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SCHOOL OF COMPUTING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UNIT – 4 – PRINCIPLES OF MANAGEMENT AND PROFESSIONALETHICS

UNIT IV – CONTROLLING AND REPORTING: System and process of controlling-Budgetary and non-budgetary control techniques-Use of computers and IT in Management Control-Productivity problems and management-Control and performance-Direct and preventive control-Reporting

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1. SYSTEM AND PROCESS OF CONTROLLING

DEFINITION

Control is the process through which managers assure that actual activities conform to planned activities.

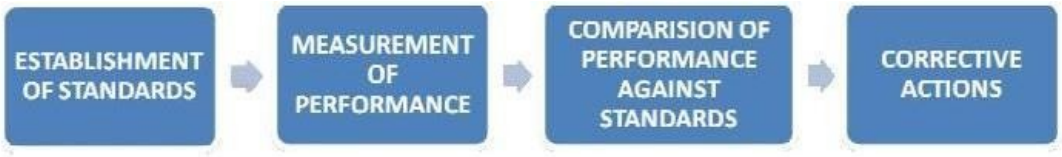
In the words of Koontz and O'Donnell - "Managerial control implies measurement of accomplishment against the standard and the correction of deviations to assure attainment of objectives according to plans."

Nature & Purpose of Control

- Control is an essential function of management
- Control is an ongoing process
- Control is forward – working because pas cannot be controlled
- Control involves measurement
- The essence of control is action
- Control is an integrated system

CONTROL PROCESS

The basic control process involves mainly these steps as shown in Figure



a) The Establishment of Standards

Because plans are the yardsticks against which controls must be revised, it follows logically that the first step in the control process would be to accomplish plans. Plans can be considered as the criterion or the standards against which we compare the actual performance in order to figure out the deviations.
Examples for the standards

- **Profitability standards:** In general, these standards indicate how much the company would like to make as profit over a given time period- that is, its return on investment.
- **Market position standards:** These standards indicate the share of total sales in a particular market that the company would like to have relative to its competitors.
- **Productivity standards:** How much that various segments of the organization should produce is the focus of these standards.
- **Product leadership standards:** These indicate what must be done to attain such a position.
- **Employee attitude standards:** These standards indicate what types of attitudes the company managers should strive to indicate in the company's employees.
- **Social responsibility standards:** Such as making contribution to the society.
- Standards reflecting the relative balance between short and long range goals.

b) Measurement of Performance

The measurement of performance against standards should be on a forward looking basis so that deviations may be detected in advance by appropriate actions. The degree of difficulty in measuring various types of organizational performance, of course, is determined primarily by the activity being measured. For example, it is far more difficult to measure the performance of highway maintenance worker than to measure the performance of a student enrolled in a college level management course.

c) Comparing Measured Performance to Stated Standards

When managers have taken a measure of organizational performance, their next step in controlling is to compare this measure against some standard. A standard is the level of activity established to serve as a model for evaluating organizational performance. The performance evaluated can be for the organization as a whole or for some individuals working within the organization. In essence, standards are the yardsticks that determine whether organizational performance is adequate or inadequate.

d) Taking Corrective Actions

After actual performance has been measured compared with established performance standards, the next step in the controlling process is to take corrective action, if necessary. Corrective action is managerial activity aimed at bringing organizational performance up to the level of

performance standards. In other words, corrective action focuses on correcting organizational mistakes that hinder organizational performance. Before taking any corrective action, however, managers should make sure that the standards they are using were properly established and that their measurements of organizational performance are valid and reliable.

At first glance, it seems a fairly simple proposition that managers should take corrective action to eliminate problems - the factors within an organization that are barriers to organizational goal attainment. In practice, however, it is often difficult to pinpoint the problem causing some undesirable organizational effect.

BARRIERS FOR CONTROLLING

There are many barriers, among the most important of them:

- Control activities can create an undesirable overemphasis on short-term production as opposed to long- term production.
- Control activities can increase employees' frustration with their jobs and thereby reduce morale. This reaction tends to occur primarily where management exerts too much control.
- Control activities can encourage the falsification of reports.
- Control activities can cause the perspectives of organization members to be too narrow for the good of the organization.
- Control activities can be perceived as the goals of the control process rather than the means by which corrective action is taken.

REQUIREMENTS FOR EFFECTIVE CONTROL

The requirements for effective control are

a) Control should be tailored to plans and positions

This means that, all control techniques and systems should reflect the plans they are designed to follow. This is because every plan and every kind and phase of an operation has its unique characteristics.

b) Control must be tailored to individual managers and their responsibilities

This means that controls must be tailored to the personality of individual managers. This because control systems and information are intended to help individual managers carry out their function of control. If they are not of a type that a manager can or will understand, they will not be useful.

c) Control should point up exceptions as critical points

This is because by concentration on exceptions from planned performance, controls based on the time honored exception principle allow managers to detect those places where their attention is

required and should be given. However, it is not enough to look at exceptions, because some deviations from standards have little meaning and others have a great deal of significance.

d) Control should be objective

This is because when controls are subjective, a manager's personality may influence judgments of performance inaccuracy. Objective standards can be quantitative such as costs or man hours per unit or date of job completion. They can also be qualitative in the case of training programs that have specific characteristics or are designed to accomplish a specific kind of upgrading of the quality of personnel.

e) Control should be flexible

This means that controls should remain workable in the case of changed plans, unforeseen circumstances, or outsight failures. Much flexibility in control can be provided by having alternative plans for various probable situations.

f) Control should be economical

This means that control must worth their cost. Although this requirement is simple, its practice is often complex. This is because a manager may find it difficult to know what a particular system is worth, or to know what it costs.

g) Control should lead to corrective actions

This is because a control system will be of little benefit if it does not lead to corrective action, control is justified only if the indicated or experienced deviations from plans are corrected through appropriate planning, organizing, directing, and leading.

2. BUDGETARY AND NON-BUDGETARY CONTROL TECHNIQUES

TYPES OF CONTROL SYSTEMS

The control systems can be classified into three types namely feed forward, concurrent and feedback control systems.

SALIENT FEATURES

Objectives: Determining the objectives to be achieved, over the budget period, and the policy(ies) that might be adopted for the achievement of these ends.

Activities: Determining the variety of activities that should be undertaken for achievement of the objectives.

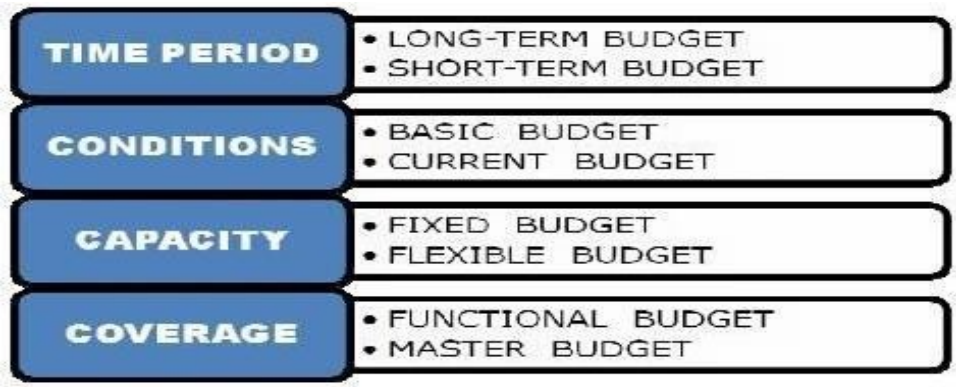
Plans: Drawing up a plan or a scheme of operation in respect of each class of activity, in physical a well as monetary terms for the full budget period and its parts.

Performance Evaluation: Laying out a system of comparison of actual performance by each person section or department with the relevant budget and determination of causes for the discrepancies, if any.

Control Action: Ensuring that when the plans are not achieved, corrective actions are taken; and when corrective actions are not possible, ensuring that the plans are revised and objective achieved

CLASSIFICATION OF BUDGETS

Budgets may be classified on the following bases –



BASED ON TIME PERIOD:

Long Term Budget

Budgets which are prepared for periods longer than a year are called Long Term Budgets. Such Budgets are helpful in business forecasting and forward planning. Eg: Capital Expenditure Budget and R&D Budget.

Short Term Budget

Budgets which are prepared for periods less than a year are known as Short Term Budgets. Such Budgets are prepared in cases where a specific action has to be immediately taken to bring any variation under control.
Eg: Cash Budget.

BASED ON CONDITION:

Basic Budget

A Budget, which remains unaltered over a long period of time, is called Basic Budget.

Current Budget

A Budget, which is established for use over a short period of time and is related to the current conditions, is called Current Budget.

BASED ON CAPACITY:

Fixed Budget

It is a Budget designed to remain unchanged irrespective of the level of activity actually attained. It operates on one level of activity and less than one set of conditions. It assumes that there will be no change in the prevailing conditions, which is unrealistic.

Flexible Budget

It is a Budget, which by recognizing the difference between fixed, semi variable and variable costs is designed to change in relation to level of activity attained. It consists of various budgets for different levels of activity.

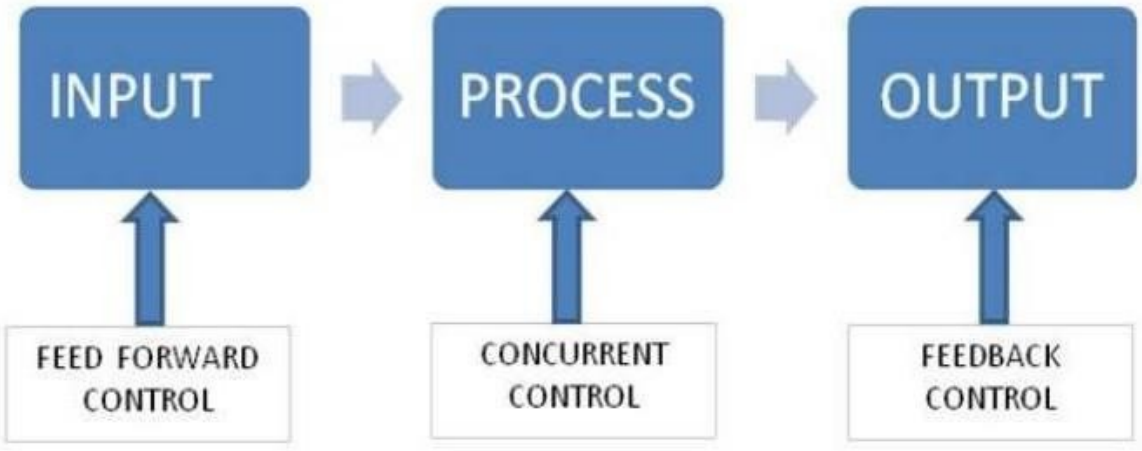
BASED ON COVERAGE:

Functional Budget

Budgets, which relate to the individual functions in an organization, are known as Functional Budgets, e.g. purchase Budget, Sales Budget, Production Budget, plant Utilization Budget and Cash Budget.

Master Budget

It is a consolidated summary of the various functional budgets. It serves as the basis upon which budgeted Profit & Loss Account and forecasted Balance Sheet are built up.



Feed forward controls:
They are preventive controls that try to anticipate problems and take corrective action before they occur. Example – a team leader checks the quality, completeness and reliability of their tools prior to going to the site.

Concurrent controls:
They (sometimes called screening controls) occur while an activity is taking place. Example – the team leader checks the quality or performance of his members while performing.

Feedback controls:
They measure activities that have already been completed. Thus corrections can take place after performance is over. Example – feedback from facilities engineers regarding the completed job.

BUDGETARY CONTROL TECHNIQUES

The various types of budgets are as follows

i) Revenue and Expense Budgets

The most common budgets spell out plans for revenues and operating expenses in rupee terms. The most basic of revenue budget is the sales budget which is a formal and detailed expression of the sales forecast. The revenue from sales of products or services furnishes the principal income to pay operating expenses and yield profits. Expense budgets may deal with individual items of expense, such as travel, data processing, entertainment, advertising, telephone, and insurance.

ii) Time, Space, Material, and Product Budgets

Many budgets are better expressed in quantities rather than in monetary terms. e.g. direct-labor-hours, machine-hours, units of materials, square feet allocated, and units produced. The Rupee cost would not accurately measure the resources used or the results intended.

iii) Capital Expenditure Budgets

Capital expenditure budgets outline specifically capital expenditures for plant, machinery, equipment, inventories, and other items. These budgets require care because they give definite form to plans for spending the funds of an enterprise. Since a business takes a long time to recover its investment in plant and equipment, (Payback period or gestation period) capital expenditure budgets should usually be tied in with fairly long-range planning.

iv) Cash Budgets

The cash budget is simply a forecast of cash receipts and disbursements against which actual cash "experience" is measured. The availability of cash to meet obligations as they fall due is the first requirement of existence, and handsome business profits do little good when tied up in inventory, machinery, or other noncash assets.

v) Variable Budget

The variable budget is based on an analysis of expense items to determine how individual costs should vary with volume of output.

Some costs do not vary with volume, particularly in so short a period as 1 month, 6 months, or a year. Among these are depreciation, property taxes and insurance, maintenance of plant and equipment, and costs of keeping a minimum staff of supervisory and other key personnel. Costs that vary with volume of output range from those that are completely variable to those that are only slightly variable.

The task of variable budgeting involves selecting some unit of measure that reflects volume; inspecting the various categories of costs (usually by reference to the chart of accounts); and, by statistical studies, methods of engineering analyses, and other means, determining how these costs should vary with volume of output.

vi) Zero Based Budget

The idea behind this technique is to divide enterprise programs into "packages" composed of goals, activities, and needed resources and then to calculate costs for each package from the ground up. By starting the budget of each package from base zero, budgeters calculate costs afresh for each budget period; thus they avoid the common tendency in budgeting of looking only at changes from a previous period.

Advantages

There are a number of advantages of budgetary control:

- Compels management to think about the future, which is probably the most important feature of a budgetary planning and control system. Forces management to look ahead, to set out detailed plans for achieving the targets for each department, operation and (ideally) each manager, to anticipate and give the organization purpose and direction.

- Promotes coordination and communication.

- Clearly defines areas of responsibility. Requires managers of budget centre's to be made responsible for the achievement of budget targets for the operations under their personal control.

- Provides a basis for performance appraisal (variance analysis). A budget is basically a yardstick against which actual performance is measured and assessed. Control is provided by comparisons of actual results against budget plan. Departures from budget can then be investigated and the reasons for the differences can be divided into controllable and non-controllable factors.

- Enables remedial action to be taken as variances emerge.

- Motivates employees by participating in the setting of budgets.

- Improves the allocation of scarce resources.

- Economies management time by using the management by exception principle.

Problems in budgeting

Whilst budgets may be an essential part of any marketing activity they do have a number of disadvantages, particularly in perception terms.
Budgets can be seen as pressure devices imposed by management, thus resulting in:

- bad labor relations
- inaccurate record-keeping

Departmental conflict arises due to:

- disputes over resource allocation
- departments blaming each other if targets are not attained

It is difficult to reconcile personal/individual and corporate goals.

Waste may arise as managers adopt the view, "we had better spend it or we will lose it". This is often coupled with "empire building" in order to enhance the prestige of a department.

Responsibility versus controlling, i.e. some costs are under the influence of more than one person, e.g. power costs.

Managers may overestimate costs so that they will not be blamed in the future should they overspend.

NON-BUDGETARY CONTROL TECHNIQUES

There are, of course, many traditional control devices not connected with budgets, although some may be related to, and used with, budgetary controls. Among the most important of these are: statistical data, special reports and analysis, analysis of break- even points, the operational audit, and the personal observation.

i) Statistical data

Statistical analyses of innumerable aspects of a business operation and the clear presentation of statistical data, whether of a historical or forecast nature are, of course, important to control. Some managers can readily interpret tabular statistical data, but most managers prefer presentation of the data on charts.

ii) Break- even point analysis

An interesting control device is the break even chart. This chart depicts the relationship of sales and expenses in such a way as to show at what volume revenues exactly cover expenses.

iii) Operational audit

Another effective tool of managerial control is the internal audit or, as it is now coming to be called, the operational audit. Operational auditing, in its broadest sense, is the regular and independent appraisal, by a staff of internal auditors, of the accounting, financial, and other operations of a business.

iv) Personal observation

In any preoccupation with the devices of managerial control, one should never overlook the importance of control through personal observation.

v) PERT

The Program (or Project) Evaluation and Review Technique, commonly abbreviated PERT, is a is a method to analyze the involved tasks in completing a given project, especially the time needed to complete each task, and identifying the minimum time needed to complete the total project.

vi) GANTT Chart

A Gantt chart is a type of bar chart that illustrates a project schedule. Gantt charts illustrate the start and finish dates of the terminal elements and summary elements of a project. Terminal elements and summary elements comprise the work breakdown structure of the project. Some Gantt charts also show the dependency (i.e., precedence network) relationships between activities.

3. USE OF COMPUTERS AND IT IN MANAGEMENT CONTROL

Definition:
MIS can be defined as — A system of obtaining, abstracting, storing and analyzing data to produce effective information or use in planning, controlling and decision making process.

Characteristics of Good Management Information System :
- Information must be clear and conciseness.
- The information should be relevant the business organization. Unnecessary information should be avoided.
- MIS must be simple and easy to understand.
- It must help in the process of decision making and corrective actions.
- MIS should help in solving the complicated problems effectively.

Need of MIS:

1. Internal factors

- **Resources:** This involves the analysis of available resources in the organization like money, material, machines and etc.
- **Planning and control information:** To get required information about budgets, sales forecasts etc.
- **Operational information:** The technique evaluates the overall operations of the business.
- **Production function:** It is required to increase the production, Product quality and to reduce wastages etc.
- **Marking function:** To obtain required information for plan sales forecast, advertising budget consumer satisfaction, sales value competitors etc.

2. External Information Needs

- Political and Government: This involves information about political fiscal policies, government policies, procedures, rules and regulations.
- Economic condition: To get required information such as money value, GNP, Inflation rate interest rate etc.
- Technology: To get information‘s about new advanced machinery, new process etc.

MIS resources:
It consists of five major resources.

Computer hardware:
It refers to computer system and other associated equipment including the communication link. Computer, monitors, disk, printers, optical scanners.

Software :
Programs: Operating system programs, word processing programs and procedures.
Data : It is in the form of symbols, digits, alphabets, graph, pictures etc.
People:
Specialists system analysts programmers and computer operator.

IMPLEMENTATION OF MIS

Management information system is implemented through the following steps.

- Input data
- Information's stores and retrieval
- Analysis
- Output
- Decision making
- Actions

Input data:
The necessary data can be collected. The object is the development of better Information system for management.
Information stored and retrieval:
The necessary data can be stored and utilized and when required. The information can be indexed and classified for quick accessibility of the management.
Analysis:
To utilize the data effectively it is necessary to analyze them. To analyze the problem and develop alternatives and select the best one.
Output:
Output is in the form of reports, charts ,tables, graph etc.
Decision making:
The output information is used to decision making process.
Action:
After decision is taken, it is converted in to action.

Applications of MIS:

• To provide long term plans
• To find out new opportunities
• To allocate resources
• To provide planning and control
• To provide sales forecasting
• To help management decision about quality, quantity and market price etc
• To provide government policy and regulation
• To provide effective managerial activities

Important Devices for Information System:

i) Speech Recognition devices

Instead of keyboard input data in to the computer is through speech by normal manner. It can be used several companies for several uses. Clear communication is also possible some disadvantage also in this system. Similar sound words like _to‘ _too‘ and _two‘ are complex problems.

ii) Network

It is one of the most important technologies. Computer is connected by internet and other communications network. The network serves as share processing, software and database.

Computer networks enable and uses and work groups to communicate and collaborate electronically and share the use of hardware, software and data resources. The networks have become the primary information technology that supports the business operations of many organizations.

Importance of MIS or Role of MIS:

S. No.	Major Subsystem	Application
1	Marketing	Sales planning, Sales Analysis, Sales forecasting
2	Manufacturing	Production planning, cost control analysis
3	Logistics	Planning and control
4	Finance and Accounting	Cost analysis, planning, income measurement.
5	Top Management	Strategic planning, policy, resource allocation

Management and MIS:

MIS supports management activity. Information system provides information to managers of three levels of responsibilities. MIS helps to guide managers to carry out their planning, organizing, directing, controlling and coordinating the function effectively.

i) Operational control

Operational control provides detailed information and accurate on a daily or weekly basis. A market manager must know of past and present sales record, consumer‘s behavior, advertising budget. The MIS must provide him timely and detailed information obtained from daily operations.

ii) Middle management

Middle levels managers such as department‘s heads are concerned with the current and future performance. For example information about marketing level problems with customer‘s reduction in sales, quality of product are needed by middle managers. They required information from within and outside organization.

iii) Top level-strategic planning

Top management the MIS must provide information to top management for strategic planning and control. They need the following external source of information.

Economic condition
Technological condition
Government policy
Actions of Competitors Company

They need the following internal sources of information.

- Sales volume
- Financial analysis

- Human resources
- Product quality, customer's satisfaction

MIS should provide information to the managers accurately and correct time.
So MIS should be designed in suitable way depending upon the organization. The top managers receive overall financial analysis and summarized of department performance.

Decision Support System:

Decision support systems which support the process of making decisions. It is also operated by people who are not computer specialists who use the DSS to help them plan and make decisions. The process of development of decision support system is depended by the end user. DSS helps the managers to solve non-routine problems in the organization.

Role of MIS play at various levels of management:

- Trends in Information Systems
- Expanding roles of IS in business and management
- The expanding participation of end users and managers in Information Systems
- Data Processing: (1950-1960)
- Electronic data processing systems: Transaction processing, record keeping, and traditional accounting applications
- Management Reporting: 1960-1970s
- Management information system: Management reports of pre-specified information to support decision making
- Decision support: 1970s 1980s
- Decision support systems: Interactive ad hoc support of the managerial decision making
- Strategic and End User support: 1980s-1990s
- End user computing systems: Direct computing support for end user productivity and work group collaboration
- Executive information systems: Critical information for top management
- Expert systems: Knowledge based expert advice for end use
- Strategic information system: Strategic products and services for competitive advent
- Electronic Business and Commerce: 1990
- Internetworked E-business and E-commerce systems: Internetworked enterprise and global E-business operations and electronic commerce on the internet, intranets, extranets, and other networks.

4. PRODUCTIVITY

Productivity refers to the ratio between the outputs from production processes to its input. Productivity may be conceived of as a measure of the technical or engineering efficiency of production. As such quantitative measures of input and sometimes outputs are emphasized.

Typical Productivity Calculations

Measures of size and resources may be combined in many different ways. The three common approaches to defining productivity based on the model are referred to as physical, functional, and economic productivity. Regardless of the approach selected, adjustments may be needed for the factors of diseconomy of scale, reuse, requirements churn, and quality at delivery.

a) Physical Productivity

This is a ratio of the amount of product to the resources consumed (usually effort). Product may be measured in lines of code, classes, screens, or any other unit of product. Typically, effort is measured in terms of staff hours, days, or months. The physical size also may be used to estimate software performance factors (e.g., memory utilization as a function of lines of code).

b) Functional Productivity

This is a ratio of the amount of the functionality delivered to the resources consumed (usually effort). Functionality may be measured in terms of use cases, requirements, features, or function points (as appropriate to the nature of the software and the development method). Typically, effort is measured in terms of staff hours, days, or months. Traditional measures of Function Points work best with information processing systems. The effort involved in embedded and scientific software is likely to be underestimated with these measures, although several variations of Function Points have been developed that attempt to deal with this issue.

c) Economic Productivity

This is a ratio of the value of the product produced to the cost of the resources used to produce it. Economic productivity helps to evaluate the economic efficiency of an organization. Economic productivity usually is not used to predict project cost because the outcome can be affected by many factors outside the control of the project, such as sales volume, inflation, interest rates, and substitutions in resources or materials, as well as all the other factors that affect physical and functional measures of productivity. However, understanding economic productivity is essential to making good decisions about outsourcing and subcontracting.

The basic calculation of economic productivity is as follows:

Economic Productivity = Value/Cost

Factors affecting Productivity:

The following are the factors that affect the productivity:

(i) Technology
Technological factors including the degree of mechanization how raw materials, layout and the method and techniques of work determine the level of technological development in any industry. New technology developments and R&D development improve the productivity.
(ii) Human resources
Education of the employee's favors the improvement of the productivity.

Motivation of the employees improves the efficiency of the productivity.

(iii) Government policy

Government can eliminate unnecessary regulations and make productivity effectively.

(iv) Machinery and Equipment design

Whether design of machinery and equipment is modern and in keeping with the limitations and capacities of the workers will also determine the production efficiently and level of productivity. Modern machineries and equipment also increase the productivity.

(v) Skill of the workers

Well trained and experienced employees lead to effective productivity.

(vi) Capital

Increased capital investment results in increased productivity. This capital also increases other factors such as market share, low cost, high profit.

(vii) Research and development

Research and development play a vital role in determining the productivity. The research includes the reduction of cost and wastage, new techniques etc. All these factors must help the concern to increase the productivity.

(viii) Trade unions

Some trade unions create some unnecessary problems in the company and start strike and lock out the company. It decreases the productivity. Efficient top management executives smoothly handle the trade unions to carry out the positive effect.

(ix) Raw materials & Production processes

Improved quality of raw materials and increased use of power have a favorable effect on productivity. Advanced production processes involving the use of Modern integrated and automatic machinery and semi processed material have been known t o help in raising levels of productivity.

(x) Plant and job layout

Productivity can be increased through modern tools. A proper maintenance of plant and equipment increases the productivity. The arrangement of machines and position in the plant is called job layout. The setup of the work-bench of an individual worked will determine how economically and efficiently production will be ferried out.

(xi) Land and Buildings

Working environment must be suitable for employees. A poor plant layout and construction will affect the productivity.

(xii) The size of the plant

The size of the plant and the capacity utilization has direct bearing on productivity. Production below or above t he optimum level will be uneconomical and will tend towards lower level of productivity.

Problems in Measurement of Productivity of Knowledge Workers:

Productivity implies measurement, which in turn, is an essential step in the control process. Although there is a general agreement about the need for improving productivity, there is little consensus about the fundamental causes of the problem and what to do about them. The blame has been assigned to various factors. Some people place it on the greater proportion of less skilled workers with respect to the total labor force, but others disagree. There are those who see

cutback in research and the emphasis on immediate results as the main culprit. Another reason given for the productivity dilemma is the growing affluence of people, which makes them less ambitious. Still others cite the breakdown in family structure, the workers' attitudes, and government policies and regulations. Another problem is that the measurement of skills work is relatively easy, but it becomes more difficult for knowledge work. The difference between the two kinds is the relative use of knowledge and skills.

ADDITIONAL TOPIC RELATED TO CONTROLLING
PURCHASE CONTROL, MAINTENANCE CONTROL AND QUALITY CONTROL
PURCHASE CONTROL

Purchase control is an element of material control. Material procurement is known as the purchase function. The functional responsibility of purchasing is that of the purchase manager or the purchaser. Purchasing is an important function of materials management because in purchase of materials, a substantial portion of the company's finance is committed which affects cash flow position of the company. Success of a business is to a large extent influenced by the efficiency of its purchase organization.
The advantages derived from a good and adequate system of the purchase control are as follows:

Continuous availability of materials:
It ensures the continuous flow of materials. so production work may not be held up for want of materials. A manufacturer can complete schedule of production in time.

Purchasing of right quantity:
Purchase of right quantity of materials avoids locking up of working capital. It minimizes risk of surplus and obsolete stores. It means there should not be possibility of overstocking and under stocking.

Purchasing of right quality:
Purchase of materials of proper quality and specification avoids waste of materials and loss in production. Effective purchase control prevents wastes and losses of materials right from the purchase till their consumptions. It enables the management to reduce cost of production.

Economy in purchasing:
The purchasing of materials is a highly specialized function. By purchasing materials at reasonable prices, the efficient purchaser is able to make a valuable contribution to the success of a business.

Works as information centre:
It serves as a function centre on the materials knowledge relating to prices, sources of supply, specifications, mode of delivery, etc. By providing continuous information to the management it is possible to prepare planning for production.

Development of business relationship:

Purchasing of materials from the best market and from reliable suppliers develops business relationships. The result is that there may be smooth supply of materials in t ime and so it avoids disputes and financial losses.

Finding of alternative source of supply:
If a particular supplier fails to supply the materials in time, it is possible to develop alternate sources of supply. The effect of this is that the production work is not disturbed.

Fixing responsibilities:
Effective purchase control fixes the responsibilities of operating units and individuals connected with the purchase, storage and handling of materials.

In short, the basic objective of the effective purchase control is to ensure continuity of supply of requisite quantity of material, to avoid held up of production and loss in production and at the same time reduces the ultimate cost of the finished products.

MAINTENANCE CONTROL

Maintenance department has to exercise effective cost control, to carry out the maintenance functions in a pre-specified budget, which is possible only through the following measures:

First line supervisors must be apprised of the cost information of the various materials so that the objective of the management can be met without extra expenditure on maintenance functions

A monthly review of the budget provisions and expenditures actually incurred in respect of each center/shop will provide guidelines to the departmental head to exercise better cost control.

The total expenditure to be incurred can be uniformly spread over the year for better budgetary control. However, the same may not be true in all cases particularly where overhauling of equipment has to be carried out due to unforeseen breakdowns. Some budgetary provisions must be set aside, to meet out unforeseen exigencies.

The controllable elements of cost such as manpower cost and material cost can be discussed with the concerned personnel, which may help in reducing the total cost of maintenance. Emphasis should be given to reduce the overhead expenditures, as other expenditures cannot be compromised.

It is observed through studies that the manpower cost is normally fixed, but the same way increase due to overtime cost. However, the material cost, which is the prime factor in maintenance cost, can be reduced by timely inspections designed, to detect failures. If the inspection is carried out as per schedule, the total failure of parts may be avoided, which otherwise would increase the maintenance cost. The proper handling of the equipment by the operators also reduces the frequency of repair and material requirements. Operators, who check their equipment regularly and use it within the operating limits, can help avoid many unwanted repairs. In the same way a good record of equipment failures/ maintenance would indicate the nature of failures, which can then be corrected even permanently.

QUALITY CONTROL

Quality control refers to the technical process that gathers, examines, analyze & report the progress of the project & conformance with the performance requirements.

The steps involved in quality control process are

- Determine what parameter is to be controlled.
- Establish its criticality and whether you need to control before, during or after results are produced.
- Establish a specification for the parameter to be controlled which provides limits of acceptability and units of measure.
- Produce plans for control which specify the means by which the characteristics will be achieved and variation detected and removed.
- Organize resources to implement the plans for quality control.
- Install a sensor at an appropriate point in the process to sense variance from specification.
- Collect and transmit data to a place for analysis.
- Verify the results and diagnose the cause of variance.
- Propose remedies and decide on the action needed to restore the status quo.
- Take the agreed action and check that the variance has been corrected.

Advantages and disadvantages

Advantages include better products and services ultimately establishing a good reputation for a company and higher revenue from having more satisfied customers.
Disadvantages include needing more man power/operations to maintain quality control and adding more time to the initial process.

5. Productivity problems and management , Control and performance

Productivity implies measurement, which in turn, is an essential step in the control process. Although there is a general agreement about the need for improving productivity, there is little consensus about the fundamental causes of the problem and what to do about them. The blame has been assigned to various factors. Some people place it on the greater proportion of less skilled workers with respect to the total labor force, but others disagree. There are those who see cutback in research

and the emphasis on immediate results as the main culprit. Another reason given for the productivity dilemma is the growing affluence of people, which makes them less ambitious. Still others cite the breakdown in family structure, the workers' attitudes, and government policies and regulations. Another problem is that the measurement of skills work is relatively easy, but it becomes more difficult for knowledge work. The difference between the two kinds is the relative use of knowledge and skills.

Cost control is the measure taken by management to assure that the cost objectives set down in the planning stage are attained and to assure that all segments of the organization function in a manner consistent with its policies.

Steps involved in designing process of cost control system:

1) **Establishing norms:** To exercise cost control it is essential to establish norms, targets or parameters which may serve as yardsticks to achieve the ultimate objective. These standards, norms or targets may be set on the basis of research, study or past actual.
2) **Appraisal:** The actual results are compared with the set norms to ascertain the degree of utilization of men, machines and materials. The deviations are analyzed so as to arrive at the causes which are controllable and uncontrollable.
3) **Corrective measures:** The variances are reviewed and remedial measures or revision of targets, norms, standards etc., as required are taken.

Advantages of cost control

1) Better utilization of resources
1) To prepare for meeting a future competitive position.
2) Reasonable price for the customers
3) Improved methods of production and use of latest manufacturing techniques which have the effect of rising productivity and minimizing cost.By a continuous search for improvement creates proper climate for the increase efficiency.
4) Improves the image of company for long-term benefits.
5) Improve the rate of return on investment.

Purchase Control

Purchase control is an element of material control. Material procurement is known as the purchase function. The functional responsibility of purchasing is that of the purchase manager or the purchaser. Purchasing is an important function of materials management because in purchase of materials, a substantial portion of the company's finance is committed which affects cash flow position of the company. Success of a business is to a large extent influenced by the efficiency of its purchase organization. The advantages derived from a good and adequate system of the purchase control are as follows:

Continuous availability of materials: It ensures the continuous flow of materials. So production work may not be held up for want of materials. A manufacturer can complete schedule of production in time.

Purchasing of right quantity: Purchase of right quantity of materials avoids locking up of working capital. It minimizes risk of surplus and obsolete stores. It means there should not be possibility of overstocking and understocking.

Purchasing of right quality: Purchase of materials of proper quality and specification avoids waste of materials and loss in production. Effective purchase control prevents wastes and losses of materials right from the purchase till their consumptions. It enables the management to reduce cost of production.

Economy in purchasing: The purchasing of materials is a highly specialized function. By purchasing materials at reasonable prices, the efficient purchaser is able to make a valuable contribution to the success of a business.

Works as information centre: It serves as a function centre on the materials knowledge relating to prices, sources of supply, specifications, mode of delivery, etc. By providing continuous information to the management it is possible to prepare planning for production

Development of business relationship: Purchasing of materials from the best market and from reliable suppliers develops business relationships. The result is that there may be smooth supply of materials in time and so it avoid disputes and financial losses

) **Finding of alternative source of supply:** If a particular supplier fails to supply the materials in time, it is possible to develop alternate sources of supply. the effect of this is that the production work is not disturbed.

Fixing responsibilities: Effective purchase control fix the responsibilities of operating units and individuals connected with the purchase, storage and handling of materials

In short, the basic objective of the effective purchase control is to ensure continuity of supply of requisite quantity of material, to avoid held up of production and loss in production and at the same time reduces the ultimate cost of the finished products.

Maintenance Control

Maintenance department has to excercise effective cost control, to carry out the maintenance functions in a pre-specified budget, which is possible only through the following measures:

First line supervisors must be apprised of the cost information of the various materials so that the objective of the management can be met without extra expenditure on maintenance functions

A monthly review of the budget provisions and expenditures actually incurred in respect of each center/shop will provide guidlines to the departmental head to exercise better cost control.

The total expenditure to be incurred can be uniformly spread over the year for better budgetary control. however, the same may not be true in all cases particularly where overhauling of equipment has to be carried out due to unforseen breakdowns. some budgetary provisions must be set aside, to meet out unforeseen exigencies.

The controllable elements of cost such as manpower cost and material cost can be discussed with the concerned personnel, which may help in reducing the total cost of maintenance.

Emphasis should be given to reduce the overhead expenditures, as other expenditures cannot be compromised

It is observed through studies that the manpower cost is normally fixed, but the same way increase due to overtime cost. however, the material cost, which is the prime factor in maintenance cost, can be reduced by timely inspections designed, to detect failures. If the inspection is carried out as per schedule, the total failure of parts may be avoided,

which otherwise would increase the maintenance cost. the proper handling of the equipment by the operators also reduces the frequency of repair and material requirements. Operators, who check their equipment regularly and use it within the operating limits, can help avoid many unwanted repairs. In the same way a good record of equipment failures/ maintenance would indicate the nature of failures, which can then be corrected even permanently.

Quality Control

Quality control refers to the technical process that gathers, examines, analyze & report the progress of the project & conformance with the performance requirements

The steps involved in quality control process are

1) Determine what parameter is to be controlled.
2) Establish its criticality and whether you need to control before, during or after results are produced.
3) Establish a specification for the parameter to be controlled which provides limits of acceptability and units of measure.
4) Produce plans for control which specify the means by which the characteristics will be achieved and variation detected and removed.
5) Organize resources to implement the plans for quality control.
6) Install a sensor at an appropriate point in the process to sense variance from specification.
7) Collect and transmit data to a place for analysis.
8) Verify the results and diagnose the cause of variance.
9) Propose remedies and decide on the action needed to restore the status quo.
10) Take the agreed action and check that the variance has been corrected.

Advantages and disadvantages

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6. Direct and preventive control-Reporting

In this organization some employee's performance is poor. To find out the employees and then correct their performance and achieve the organization goals. This is called direct control.

Factors influencing the direct control:

The following factors influence the direct control.

- Uncertainty
- Lack of knowledge experience
- Lack of communication
- Lack of coordination.

Effective steps for direct control

- Success of direct control in an organization depends upon the following factors.
- Performance can be measured
- Effectively utilizes time
- Errors can be discovered in time
- ParticipationW.VIDYARTIPLUS.COM
- Coordination.

Preventive control

An efficient manager applies the skills in managerial philosophy to eliminate undesirable activities which are the reasons for poor management. This is called preventive control.

Effective steps for preventive control,

- Qualified managers
- Management principles to measure performance
- Evaluation

Advantages:

- It is better than direct control.
- This control is fast and quick.
- It gives greater accuracy.
- Prevention is better than cure.

This reduces wastage of cost