UNIT V

CONTROLLING

DEFINITION

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

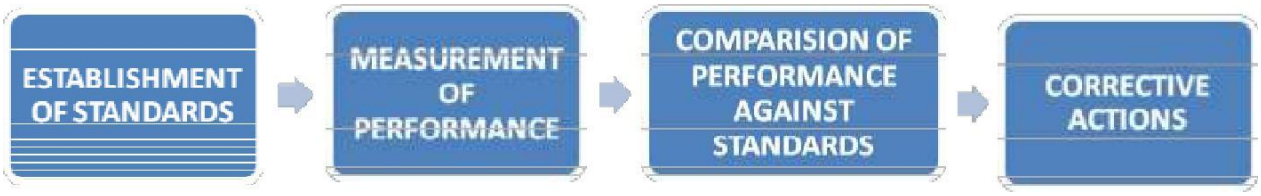
In the words of Koontz and O'Donnell - "Managerial control implies measurement of accomplishment against the standard and the correction of deviations to assure attainment of objectives according to plans."

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 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
b) Control must be tailored to individual managers and their responsibilities
c) Control should point up exceptions as critical points
d) Control should be objective
e) Control should be flexible
f) Control should be economical
g) Control should lead to corrective actions

TYPES OF CONTROL SYSTEMS

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

a) 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.

b) 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.

c) 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

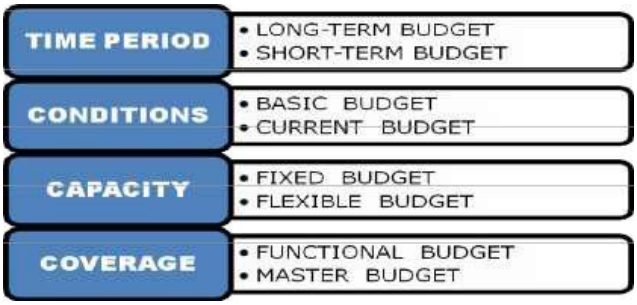
Definition: Budgetary Control is defined as "the establishment of budgets, relating the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results either to secure by individual action the objective of that policy or to provide a base for its revision.

Salient features:

- **Objectives:** Determining the objectives to be achieved, over the budget period, and the policy 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 –



a) **BASED ON TIME PERIOD:**

(i) **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.

(ii) **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.

b) **BASED ON CONDITION:**

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

(ii) **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.

c) **BASED ON CAPACITY:**

(i) 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.

(ii) **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

d) **BASED ON COVERAGE**

(i) 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.

(ii) **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.

BUDGETARY CONTROL TECHNIQUES

The various types of budgets are as follows

- **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.

- **Time, Space, Material, and Product Budgets:** Many budgets are better expressed in quantities rather than in monetary terms. e.g. Direct-labour-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.

- **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.

- **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.

- **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.

- **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:

- Promotes coordination and communication.
- Enables remedial action to be taken as variances emerge.
- Motivates employees by participating in the setting of budgets.
- Improves the allocation of scarce resources.
- Economises 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 labour 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.
- 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.

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

PRODUCTIVITY

Productivity refers to the ratio between the output 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 output, 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 of Figure 2 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

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.

COST CONTROL

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

- **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.
- **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.
- **Corrective measures:** The variances are reviewed and remedial measures or revision of targets, norms, standards etc., as required are taken.

Advantages of cost control

- Better utilization of resources
- To prepare for meeting a future competitive position.
- Reasonable price for the customers
- Firm standing in domestic and export markets.
- By continuous search for improvement creates proper climate for the increase efficiency.
- Improves the image of company for long-term benefits.
- 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.

Advantages:

a) 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.

b) 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.

c) 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.

d) 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.

f) 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.

g) 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.

g) 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.

h) 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 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 centre/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

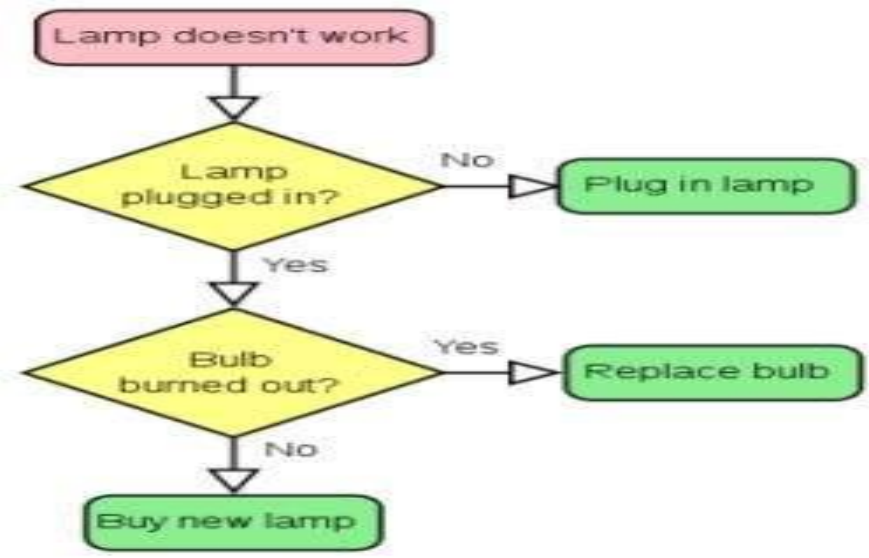
The steps involved in quality control process are

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.

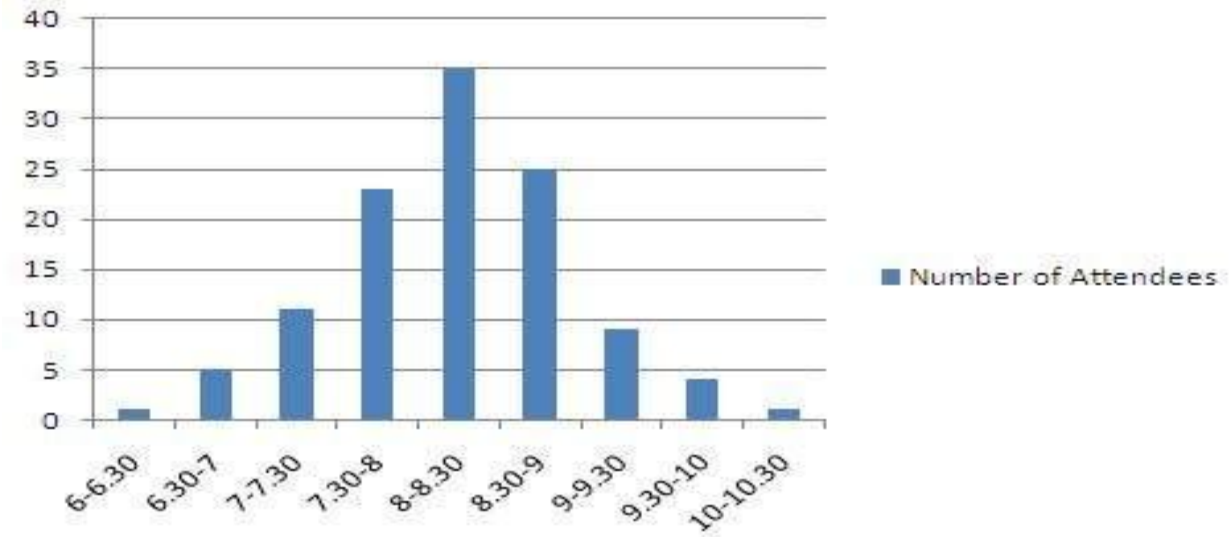
9) Propose remedies and decide on the action needed to restore the status quo.
10) Take the agreed action and check that the variance has been corrected.

TOOLS & TECHNIQUES OF QUALITY

1. Flow Charts: This is one of the basic quality tool that can be used for analyzing a sequence of events. The tool maps out a sequence of events that take place sequentially or in parallel. The flow chart can be used to understand a complex process in order to find the relationships and dependencies between events. You can also get a brief idea about the critical path of the process and the events involved in the critical path. Flow charts can be used for any field to illustrate complex processes in a simple way.

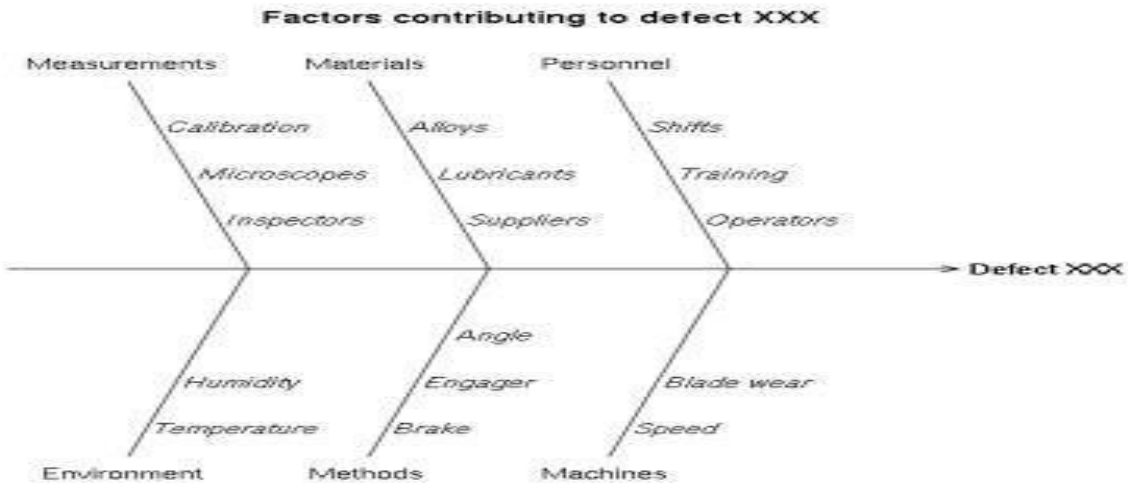


2. Histogram: Histogram is used for illustrating the frequency and the extent in the context of two variables. Histogram is a chart with columns. This represents the distribution by mean. If the histogram is normal, the graph takes the shape of a bell curve. If it is not normal, it may take different shapes based on the condition of the distribution. Histogram can be used to measure something against another thing. Always, it should be two variables. Consider the following example: The following histogram shows morning attendance of a class. The X-axis is the number of students and the Y-axis the time of the day.



3. Cause and Effect Diagram: Cause and effect diagrams (Ishikawa Diagram) are used for understanding organizational or business problem causes. Organizations face problems everyday

and it is required to understand the causes of these problems in order to solve them effectively. Cause and effect diagrams exercise is usually teamwork. A brainstorming session is required in order to come up with an effective cause and effect diagram. All the main components of a problem area are listed and possible causes from each area is listed. Then, most likely causes of the problems are identified to carry out further analysis.



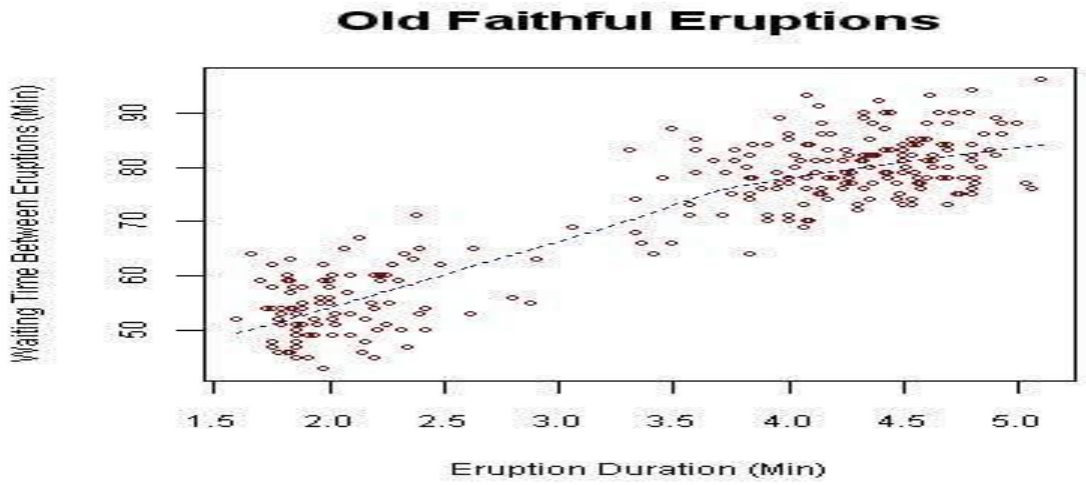
4. Check Sheet: A check sheet can be introduced as the most basic tool for quality. A check sheet is basically used for gathering and organizing data. When this is done with the help of software packages such as Microsoft Excel, you can derive further analysis graphs and automate through macros available. Therefore, it is always a good idea to use a software check sheet for information gathering and organizing needs. One can always use a paper-based check sheet when the information gathered is only used for backup or storing purposes other than further processing.

Motor Assembly Check Sheet

Name of Data Recorder: Lester B. Rapp
Location: Rochester, New York
Data Collection Dates: 1/17 - 1/23

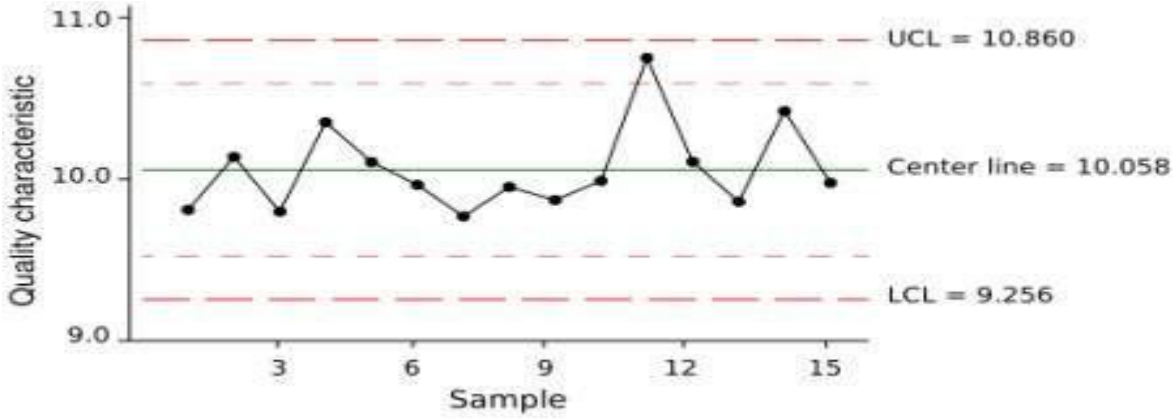
Defect Types: Event Occurrence	Dates: Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	TOTAL
Supplied parts rusted		8	5	4	2			20
Misaligned weld			3			2		5
Improper test procedure								0
Wrong part issued		1		2				3
Film on parts								0
Voids in casting				4	2			6
Incorrect dimensions						2		2
Adhesive failure								0
Marking insufficient					1			1
Spray failure			5					5
TOTAL		10	13	10	5	4		

5. Scatter Diagram: When it comes to the values of two variables, scatter diagrams are the best way to present. Scatter diagrams present the relationship between two variables and illustrate the results on a Cartesian plane. Then, further analysis, such as trend analysis can be performed on the values. In these diagrams, one variable denotes one axis and another variable denotes the other axis.

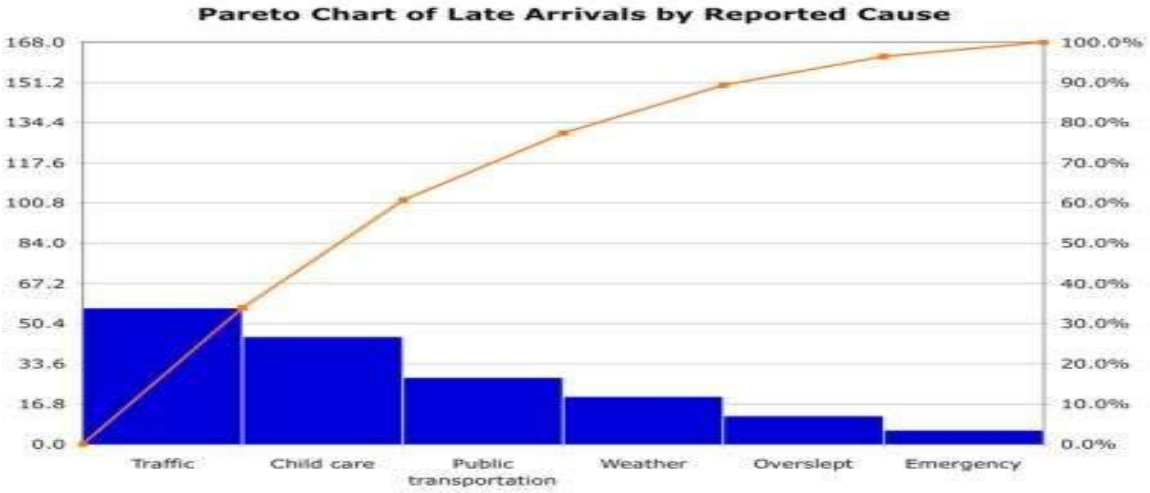


6. Control Charts: Control chart is the best tool for monitoring the performance of a process. These types of charts can be used for monitoring any processes related to function of the organization. These charts allow you to identify the following conditions related to the process that has been monitored.

- Stability of the process
- Predictability of the process
- Identification of common cause of variation
- Special conditions where the monitoring party needs to react



7. Pareto Charts: Pareto charts are used for identifying a set of priorities. You can chart any number of issues/variables related to a specific concern and record the number of occurrences. This way you can figure out the parameters that have the highest impact on the specific concern. This helps you to work on the propriety issues in order to get the condition under control.



USE OF COMPUTERS AND IT IN MANAGEMENT CONTROL

The Nature of Information

- We tend to use the term **Data** and **Information** interchangeably, there is distinction between the two concepts.
- **Data** are raw, unanalyzed numbers and facts about events
- **Information**, in contrast, results when data are organized or analyzed in some meaningful way

Management Information System

- A **management information system (MIS)** is a system that provides information needed to manage organizations efficiently and effectively.
- MIS encompass three primary components: Technology, People (individuals, groups, or organizations), and Data/Information for **decision making**.
- Academically, the term is commonly used to refer to the study of how individuals, groups, and organizations evaluate, design, implement, manage, and utilize systems to generate information to improve efficiency and effectiveness of decision making, including systems termed decision support system, Expert systems, and executive information systems.

Main Resources of MIS

- Hardware
- Software
- Telecommunications
- Network
- People
- Procedures
- Data

Implementation of MIS

1. Preparing organizational plans
2. Planning of workflow
3. Training of personnel
4. Development of software
5. Acquiring computer hardware
6. Designing the format for data collection
7. Construction of data files
8. Operation of old and new systems in parallel
9. Phasing out the old and inducing the new systems
10. Evaluation, Maintenance and control of the new system

Electronic Data Processing (EDP)

- **Electronic Data Processing** (**EDP**) can refer to the use of automated methods to process commercial data
- Typically, this uses relatively simple, repetitive activities to process large volumes of similar information
- For example: stock updates applied to an inventory, banking transactions applied to account and customer master files, booking and ticketing transactions to an airline's reservation system, billing for utility services.

Computer Based Information System (CBIS)

- **Information systems** (IS) is the study of complementary networks of hardware and software that people and organizations use to collect, filter, process, create, and distribute data
- Information system that goes beyond the mere standardization of data to add in the planning process.

Decision Support System

- *Decision Support System (DSS)* are computer program applications used by middle management to compile information from a wide range of sources to support problem solving and decision making.
- A properly designed DSS is an interactive software-based system intended to help decision makers compile useful information from a combination of raw data, documents, and personal knowledge, or business models to identify and solve problems and make decisions.

BALANCED SCORECARD

A performance measurement tool that looks at more than just the financial perspective. The balanced scorecard approach is a way to evaluate organizational performance from more than just the financial perspective. A balanced scorecard typically looks at four areas that contribute to a company's performance:

- financial,
- customer,
- Internal processes and
- people/innovation/growth assets.

According to this approach, managers should develop goals in each of the four areas and then measure whether the goals are being met.

For instance, at IBM Global Services in Houston, managers developed a scorecard around an overriding strategy of customer satisfaction. However, the other areas (financial, internal processes, and people/innovation/growth) support that central strategy.

Balanced Scorecard Measurements

Perspective	Generic Measurements
Financial	**Return of Capital Employed, Economic value added, Sales growth, Cash flow**
Customer	**Customer satisfaction, retention, acquisition, profitability, market share**
Internal business process	**Includes measurements along the internal value chain for:** **Innovation - measures of how well the company identifies the customers' future needs.** **Operations - measures of quality, cycle time, and costs.** **Post sales service - measures for warranty, repair and treatment of defects and returns.**
Learning and growth	**Includes measurements for:** **People - employee retention, training, skills, morale.** **Systems - measure of availability of critical real time information needed for front line employees.**

BENCHMARKING

- The search for the best practices among competitors or non-competitors that lead to their superior performance. The standard of excellence against which to measure and compare.
- Managers in diverse industries such as health care, education, and financial services are discovering what manufacturers have long recognized — the benefits of benchmarking, which is the search for the best practices among competitors or noncompetitors that lead to their superior performance.
- Benchmarking should identify various benchmarks, which are the standards of excellence against which to measure and compare.
- For instance, the American Medical Association developed more than 100 standard measures of performance to improve medical care.
- Carlos Ghosn, CEO of Nissan, benchmarked Walmart operations in purchasing, transportation, and logistics.
- At its most basic, benchmarking means learning from others.