Materials move from suppliers to a plant, from one operation to the next in the plant, from the plant to a distribution center or customer, and from the distribution center to a retailer. Pipeline inventory consists of orders that have been placed but not yet received.

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What is ABC Analysis?

## ABC analysis:

The process of dividing inventory items into three classes according to their dollar usage so that managers can focus on items that have the highest dollar value. The goal of ABC analysis is to identify the inventory levels of class 'A' items and enable management to control them tightly by using the levers.



In the above figure, class A items typically represent only about 20 percent of total items but account for 80 percent of the dollar usage. Class B items account for another 30 percent of the items but only 15 percent of the dollar usage. Finally, 50 percent of the items fall in class C, representing a mere 5 percent of the dollar usage.

### What is EOQ?

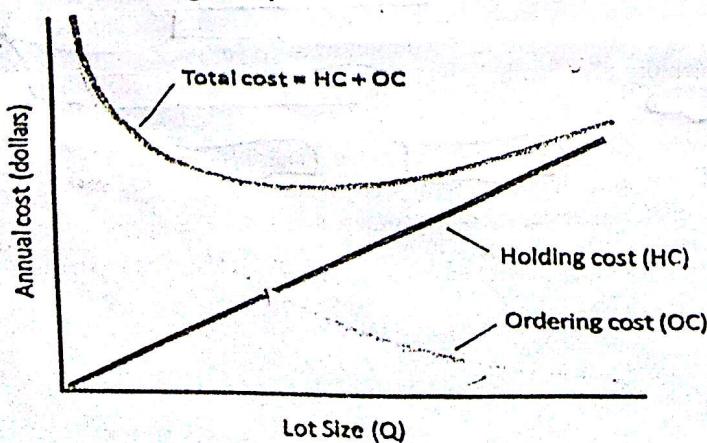
EOQ is the lot size that minimizes total annual inventory holding and ordering costs.

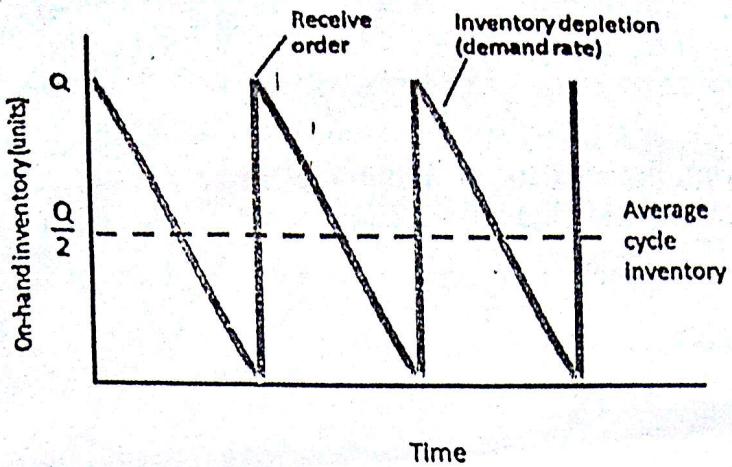
Manufacturers often face conflicting pressures to keep inventories low enough to avoid excess inventory holding costs but high enough to reduce the frequency of orders and setups. A good starting point for balancing these conflicting pressures and determining the best cycle inventory level for an item is finding the Economic Order Quantity (EOQ).

### Assumptions of EOQ

1. Demand rate is constant
2. No constraints on lot size
3. Only relevant costs are holding and ordering/setup
4. Decisions for items are independent from other items
5. No uncertainty in lead time or supply

### Economic Order Quantity





### Solved Problem

A regional warehouse purchases hand tools from various suppliers and then distributes them on demand to retailers in the region. The warehouse operates five days per week, 52 weeks per year. Only when it is open can orders be received. The following data are estimated for 3/8-inch hand drills with double insulation and variable speed.

Average daily demand = 100 drills

Standard deviation of daily demand ( $\sigma$ ) = 30 drills

Lead time (L) 3 days

Holding cost (H) \$9.40 / unit / year

Ordering cost (S) ≈ \$35 / order

Cycle service level = 92 percent

Required:

- What order quantity, Q and reorder point, R, should be used?
- If on hand inventory is 40 units, there is one open order for 440 drills, and there are no backorders, should a new order be placed?

### Exercise-1

Your firm uses a continuous review system and operates 52 weeks per year. One of the items handled had the following characteristics:

Demand (D) = 20,000 units /year

Ordering cost (S) ≈ \$40 / order

Holding cost (H) = \$2 / unit / year

Lead time (L) = 2 weeks

Cycle service level = 95 percent

Demand is normally distributed, with a standard deviation of weekly demand of 100 units. Current on-hand inventory is 1040 units, with no scheduled receipts and no backorders.

- Calculate the item's EOQ. What is the average time, in weeks, between orders?
- Find the safety stock and reorder point that provides a 95 percent cycle service level.
- For these policies, what are the annual costs of (i) holding the cycle inventory and (ii) placing order?
- A withdrawal of 15 units just occurred. Is it time to reorder? If so, how much should be ordered?

**Exercise-2**

A company begins a review of ordering policies for its continuous review system by checking the current policies for a sample of items. Following are the characteristics of one item.

Demand ( $D$ ) = 64 units / week (assume 52 weeks per year)

Ordering and setup cost ( $S$ ) = \$50 / order

Holding cost ( $H$ ) = \$13 / unit / year

Lead time ( $L$ ) = 2 weeks

Standard deviation of weekly demand = 12 units

Cycle service level = 88 percent

- a. What is EOQ for these items?
- b. What is the desired safety stock?
- c. What is the reorder point?
- d. What are the cost implications if the current policy for this item is  $Q = 200$  and  $R = 180$ ?