Module XI : Controlling

Chapter 1
Foundations of Control

A. What Is Control?

Control is the process of monitoring activities to ensure that they are being accomplished as planned and of correcting significant deviations. Control systems are judged in terms of how well they facilitate goal achievement. Control is the process through which standards for performance of people and processes are set, communicated, and applied. Effective control systems use mechanisms to monitor activities and take corrective action, if necessary. The supervisor observes what happens and compares that with what was supposed to happen. He or she must correct below-standard conditions and bring results up to expectations. Effective control systems allow supervisors to know how well implementation is going. Control facilitates delegating activities to employees. Since supervisors are ultimately held accountable for their employees' performance, timely feedback on employee activity is necessary.

Controlling is directly related to planning. The controlling process ensures that plans are being implemented properly. In the functions of management cycle - planning, organizing, directing, and controlling - planning moves forward into all the other functions, and controlling reaches back. Controlling is the final link in the functional chain of management activities and brings the functions of management cycle full circle.

B. *Why Is Control Important?*

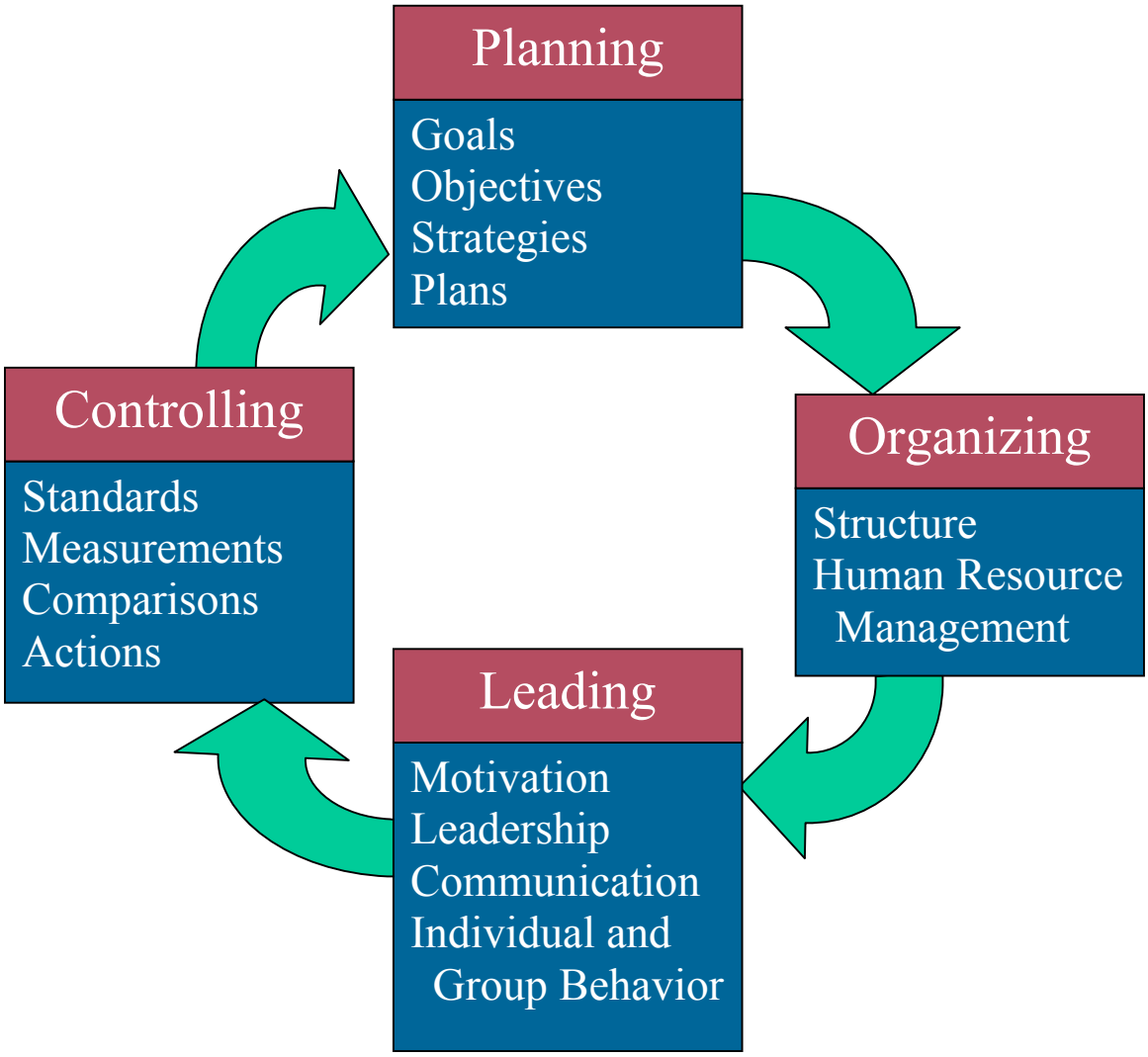
Control is the Final Link in the Management Process

Control provides the critical link back to planning. This is the only way managers know whether organizational goals are being met.

Permits Delegation of Authority

Control permits delegation of authority because of the fear that if employees will do something wrong, the manager will be held responsible for it. Control provides information and feedback on employee performance.

C. The Planning-Controlling Link



Few managers realize that a company plan must provide the framework for the company control system. If missions, goals, strategies, objectives, and plans change, then controls should change.

Unfortunately, they seldom do. Although this error occurs at the top, repercussions are felt at all levels.

Often, too, the standards of the control systems are derived from previous year's budgets rather than from current objectives of company plans. The result is that employees at lower levels are simply given "numbers to make" based on factors of which they have little knowledge and over which they have practically no influence.

The following table shows interrelationships between planning and control.

The Planning-Control Relationship

Planning	Control
1. Establish objectives	1. Establish standards
2. Determine activities	
3. Delegate	
4. Schedule tasks	
5. Allocate resources	
6. Communicate and coordinate	
7. Provide incentives	
	2. Measure and compare
	3. Evaluate results
	4. Feedback and coach
	5. Take corrective action

It can be seen that the control process does not begin after the entire planning process ends, as most managers believe. After objectives are set in the first step of the planning process, appropriate standards should be developed for them. Standards are units of measurement established to serve as a reference base and are useful in determining time lines, sequences of activities, scheduling, and allocation of resources.

For example, if objectives are set and work is planned for 18 people on an assembly line, standards or reasonable expectations of performance from each person then need to be clearly established.

The second significant interaction between planning and control occurs with the final step of the control process-taking corrective action. This can take several forms, but two of the most effective are to change the objectives or alter the plan.

Managers dislike doing either; but if a positive motivational climate is to be established, these ought to be the first two corrective actions attempted. Objectives and standards are based on assumptions, but if these assumptions prove inaccurate, then objectives and standards require alteration. Thus sales quotas assigned on the premise of a booming economy can certainly be altered if, as is often the case, the economy turns sour.

Likewise, if the assumptions are accurate and objectives and standards have not been met, then it is possible that the plan developed was inadequate and needs to be changed.

Chapter II
Control Process

The control process is a continuous flow between measuring, comparing and action. There are four steps in the control process: establishing performance standards, measuring actual performance, comparing measured performance against established standards, and taking corrective action.

Step 1. Establish Performance Standards

Standards are created when objectives are set during the planning process. A **standard** is any guideline established as the basis for measurement. It is a precise, explicit statement of expected results from a product, service, machine, individual, or organizational unit. It is usually expressed numerically and is set for quality, quantity, and time. **Tolerance** is permissible deviation from the standard. What is expected? How much deviation can be tolerated?

Time controls relate to deadlines and time constraints.

Material controls relate to inventory and material-yield controls.

Equipment controls are built into the machinery, imposed on the operator to protect the equipment or the process.

Cost controls help ensure cost standards are met. Employee performance controls focus on actions and behaviors of individuals and groups of employees. Examples include absences, tardiness, accidents, quality and quantity of work.

Budgets control cost or expense related standards. They identify quantity of materials used and units to be produced.

Financial controls facilitate achieving the organization's profit motive. One method of financial controls is budgets. Budgets allocate resources to important activities and provide supervisors with quantitative standards

against which to compare resource consumption. They become control tools by pointing out deviations between the standard and actual consumption.

Operations control methods assess how efficiently and effectively an organization's transformation processes create goods and services. Methods of transformation controls include

Total Quality Management (TQM) statistical process control and the inventory management control.

Statistical process control is the use of statistical methods and procedures to determine whether production operations are being performed correctly, to detect any deviations, and to find and eliminate their causes. A control chart displays the results of measurements over time and provides a visual means of determining whether a specific process is staying within predefined limits. As long as the process variables fall within the acceptable range, the system is in control. Measurements outside the limits are unacceptable or out of control. Improvements in quality eliminate common causes of variation by adjusting the system or redesigning the system.

Inventory is a large cost for many organizations. The appropriate amount to order and how often to order impact the firm's bottom line. The economic order quantity model (EOQ) is a mathematical model for deriving the optimal purchase quantity. The EOQ model seeks to minimize total carrying and ordering costs by balancing *purchase costs, ordering costs, carrying costs* and *stockout costs*. In order to compute the economic order quantity, the supervisor needs the following information: forecasted demand during a period cost of placing the order, that value of the purchase price, and the carrying cost for maintaining the total inventory.

The just-in-time (JIT) system is the delivery of finished goods just in time to be sold, subassemblies just in time to be assembled into finished goods, parts just in time to go into subassemblies, and purchased materials just in time to be transformed into parts. Communication, coordination, and cooperation are required from supervisors and employees to deliver the smallest possible quantities at the latest possible date at all stages of the transformation process in order to minimize inventory costs.

Step 2. Measure Actual Performance

Supervisors collect data to measure actual performance to determine variation from standard. Written data might include time cards, production tallies, inspection reports, and sales tickets. Personal observation, statistical reports, oral reports and written reports can be used to measure performance. **Management by walking around**, or observation of employees working, provides unfiltered information, extensive coverage, and the ability to read between the lines. While providing insight, this method might be misinterpreted by employees as mistrust. Oral reports allow for fast and extensive feedback.

Computers give supervisors direct access to real time, unaltered data, and information. On line systems enable supervisors to identify problems as they occur. Database programs allow supervisors to query, spend less time gathering facts, and be less dependent on other people. Supervisors have access to information at their fingertips. Employees can supply progress reports through the use of networks and electronic mail. Statistical reports are easy to visualize and effective at demonstrating relationships. Written reports provide comprehensive feedback that can be easily filed and referenced. Computers are important tools for measuring performance. In fact, many operating processes depend on automatic or computer-driven control systems. Impersonal measurements can count, time, and record employee performance.

Step 3. Compare Measured Performance Against Established Standards

Comparing results with standards determines variation. Some variation can be expected in all activities and the **range of variation** - the acceptable variance - has to be established. **Management by exception** lets operations continue as long as they fall within the prescribed control limits. Deviations or differences that exceed this range would alert the supervisor to a problem.

Step 4. Take Corrective Action

The supervisor must find the cause of deviation from standard. Then, he or she takes action to remove or minimize the cause. If the source of variation in work performance is from a deficit in activity, then a supervisor can take immediate corrective action and get performance back on track. Also, the supervisors can opt to take basic corrective action, which would determine how and why performance has deviated and correct the source of the

deviation. Immediate corrective action is more efficient, however basic corrective action is more effective.

Thermostat is an example of the control process. The room thermostat is set at 68 degrees (*Standard)*. The temperature is measured. (*Measurement)*. If the room is too cold, the heat comes on. If the room is too hot, the heat goes off. (*Corrective Action)*

Chapter III
Types of Control

Controls are most effective when they are applied at key places. Supervisors can implement controls before the process begins (feedforward), during the process (concurrent), or after it ceases (feedback).

A. Feedforward controls

These focus on operations before they begin. Their goal is to prevent anticipated problems. An example of feedforward control is scheduled maintenance on automobiles and machinery. Regular maintenance feeds forward to prevent problems. Other examples include safety systems, training programs, and budgets.

Feedback and feedforward both require action on the part of the system, to suppress or compensate the effect of the fluctuation. For example, a thermostat will counteract a drop in temperature by switching on the heating. Feedforward control will suppress the disturbance before it has had the chance to affect the system's essential variables. This requires the capacity to anticipate the effect of perturbations on the system's goal. Otherwise the system would not know which external fluctuations to consider as perturbations, or how to effectively compensate their influence before it affects the system. This requires that the control system be able to gather early information about these fluctuations.

B Concurrent controls

These apply to processes as they are happening. Concurrent controls which are enacted while work is being performed include any type of steering or guiding mechanism such as direct supervision, automated systems (such as computers programmed to inform the user when they have issued the wrong command), and organizational quality programs.

C. Feedback controls

These focus on the results of operations. They guide future planning, inputs, and process designs. Examples of feedback controls include timely (weekly, monthly, quarterly, annual) reports so that almost instantaneous adjustments can be made.

The only way to avoid this accumulation is to use feedback, that is, compensate an error or deviation from the goal *after* it has happened. Thus feedback control is also called error-controlled regulation, since the error is used to determine the control action, as with the thermostat which samples the temperature inside the room, switching on the heating whenever that temperature reading drops lower than a certain reference point from the goal temperature. The disadvantage of feedback control is that it first must allow a deviation or error to appear before it can take action, since otherwise it would not know which action to take. Therefore, feedback control is by definition imperfect, whereas feedforward could in principle, but not in practice, be made error-free.

The reason feedback control can still be very effective is continuity: deviations from the goal usually do not appear at once, they tend to increase slowly, giving the controller the chance to intervene at an early stage when the deviation is still small. For example, a sensitive thermostat may start heating as soon as the temperature has dropped one tenth of a degree below the goal temperature. As soon as the temperature has again reached the goal, the thermostat switches off the heating, thus keeping the temperature within a very limited range. This very precise adaptation explains why thermostats in general do not need outside sensors, and can work purely in feedback mode. Feedforward is still necessary in those cases where perturbations are either discontinuous, or develop so quickly that any feedback reaction would come too late. For example, if you see someone pointing a gun in your direction, you would better move out of the line of fire immediately, instead of waiting until you feel the bullet making contact with your skin.

Chapter IV
Effectiveness of Controls

A Characteristics of Effective Controls

Control systems must be designed properly to be effective. When control standards are inflexible or unrealistic, employees cannot focus on the organization's goals. Control systems must prevent, not cause, the problems they were designed to detect.

Performance variance can also be the result of an unrealistic standard. The natural response for employees whose performance falls short is to blame the standard or the supervisor. If the standard is appropriate, then it is up to the supervisor to stand his or her ground and take the necessary corrective action.

An *example* of effective controls is the *dashboard on a car*. There are many things that can go wrong with a car. Only the most critical items to the car's operation are the focus on the dashboard (oil level, engine heat, fuel gauge, etc.). Variations in these items are most likely to inflict the most damage to the car. The critical items on the dashboard are easily understood and used by drivers. They point out a problem and specify a solution. They are accurate and timely. They call the driver's attention to variations in time to prevent serious damage. Yet, there is not so much information on the dashboard that the driver is overwhelmed.

B Qualities Of An Effective Control System

- Accuracy
- Timeliness
- Economy
- Flexibility
- Understandability
- Reasonable Criteria
- Strategic Placement
- Emphasis on Exceptions

- Multiple Criteria
- Corrective Action

C. Designing Effective Control Systems

Effective control systems have the following characteristics:

- Control at all levels in the business
- Acceptability to those who will enforce decisions
- Flexibility
- Accuracy
- Timeliness
- Cost effectiveness
- Understandability
- Balance between objectivity and subjectivity
- Coordinated with planning, organizing and leading

D Dysfunctional Consequences of Control

Managers expect people in an organization to change their behavior in response to control. However, employee resistance can easily make control efforts dysfunctional. The following behaviors demonstrate means by which the manager's control efforts can be frustrated:

- Game playing- control is something to be beaten, a game between the "boss and me and I want to win."
- Resisting control- a "blue flu" reaction to too much control
- Providing inaccurate information - a lack of understanding of why the information is needed and important leading to "you want numbers, we will give you numbers."
- Following rules to the letter- people following dumb and unprofitable rules in reaction to "do as I say."
- Sabotaging - stealing, discrediting other workers, chasing customers away, gossiping about the firm to people in the community
- Playing one manager off against another - exploiting lack of communication among managers, asking a second manager if don't like the answer from the first manager.