

INFORMATION & SYSTEM CONCEPTS

UNIT 3

Methods of Data and Information Collection:

- Several methods are available for the collection of data. The choice of method will have an impact on the quality of information.
- Similarly the design of data collection method also decides the quality of data and information.
- An awareness of these methods is essential to the manager. Further, he should also understand the potential problems of bias, currency, and the fact versus the opinion in the various types of methods.
- The observation, the experiment, the survey and the subjective estimation are the methods chosen for data collection and information about a specific problem, while the remaining methods are chosen to collect data on a routine basis without any particular problem whatsoever.
- Following are the methods of data collection :
 - i. Observation
 - ii. Experiment
 - iii. Survey
 - iv. Subjective Estimation
 - v. Transaction Processing
 - vi. Purchase from Outside
 - vii. Publication
 - viii. Government Agencies
- The specific methods analysts use for collecting data about requirements are called fact - finding techniques.
- These include the interview, questionnaire, record inspections (on - site review) and observation. Analysts usually employ more than one of these techniques to help ensure an accurate and comprehensive investigation.

1) **Interview**

- ☐ Analysts use interviews to collect information from individuals or from groups. The respondents are generally current users of the existing system or potential users of the proposed system.
- ☐ In some instances, the respondents may be managers or employees who provide data for the proposed system or who will be affected by it.
- ☐ Although some analysts prefer the interview to other fact - finding techniques, it is not always the best source of application data.
- ☐ Because of the time required for interviewing, other methods must also be used to gather the information needed to conduct an investigation.
- ☐ It is important to remember that respondents and analysts converse during an interview - the respondents are not being interrogated.
- ☐ Interviews provide analysts with opportunities for gathering information from respondents who have been chosen for their knowledge of the system under study.
- ☐ This method is frequently the best source of qualitative information (opinions, policies, and subjective descriptions of activities and problems). Other fact finding methods are likely to be more useful for collecting quantitative data (numbers, frequencies, and quantities).
- ☐ This method of fact - finding can be especially helpful for gathering

Interviews can be either structured or unstructured:

- Unstructured interviews, using a question - and - answer format, are appropriate when analysts want to acquire general information about a system. This format encourages respondents to share their feelings, ideas, and beliefs.
- Structured interviews use standardized questions in either an open response or closed - response format. The former allows respondents to answer in their own words; the latter uses a set of prescribed answers.
- Each approach has advantages and disadvantages:
- The success of an interview depends on the skill of the interviewer and on his or her preparation for the interview.
- Analysts also need to be sensitive to the kinds of difficulties that some respondents create during interviews and know how to deal with potential problems.
- They need to consider not only the information that is acquired during an interview, but also its significance. It is important to have adequate verification of data through other data collection methods.

2) Questionnaire

- The use of questionnaires allows analysts to collect information about various aspects of a system from a large number of persons.
- The use of standardized question formats can yield more reliable data than other fact - finding techniques, and the wide distribution ensures greater anonymity for respondents, which can lead to more honest responses.
- However, this method does not allow analysts to observe the expressions or reactions of respondents.
- In addition, response may be limited, since completing questionnaires may not have high priority among the respondents.
- Analysts often use **open - ended questionnaires** to learn about feeling, opinions, and general experiences or to explore a process or problem.
- Closed questionnaires control the frame of reference by presenting respondents with specific responses from which to choose. This format is appropriate for eliciting factual information.
- The high cost of developing and distributing questionnaires demands that analysts carefully consider the objective of the questionnaire and determine what structure will be most useful to the study and most easily understood by the respondents.
- Questionnaires should also be tested and, if necessary, modified before being

3) Observation

- Observation allows analysts to gain information they cannot obtain by any other fact - finding method.
- Through observation, analysts can obtain first hand information about how activities are
carried out.
- This method is most useful when analysts need to actually observe how documents are handled, how processes are carried out, observers know what to look for and how to assess the significance of what they observe.

4)Record Review

- Many kinds of records and reports can provide analysts with valuable information about organizations and operations.
- In record reviews, analysts examine information that has been recorded about the system and user.
- Record inspection can be performed at the beginning of the study, as an introduction, or later in the study, as a basis for comparing, actual operations with the records indicate should be happening.
- Records include written policy manuals, regulations and standard operating procedures used by most organizations and a guide for managers and employees.
- They do not show what activities are actually occurring, where the decision - making power lies, or how tasks are performed.
- However, they can help analysts understand the system by familiarizing them with what operations must be supported and with formal relations within the organization.

What is a System?

- A collection of components that work together to realize some objectives forms a system.
- Basically there are three major components in every system, namely input, processing and output.
- In a system the different components are connected with each other and they are interdependent.
- For example, human body represents a complete natural system. We are also bound by many national systems such as political system, economic system, educational system and so forth.
- The objective of the system demands that some output is produced as a result of processing the suitable inputs. A well-designed system also includes an additional element referred to as „control“ that provides a feedback to achieve desired objectives of the system.
- Term system is derived from the Greek word “Systema” which means an organized relationship among functioning units or components.
- *“A system is an orderly grouping of interdependent components linked together according to a plan to achieve a specific objective”.*

Characteristics of a System:

- Organization
- Interaction
- Interdependence
- Integration
- Central Objective

i) **Organization**-It implies structure and order.

ii) **Interaction**-It refers to manner in which each component functions with other components of the system.

iii) **Interdependence**-Units/parts are dependent on each other

iv) **Integration**-The parts of a system work together within the system even though each part performs a unique function.

Elements of a System

- In most cases, systems analysts operate in a dynamic environment where change is a way of life.
- The environment may be a business firm, a business application, or a computer system.
- To reconstruct a system, the following key elements must be considered: 1. Outputs and inputs. 2. Processor(s). 3. Control. 4. Feedback. 5. Environment. 6. Boundaries and interface.

1) Outputs and Inputs :

- A major objective of a system is to produce an output that has value to its user. Whatever the nature of the output (goods, services, or information), it must be in line with the expectations of the intended user.
- Inputs are the elements (material, human resources, and information) that enter the system for processing. Output is the outcome of processing.
- A system feeds on input to produce output in much the same way that a business brings in human, financial, and material resources to produce goods and services.
- It is important to point out here that determining the output is a first step in specifying the nature, amount, and regularity of the input needed to operate a system.

2) Processor(s) :

- The processor is the element of a system that involves the actual transformation of input into output. It is the operational component of a system.
- Processors may modify the input totally or partially, depending on the specifications of the output.
- This means that as the output specifications change so does the processing. In some cases, input is also modified to enable the processor to handle the transformation.

3) Control :

- The control element guides the system. It is the decision - making subsystem that controls the pattern of activities governing input, processing, and output.
- In an organizational context, management as a decision - making body controls the inflow, handling and outflow of activities that affect the welfare of the business.
- In a computer system, the operating system and accompanying software influence the behaviour of the system.
- Output specifications determine what and how much input is needed to keep the system in balance. In systems analysis, knowing the attitudes of the

4)Feedback:

- Control in a dynamic system is achieved by feedback. Feedback measures output against a standard in some form of cybernetic procedure that includes communication and control.
- Output information is fed back to the input and / or to management (Controller) for deliberation. After the output is compared against performance standards, changes can result in the input or processing and consequently, the output.
- Feedback may be positive or negative, routing or informational. Positive feedback reinforces the performance of the system. It is routine in nature.
- Negative feedback generally provides the controller with information for action.
- In systems analysis, feedback is important in different ways. During analysis, the user may be told that the problems in a given application verify the initial concerns and justify the need for change.
- Another form of feedback comes after the system is implemented. The user informs the analyst about the performance of the new installation.
- This feedback often results in enhancements to meet the user's requirements.

5) Environment

- The environment is the “suprasystem” within which an organization operates.
- It is the source of external elements that impinge on the system. In fact, it often determines how a system must function.
- For example, the organization’s environment, consisting of vendors, competitors, and others, may provide constraints and, consequently, influence the actual performance of the business.


6) Boundaries and interface

- A system should be defined by its boundaries - the limits that identify its components, processes and interrelationship when it interfaces with another system.
- For example, a teller system in a commercial bank is restricted to the deposits, withdrawals and related activities of customers checking and savings accounts. It may exclude mortgage foreclosures, trust activities, and the like.
- Each system has boundaries that determine its sphere of influence and control. For example, in an integrated banking - wide computer system design, a customer who has a mortgage and a checking account with the same bank may write a check through the “teller system” to pay the premium that is later processed by the “mortgage loan system.”
- Recently, system design has been successful in allowing the automatic transfer of funds form a bank account to pay bills and other obligations to

SYSTEM CONCEPTS

MIS

Roles of System Analyst

- The system analyst is the person (or persons) who guides through the development of an information system.
- In performing these tasks the analyst must always match the information system objectives with the goals of the organization.
- The primary objective of any system analyst is to identify the need of the organization by acquiring information by various means and methods.
- Information acquired by the analyst can be either computer based or manual. Collection of information is the vital step as indirectly all the major decisions taken in the organizations are influenced.
- The system analyst has to coordinate with the system users, computer programmers, manager and number of people who are related with the use of system.
- Following are the tasks performed by the system analyst:
 1. **Defining Requirement:** The basic step for any system analyst is to understand the requirements of the users.
 -  This is achieved by various fact finding techniques like interviewing, observation, questionnaire etc.

2. Prioritizing Requirements: Number of users uses the system in the organization. Each one has a different requirement and retrieves different information.

- 📌 Due to certain limitations in computing capacity it may not be possible to satisfy the needs of all the users.
- 📌 Even if the computer capacity is good enough is it necessary to take some tasks and update the tasks as per the changing requirements.
- 📌 Hence it is important to create list of priorities according to users requirements.
- 📌 The best way to overcome the above limitations is to have a common formal or informal discussion with the users of the system. This helps the system analyst to arrive at a better conclusion.

3. Gathering Facts, data and opinions of Users:

- 📌 After determining the necessary needs and collecting useful information the analyst starts the development of the system with active cooperation from the users of the system.
- 📌 Time to time, the users update the analyst with the necessary information for developing the system.
- 📌 The analyst while developing the system continuously consults the users and acquires their views and opinions

5. Solving Problems:

- The analyst must provide alternate solutions to the management and should do a in dept study of the system to avoid future problems.
- The analyst should provide with some flexible alternatives to the management which will help the manager to pick the system which provides the best solution.

6. Drawing Specifications:

- The analyst must draw certain specifications which will be useful for the manager.
- The analyst should lay the specification which can be easily understood by the manager and they should be purely non-technical.
- The specifications must be in detailed and in well presented form.

Some more roles of System Analyst:

- Role of System Analyst differs from organization to organization. Most common responsibilities of System Analyst are following :

1) **System analysis** : It includes system's study in order to get facts about business activity. It is about getting information and determining requirements. Here the responsibility includes only requirement

Organization Needs for MIS in a Company

- To facilitate the management decision making at all levels of company, the MIS must be integrated.
- MIS units are company wide. MIS is available for the Top management.
- The top management of company should play an active role in designing, modifying and maintenance of the total organization wide management information system. Information system and Information technology have become a vital component of any successful business and are regarded as major functional areas just like any other functional area of a business organization like marketing, finance, production and HR.
- Thus it is important to understand the area of information system just like any other functional area in the business.
- MIS is important because all businesses have a need for information about the tasks which are to be performed.
- Information and technology is used as a tool for solving problems and providing opportunities for increasing productivity and quality.
- Information has always been important but it has never been so available, so current and so overwhelming.
- Efforts have been made for collection and retrieval of information, However, challenges still remain in the selection analysis and interpretation of the information that will further improve decision making and

MIS for a Business Organization :

- 1. Support the Business Process :** Treats inputs as a request from the customer and outputs as services to customer. Supports current operations and use the system to influence further way of working.
- 2. Support Operation of a Business Organization :** MIS supports operations of a business organization by giving timely information, maintenance and enhancement which provides flexibility in the operation of an organizations.
- 3. To Support Decision Making :** MIS supports the decision making by employee in their daily operations. MIS also supports managers in decision making to meet the goals and objectives of the organization. Different mathematical models and IT tools are used for the purpose evolving strategies to meet competitive needs.
- 4. Strategies for an Organization :** Today each business is running in a competitive market. MIS supports the organization to evolve appropriate strategies for the business to assented in a competitive environment.

Prerequisites of an Effective MIS

(i) Qualified System and Management Staff : (a) System and Computer Experts (b) Management experts

(ii) Futuristic Perspective

(iii) Support of Top Management

(iv) Common Database

(V) Control and maintenance of MIS

Various type of Information System

A business has several information systems :

(A) Formal Information System

(B) Informal Information System

(C) Computer Based Information System

Formal Information System : It is based on organizational chart represented by the organization.

Informal Information System : This is an employee based system designed to

i) Transaction Processing System (TPS) ii) Management Information System (MIS) iii) Decision Support System (DSS) iv) Executive Support System (ESS) v) Office Automation Systems (OASs), and vi) Business Expert Systems (BESs)

- The organization has executive support systems (ESS) at the strategic level; management information systems (MIS) and decision-support systems (DSS) at the management level; knowledge work systems (KWS) and office systems at the knowledge level; and transaction processing systems (TPS) at the operational level.
- Systems at each level in turn are specialized to serve each of the major functional areas. Thus, the typical systems found in organizations are designed to assist workers or managers at each level and in the functions of sales and marketing, manufacturing, finance, accounting, and human resources.

UNIT 2

Strategic Planning

Strategic Planning – Meaning

- Strategic planning means planning for strategies and implementing them to achieve organizational goals. It starts by asking oneself simple questions like- What are we doing? Should we continue to do it or change our product line or the way of working? What is the impact of social, political, technological and other environmental factors on our operations? Are we prepared to accept these changes etc.?
- Strategic planning helps in knowing what we are and where we want to go so that environmental threats and opportunities can be exploited, given the strengths and weaknesses of the organization. Strategic planning is “a thorough self-examination regarding the goals and means of their accomplishment so that the enterprise is given both direction and cohesion.”
- It is “a process through which managers formulate and implement strategies geared to optimizing strategic goal achievement, given available environmental and internal conditions.”
- Strategic planning is formalization of planning where plans are made for long periods of time for effective and efficient attainment of organizational goals. Strategic planning is based on extensive environmental scanning.

- It is a projection into environmental threats and opportunities and an effort to match them with organization's strengths and weaknesses.
- While long-run planning may not be fully equipped to absorb environmental shocks, strategic planning is done to comprehend, anticipate and absorb environmental vagaries.
- Strategic planning is a continuous process. Every time business organizations want to achieve a higher growth rate or change their operations, desire for better management information system, coordinate activities of different departments, remove complacency from organizations; they make strategic plans.

Strategic Planning Goals:

- Once we established a vision, mission and role, and done internal and external scans, we should have enough information to set goals for the period that our strategic plan covers.
- Goals in strategic planning can be either result oriented, or process oriented, although, it's probably better to have results oriented goals.
- For example – increase share price by 5%, increase return on capital investments by 10%, reduce employee turnover by 10%, bring three new products to market, and register 3 new patents.

Strategic Planning – Features

- **The following are the salient features of strategic planning:**

1. Process of Questioning:

- It answers questions like where we are and where we want to go, what we are and what we should be.

2. Time Horizon:

- It aims at long-term planning, keeping in view the present and future environmental opportunities. It helps organizations analyze their strengths and weaknesses and adapt to the environment. Managers should be farsighted to make strategic planning meaningful

3. Pervasive Process:

- It is done for all organizations, at all levels; nevertheless, it involves top executives more than middle or lower-level managers since top executives envision the future better than others.

4. Focus of Attention:

- It focuses organization's strengths and resources on important and high-priority activities rather than routine and day-to-day activities. It reallocates resources from non-priority to priority sectors.

5. Continuous Process:

- Strategic planning is a continuous process that enables organizations to adapt to the ever-changing, dynamic environment.

6. Co-Ordination:

- It coordinates organizations internal environment with the external environment, financial resources with non- financial resources and short-term plans with long- term plans.

Strategic Planning – Importance

Strategic planning offers the following benefits:

1. Financial Benefits:

- Firms that make strategic plans have better sales, lower costs, higher EPS (earnings per share) and higher profits. Firms have financial benefits if they make strategic plans.

2. Guide to Organizational Activities:

- Strategic planning guides members towards organizational goals. It unifies organizational activities and efforts towards the long-term goals. It guides members to become what they want to become and do what they want to do.

3. Competitive Advantage:

- In the world of globalization, firms which have competitive advantage (capacity to deal with competitive forces) capture the market and excel in financial performance. This is possible if they foresee the future; future can be predicted through strategic planning. It enables managers to anticipate problems before they arise and solve them before they become worse.

5. Beneficial for Companies with Long Gestation Gap:

- The time gap between investment decisions and income generation from those investments is called gestation period. During this period, changes in technological or political forces can disrupt implementation of decisions and plans may, therefore, fail. Strategic planning discounts future and enables managers to face threats and opportunities.

6. Promotes Motivation and Innovation:

- Strategic planning involves managers at top levels. They are not only committed to objectives and strategies but also think of new ideas for implementation of strategies. This promotes motivation and innovation.

7. Optimum Utilization of Resources:

- Strategic planning makes best use of resources to achieve maximum output.
- General Robert E. Wood remarks, “Business is like war in one respect. If its grand strategy is correct, any number of tactical errors can be made and yet the enterprise proves successful.” Effective allocation of resources, scientific thinking, effective organization structure, co-ordination and integration of functional activities and

Strategic Planning – Approaches

Arthur A. Thompson and A. J. Strickland have described four basic approaches to formal strategic planning:

1. Bottom-Up Approach:

- Initiatives in formulating strategy are taken by the various units or divisions of an organization and then passed upward for aggregation at the corporate level. Corporate strategy will then be a composite of these plans. The weakness of this approach is that corporate strategy may end up as an incoherent muddle that merely reflects the objectives of the divisions before the planning attempt was made.

2. Top-Down Approach:

- Initiative is taken by the upper-level executives of the organization, who formulate a unified, coordinated strategy, usually with the advice of lower-level managers. This overall strategy is then used to establish objectives and evaluate the performance of each business unit.

3. Interactive Approach:

- This approach is a compromise between the bottom-up and top-down methods, corporate executives and lower-level managers

4. Dual-Level Approach:

- Strategy is independently formulated at both the corporate and business levels. All units form plans which suit their particular situations, and these plans are regularly reviewed by corporate management. At the corporate level, strategic planning is continuous and focuses on the larger goals of the organization—when to acquire and when to divest businesses; how to react to competition and the external environment; what priorities to attach to the organization’s various units.

Strategic Planning – Process

- Even though the phrases, ‘Long-term Planning’ and ‘Strategic Planning’ are interchangeably used, we may have a line of discrimination in between them. Philip Kotler puts “whereas the company’s annual and long-range plans deal with current businesses and how to keep them going, the strategic plan involves adapting the firm define Strategic Planning as the process of developing and maintaining a strategic fit between the organizational goals and capabilities and its changing marketing opportunities”.

- Strategic planning is the foundation for other type of plans. It depends upon developing a clear company mission, supporting objectives of a sound business portfolio and coordinated functional strategies. The strategic planning process is one in which the management converts its mission, objectives and goals into a workable strategy. It involves the preparation of ways and means to the circumstances of the organization's environment.
- In today's highly competitive business environment, budget-oriented planning or forest-based planning methods are insufficient for a large corporation to survive and prosper. The firm must engage in strategic planning that clearly defines objectives and assesses both the internal and external situation to formulate strategy, implement the strategy, evaluate the progress and make adjustments as necessary to stay on track.
- The Strategic Management Process can be studied under five, different components.

- **They are:**

- 1. Missions and Objectives:**

- A mission statement reveals the long-term vision of an organization in terms of what it wants to be and whom it wants to serve.

It describes an organization's purpose, customers, products or services, markets, philosophy, and basic technology. The mission statement describes the company's business vision, including the unchanging values and purposes of the firm and forward looking visionary goals that guide the pursuit of future opportunities.

2. Environmental Scanning or Surveying the Environment:

- This is central to strategic planning. The second aspect of the strategic planning process is the environmental analysis. Since the basic objective of strategies is to integrate the organization with its environment, it must know the kind of environment in which it has to work. This can be known by environmental analysis.
- The process of environmental analysis includes collection of relevant information from the environment, interpreting its impact on the future organizational working, and determining what opportunities and threats-positive and negative aspects are offered by the environment.
- Basically, a firm gathers all relevant information relating to the environment and analyzes them in detail. It analyses both the Macro Environmental factors as well as Environmental factors that have specific to the business concerned.

i. Macro Environmental Factors or External Factors:

- Under the macro environmental factors, it studies the demographic, socio-cultural, economic, political and legal environment. Business-specific environmental factors include emerging trends in the industry, structure of the industry, nature of the competition and the scope for invasion by substitute products.

ii. Internal Factors:

- This is the process of assessing the company's capabilities and resources, strengths and weaknesses, core competencies and competitive advantages. The firm also has to examine which of its perceived strengths actually constitutes the competitive advantage for the firm. The firm compares itself against the competition and develops its Competitive Advantage Profile (CAP). The process of internal appraisal also throws up the capability gaps of the firms, i.e., the gaps between its existing capabilities and the needed capabilities for tapping the opportunities spotted through the environmental survey.

3. Strategy Formulation:

- Given the information from the environmental scan, the firm should match its strengths to the opportunities that it has identified, while addressing its weaknesses and external threats.
- To attain superior profitability, the firm seeks to develop a competitive advantage over its rivals. A competitive advantage can be based on cost or differentiation. Michael Porter identified three industry-independent generic strategies from which firm can choose.
- After strategy chosen, it is put to implementation, that is, it is put into action. Various factors which are necessary for implementation are designed for suitable organization structure, developing and motivating people to take up the work, designing effective control and information system, allocation of resources, etc.
- The most crucial task is formulating the corporate strategy. The effectiveness of the entire strategic planning process of a firm is tested and proved by the effectiveness of the corporate strategy it walks out. While the objectives clarify where the firm wants to go, the strategy provides the design to getting there.

4. Strategy Implementation:

- The selected strategy is implemented by means of programs, budgets, and procedures. Implementation involves organization of the firm's resources and motivation of the staff to achieve objectives.
- The way in which the strategy is implemented can have a significant impact on whether it will be successful. In a large company, those who implement the strategy likely will be different people from those who formulated it.
- For this reason, care must be taken to communicate the strategy and the reasoning behind it. Otherwise, the implementation might not succeed if the strategy is misunderstood or if lower level managers resist its implementation because they do not understand why the particular strategy was selected.

5. Evaluation and Control:

- The strategy has to be monitored and adjustments that become necessary have to be brought. Essentially, the thing had to be compatibility of the strategy with the environment as well as internal realities.

- The implementation of the strategy must be monitored and adjustments made as needed.

Evaluation and control consists of the following steps:

- i. Defining parameters to be measured
 - ii. Defining target values for those parameters
 - iii. Performing measurements
 - iv. Comparing measured results to the pre-defined standards
 - v. Making necessary changes.
- The results of implementation can be compared in the light of objectives set, and control process comes into operation. If the results and objectives differ, a further analysis is required to find out the reasons for the gap and taking suitable actions to overcome the problems because of which the gap exists.
 - This may also require a change in strategy if there is a problem because of the formulation n inadequacy. This puts back the managers at the starting point of the strategy formulation.

Strategic Planning – 6 Main Tools: SWOT Analysis, Scenario Planning, Pest Analysis, Risk Analysis, STP (Situation-Target-Path) and Goals Grid Method

Tool # 1. SWOT Analysis:

- SWOT analysis is a tool for assessing the business and its environment that helps focus on key issues. It can help us focus limited resources and capabilities to the competitive environment. SWOT stands for strengths, weaknesses, opportunities, and threats.
- Strengths and weaknesses are internal factors. Opportunities and threats are external factors. The point of the SWOT analysis is to ensure that we have a marketing plan that is consistent with the resources and capabilities of our company.
- **Strengths could be:**
 - i. A specialist marketing expertise.
 - ii. A new, innovative product or service.
 - iii. Location of business.
 - iv. Quality processes and procedures.
 - v. Any other aspect of business that adds value to product or service.

Weaknesses could be:

- i. Lack of marketing expertise.
- ii. Undifferentiated products or services (i.e., in relation to competitors).
- iii. Location of business.
- iv. Poor quality goods or services.
- v. Damaged credibility.

Opportunities could be:

- i. A developing market or an emerging market.
- ii. Mergers, joint ventures or strategic alliances.
- iii. Moving into new market segments that offer improved profits.
- iv. A new international market.
- v. A takeover

Threats could be:

- i. A new competitor in home market.
- ii. Price wars with competitors.
- iii. A competitor has a new, innovative product or service.
- iv. Competitors have superior access to channels of distribution.
- v. Taxation/Octroi/Service tax is introduced on product or service.

- **Examples of SWOT analysis:**

- i. Wal-Mart:**

- a. Strengths – Wal-Mart is a powerful retail brand. It has a reputation for value for money, convenience and a wide range of products all in one store.
 - b. Weaknesses – Wal-Mart is the World’s largest grocery retailer and control of its empire, despite its IT advantages, could leave it weak in some areas due to the huge span of control.
 - c. Opportunities – To take over, merge with, or form strategic alliances with other global retailers, focusing on specific markets such as – Europe or the Greater China Region.
 - d. Threats – Being number one means that you are the target of competition, locally and globally.

Tool # 2. Scenario Planning:

- In essence scenario planning is about being prepared.
- Scenario planning is a fancy term for a very logical and sensible process — the “what if” process. It involves looking into the future, anticipating possible events, scenarios or changes, and analyzing what will happen to the company as a result of those things happening, and, planning to minimize any damage, and maximize opportunities.
- Scenario planning is often used in IT environments but applies to any business. For example, the IT department might anticipate what would happen if a major hurricane hit and destroyed their central computers. As a result they would minimize their risk by using offsite data storage geographically separate from the main installation, or move their central computers to a more resistant building.
- Scenario planning can look at any set of possible circumstances. For example, an oil company might plan around the possibility that a new, non-petroleum based vehicle becomes available. As an outcome of this kind of scenario planning, they might look at the possibility of offering hydrogen fuel at their retail outlets (or charging stations).

- It doesn't mean they would implement those now, but they would be more prepared if such changes happened. In small business, one might consider, and plan for a scenario where one's rent might double, or one might lose the prime retail space.

Tool # 3. Pest Analysis:

- The PEST analysis or model is another tool, quite similar to the SWOT model, but is more specialized and focused on the external environment and important factors “out there” that can affect present and future business.
- **The PEST acronym stands for:**
 - i. Political
 - ii. Economic
 - iii. Social, and
 - iv. Technological.
- Once political, economic, social and technological factors are identified (which is the first step), the next step is to create a business strategies that will take advantage of these trends and changes, while minimizing risk to the company from those trends and changes

Tool # 4. Risk Analysis:

- Risk analysis involves identifying where a company might be vulnerable to various outside (usually) factors. Risk analysis may be conducted either within the structure of strategic planning, or, on its own. These days companies need to buffer the effects of a number of things “out there” so they ensure that they don’t become the victims of foreseeable events. We can never be sure that we have covered off all risks — we can only identify, and plan for risks we can foresee.

Tool # 5. STP (Situation-Target-Path):

- STP or Situation-Target-Path is a very simple overview of the strategic planning method, it divides the planning process into three parts, starting with defining the situation – evaluating and analyzing the current situation and how it came about.
- The second component – Target – involves defining goals and objectives for the future. Sometimes this is referred to as defining the ideal or desired future state.
- The third component – Path – involved defining a map or path to achieve the goals or future state.
- The STP method is simple, but accurately describes, at least in a

Tool # 6. Goals Grid Method:

- A goals grid is a relatively simple technique to help us think more clearly about organizational and company goals, particularly when we are doing strategic planning.

UNIT 2

Corporate Planning

- Corporate planning is a total system of planning which involves the determination of the objectives for the company as a whole and for each department of the it; formulation of strategies for the attainment of these objectives (all this being done against the background of SWOT analysis); conversion of strategies into tactical plans (or operational plans); implementation of tactical plans and a review of the progress of tactical plans against the corporate planning objectives.
- **On the basis of the above definition, we can state the following main features of corporate planning:**
- (i) Corporate planning is a total system of planning, under which concept objectives are determined for the company as a whole and for each department of it. This means that under the concept of corporate planning, no department of company is allowed to have its own independent planning. All departmental plans are a part of corporate planning, in a unified structure.

- ii) To realize the objectives of corporate planning, strategy formulation is done. Strategy formulation is the core aspect of corporate planning. Success of corporate planning depends on the success of strategy formulation
- (iii) Determination of objectives of corporate planning and strategy formulation – both are done against the background of SWOT analysis.
- (iv) Strategies are translated (or converted) into tactical plans (or operational plans), which are detailed in nature.
- (v) Tactical plans are put to action at the right time, as decided by management. This is the practical aspect of corporate planning.
- (vi) Performance of tactical plans is judged in the light of the objectives of corporate planning; so that necessary modifications might be made in the corporate planning process and better corporate planning might be done in future.
- (vii) Corporate planning has a long-term perspective; while operational plans have a short-term prospective.

- **David Hussey (Corporate Planning: Theory and Practice) defines corporate planning as follows:**
- “Corporate planning includes the setting of objectives, organizing the work, people and systems to enable those objectives to be achieved, motivating through the planning process and through the plans, measuring performance and so controlling progress of the plans and developing people through better decision-making, clearer objectives, more involvement, and awareness of progress.”
- **Process of Corporate Planning:**
- **Major steps involved in corporate planning are as follows:**
 - ***(i) Environmental Analysis and Diagnosis:***
 - The first steps (which is, in fact, the background step), involved in corporate planning is environmental analysis and diagnosis. (A detailed account of this step is attempted subsequently, in the discussion about corporate planning).

(ii) Determination of Objectives:

- All planning starts with a determination of the objectives for the plan; and corporate planning is no exception to this generality. In corporate planning, after environmental analysis and diagnosis, the planners determine objectives for the company as a whole and for each department of it; which become the beginning point of corporate planning.
- All objectives of corporate planning must represent an integrated or coordinated system of objectives. In order to make corporate planning a realistic approach to attaining objectives; objective setting for corporate planning is done in the light of environmental analysis and diagnosis.

(iii) Strategy Formulation:

- Strategy formulation is the core aspect of corporate planning. Strategy is, in fact, the weapon of the planner devised for attaining objectives of corporate planning. It is easier to set objectives; it is difficult to realize them. Strategies facilitate the attainment of objectives.
- There is no doubt about it that success of strategies is the success of corporate planning; and vice versa. Strategy formulation is also

(iv) Development of Tactical Plans:

- Strategies are translated into action plans called tactical plans or operational plans. Tactical plans are necessary for implementation of strategies leading to the attainment of corporate planning objectives. For example, if the strategy of a company is to develop the skills and talents of manpower for realizing objectives; then designing of suitable training programmes would amount to making tactical plans.
- Corporate planning and strategy formulation have a long-term perspective; while tactical plans have a short-term perspective, as the latter are to be implemented immediately, in the usual course of organisational life.

(v) Implementation of Tactical Plans:

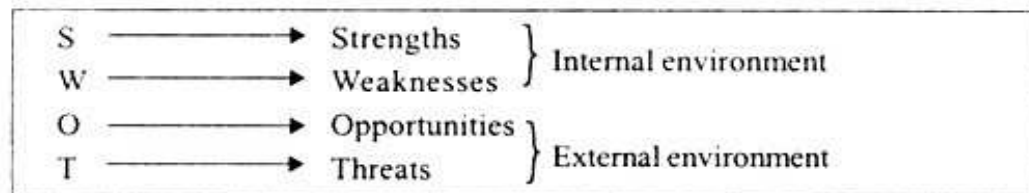
- Mere paper planning is no planning; unless and until it is put into practice. As such, tactical plans are put into a process of implementation, just at the right time, as decided by management. For implementation purposes, necessary communications are made to the operating staffing; who are also provided with necessary facilities to implement the tactical plans.

(vi) Follow-Up-Action:

- After the tactical plans have been put into practice; a review of progress is done i.e. an examination of what results are following from the implementation of the plan and what feedback action is necessary, for the betterment of the corporate planning process.

(I) Environmental Analysis: SWOT Analysis:

- SWOT analysis is a key concept in the world of corporate planning and strategy formulation. SWOT is also called TOWS by some management people. In fact, TOWS is SWOT; just written backward, i.e. SWOT and TOWS one and the same thing.
- Out of these four words, the first two refer to the internal environment of the company; while the last two refer to the external environment of business.
- **The purpose of SWOT analysis is:**
- (i) To capitalize (i.e. to take best advantage) on the strengths of the company.
- (ii) To overcome the weaknesses of the company.
- (iii) To exploit fully the opportunities available in the external environment.
- (iv) To manage successfully the threats posed by the external environment.



Internal Environmental Analysis:

- All that environment which is found within the business enterprise itself, may be termed as the internal environment of business.
- **For sake of analysis, we can break-up the internal environment into the following major factors:**
 - (i) Philosophical environment**, consisting of the mission, values, beliefs and long-term goals of the enterprise and organisational culture.
 - (ii) Managerial environment**, consisting of the management hierarchy, quality of managerial talents and the process of managerial development
 - (iii) Structural environment, consisting of:**
 - 1. Rules, policies and procedures of the organisation
 - 2. Authority-responsibility relationships found in the organisation
 - 3. Communication network
 - 4. Controlling techniques etc.
 - (iv) Production environment, consisting of:**
 - 1. Raw material availability and utilisation system
 - 2. Technology available to the organisation
 - 3. Plant capacity utilisation
 - 4. Quality control system

Internal Environmental Analysis:

(v) Marketing environment, consisting of:

1. Marketing research system and procedures
2. Training and compensation of salesmen
3. Advertising and other sales promotion techniques

(vi) Personnel environment, consisting of:

1. Quantity and quality of manpower
2. Systems of training, promotion and compensation of workmen
3. Type and nature of manpower planning

(vii) Financial environment, consisting of:

1. Working capital management
2. Capital budgeting – techniques and procedures
3. Financial discipline enforced in organisation.

Internal Environmental Analysis:

(viii) Human relations environment, consisting of:

1. Line-staff harmony and conflicts
2. Management labour relations
3. Workers' relations interest.
4. Public relations etc.

Point of comment:

- By and large, management has control over elements of internal environment, except human relations aspect.

External Environmental Analysis:

- All the environment which obtains and prevails outside the business enterprise may be termed as the external environment of business.
- **Before we undertake a brief account of various external environmental factors; it would be in the fitness of things, to first identify the salient features of external environment as stated below:**

(i) External environment is unlimited:

- It extends beyond national frontiers. The need, therefore, is to analyse and consider only relevant factors with appropriate dimensions, obtaining in external environmental scenario. It, so to say, has an upper hand over management. Only a few 'hero industrial giants' may have an influence over external environment; but only in a limited way.

(ii) By and large, external environment is beyond the control of management:

- It, so to say, has an upper hand over management. Only a few 'hero industrial giants' may have an influence over external environment; but only in a limited way.

External Environmental Analysis:

(iii) External environment:

- It is very complex; and various factors comprised in it may be highly interrelated and interdependent. For example, there is considerable overlapping among political and legal factors; social and economic factors and so on. As such, to analyse external environmental factors in a thorough and precise manner is, in itself, a very complex job.

(iv) External environment is highly volatile and turbulent; in which there are lots of sudden changes, which may even become quite dangerous. This feature of external environment is a serious challenge to management requiring it to remain highly cautious, alert and adaptable.

(v) External environment is subject to perception values i.e. one environmental expert may perceive a particular factor to be favourable; another expert may regard it to be most unfavourable. As such, decision-making based on environmental influences may become highly confused.

Major Factors Comprised in External Environment

- **Though due to the overlapping nature of environmental factors, it is quite difficult to identify specific factors comprised in this environment; yet for sake of analysis some major factors of it could be stated as under:**

(i) Political factors:

Major sub-aspects of political factors may be:

1. Whether there is a united front government or a single party government
2. Political stability
3. Ideology of the government towards business reflected in its economic and business policies.
4. Taxation attitude towards business
5. Policies of liberalisation
6. Import-export orientation etc.

- **Point of comment:**

- The potential risk and danger of political factors is that many-a-times, these factors have legal implications; as any of the ideologies of the government may be enforced on business through enactment

Major Factors Comprised in External Environment

(ii) Legal factors:

- Legal factors constitute the existing legal framework, as applicable to business enterprises.
- **Some important laws which vitally affect the functioning of the enterprise may be:**
 1. Commercial laws, especially the Companies Law
 2. Industrial laws
 3. Taxation laws
 4. Import-export regulations
 5. MRTP (Monopolies and Restrictive Trade Practices Act)
 6. Monetary and fiscal policies etc.

Point of comment:

- The functioning of a business enterprise is seriously constrained by legal requirements; as non-adherence to these invites fines, penalties and punishment. 'What cannot be cured must be endured', applies to legal factors commanding business enterprises.

Major Factors Comprised in External Environment

(iii) Social-religious-cultural factors:

- In a way, social, religious and cultural factors are inter-wined i.e. they cannot be separated from one another.
- **Some major aspects of these factors may be:**
- 1. Population growth and trends
- 2. Level of education in society
- 3. Craze for a higher standard of living.
- 4. Urbanization tendencies
- 5. Demonstration effect carried from the Western economies
- 6. Consumer awareness
- 7. Changing social and cultural values etc.
- **Point of comment:**
- Since a business enterprise operates in a socio-cultural environment, and is a sub-system of it; it becomes imperative for business enterprises to attune their functioning to meet the aspirations and needs of society to ensure their survival and growth.

Major Factors Comprised in External Environment

(iv) Competitive factors:

- Competitors, so to say, for practical purposes are, by far, the most significant component part of external environment. Policies, strategies, actions and reactions of competitors vitally affect the functioning of an enterprise. In fact, one biggest problem of an enterprise is to ensure its survival amidst intensely competitive conditions.
- Consumers, especially target consumers, who become buyers of the goods/services produced; provided by the business enterprise; are, perhaps, the most critical component part of this environment. Their patronage of business products (services), buying capacity, likes, dislikes, preferences etc. vitally ensure profitability for the business enterprise; and help business in realisation of its ultimate objectives.

(v) Technological factors:

- Technology, because of advancement in science, has progressed so much that many experts speak of a 'technological revolution'; which the commercial world is passing through technological factors

Major Factors Comprised in External Environment

- (a) If business enterprises do not adhere to latest technology; they might lag much behind under competitive conditions and become obsolete one day; and
- (b) If they plan to adhere to the new technology, they may face:
 1. Problem of resource crunch
 2. Re-organisational problems
 3. Resistance to organisational changes by workers, and so on.

Point of comment:

- A thing which adds insult to injury, here is that the new technology adhered to and accepted by the enterprise may, after some time, be rendered obsolete-due to rapid technological advancements. Again, the business management is put in a dilemma – what to do and what not to do.

(vi) General economic factors:

- Among general economic factors, inflationary tendencies are the most significant aspect; as these tendencies are observed all over the world, in the present-day-times.

Major Factors Comprised in External Environment

- **Some social tendencies which emerge from inflationary tendencies; and which require serious consideration by business enterprises are:**

1. A craze for low priced products
2. Tendency to save, rather than spend, as a measure to provide for future contingencies.
3. Managing purchasing on hire-purchase and installment basis etc.

Point of comment:

- A paradoxical situation is created by inflationary tendencies, in that on the one hand producers face problems of higher operational and production costs; and on the other hand, consumers prefer cheaper products. A high ingenuity is called for on the part of management to reconcile the situational factors, under these circumstances.

(vii) Financial factors:

Financial factors include the following major sub-aspects:

1. Policies of banks and financial institutions.
2. Stock market environment

Major Factors Comprised in External Environment

3. Control of Central Bank (RBI) and SEBI (Securities and Exchange Board of India) over financial institutions and stock market
4. Structure of interest rates
5. Foreign capital etc.

Point of comment:

- Corporate enterprises are deeply affected by these financial factors. It is the financial environment of the economy which helps them turn their dreams into reality. Managements of corporate enterprises must seek consultations with financial experts to take best advantage of financial environmental factors.

Major Factors Comprised in External Environment

(viii) Natural environmental factors:

- **Natural environmental factors usually include the following:**
 1. Natural resources
 2. Climate
 3. Geographical features, whether the area is hilly or plain etc.
- These and other allied factors vitally affect the functioning of a business enterprise. For example, mode of living and requirements of people in cold-climatic regions are much different from those living in hot areas. Likewise, his system of transportation in hilly regions and plains are much different requiring businesses to adapt their productive and marketing operations, accordingly.

An example of SWOT analysis:

- To illustrate the concept of SWOT analysis, let us take an example.
- **It is preferable to examine and analyses strengths and weaknesses in the internal environment and opportunities and threats in the external environment according to the major categories of factors obtaining in both these types of environments, as explained below:**

I. Strengths:

(i) Philosophical environment:

1. Organization's mission based on considerations of ethics and social responsibilities
2. Emphasis on long-term goals

(ii) Managerial environment:

1. Honest and dedicated management class.
2. Open minded management

(iii) Structural environment:

1. Open lines of communication i.e. two way communication
2. Controls of a bread nature to minimize disturbance for subordinates

An example of SWOT analysis:

(iv) Production environment:

1. Latest technology used
2. An efficient inventory control system in use

(v) Marketing environment:

1. An excellent marketing research organisation
2. A wide distribution network

(vi) Personnel environment:

1. Sound promotion policy
2. Satisfactory system of employee remuneration

(vii) Financial environment:

1. Plentiful financial resources available
2. An excellent budgetary control system in use

(viii) Human relations environment:

1. Excellent labour management relations
2. Good relations among workers interest

An example of SWOT analysis:

II. Weaknesses:

(i) Philosophical environment:

1. Poor organisational culture.
2. Values held by upper management class being extremely traditional and orthodox.

(ii) Managerial environment:

1. A large number of competent managers in the retirement age group
2. No satisfactory system of managerial development.

(iii) Structural environment:

1. Mechanistic organisational structure
2. Organisational policies not evaluated and revised.

(iv) Production environment:

1. Inadequate plant capacity utilisation
2. Not much attention to quality control

An example of SWOT analysis:

(vi) Personnel environment:

1. Emphasis on traditional sources of recruitment
2. No provision for refresher training

(vii) Financial environment:

1. Improper management of working capital
2. Capital structure not properly designed

(viii) Human relations environment:

1. Ever growing line-staff conflicts
2. No attention to public relations.

III. Opportunities:

(i) Political factors:

1. Favourable policies of liberalization
2. Huge incentives and tax concessions for export promotion

An example of SWOT analysis:

(ii) Legal factors:

1. Welcome relaxations in MRTP
2. Recent amendments in Company Law suitable for the enterprise.

(iii) Social-religious-cultural factors:

1. Craze for higher standard of living encouraging investment in production of luxurious consumer goods.
2. Availability of educated and professionally skilled managers and workers.

(iv) Competitive factors:

1. Company's products enjoying popularity among target consumers, weakening competitors' morale
2. Unpopular and poor pricing strategies followed by competitors

(v) Technological factors:

1. Availability of advanced technology
2. Technology suitable to the organisational set-up of the enterprise

An example of SWOT analysis:

(vi) General economic factors:

1. Optimistic economic outlook ensuring good investment opportunities
2. Opportunities for market enlargement in backward areas because of overall progressive outlook of society, everywhere.

(vii) Financial factors:

1. Favourable lending policies of financial institutions
2. Availability of foreign capital and initiative

(viii) Natural environmental factors:

1. Good climatic conditions conducive to hard work
2. Easy availability of water for production requirements

IV. Threats:

(i) Political factors:

1. United Front Government with politically oriented business policies, harming long-term business interests
2. High rates of corporate taxation, with no relief in sight.

An example of SWOT analysis:

(ii) Legal factors:

1. Strict provisions of Company Law resulting in delayed and inferior corporate decision making
2. Many pieces of labour laws falling heavy on company's functioning and finances.

(iii) Social-religious-cultural factors:

1. Changing social values, specially fashion, making for uncertain and irregular demand.
2. Rising population, creating problems of space, accommodation and unduly high rentals.

(iv) Competitive factors:

1. Competitors trying to capture market through exaggerated advertising claims.
2. Competitive threats from multinationals, assuming serious proportions.

(v) Technological factors:

1. Danger of technological obsolescence due to rapid scientific inventions.

An example of SWOT analysis:

vi) General economic factors:

1. Rising prices discouraging demand and investment.
2. Workers' demand for higher and higher wages creating severe financial implications for management, because of present day inflationary tendencies.

(vii) Financial factors:

1. Craze for investment in companies virtually disappearing because of securities scams.
2. Strict regulations of SEBI creating problems for corporate management.

(viii) Natural environmental factors:

1. Much needed natural resources disappearing
2. Increasing environmental pollution creating problems for health and hard work.

(III) Environmental Diagnosis:

- After the external environmental analysis is complete; the next task for the strategist is to undertake environmental diagnosis.
- Just as a doctor does the diagnosis of a patient to find out the exact disease of the patient; very much in the same way a strategist does the environmental diagnosis to find out –
 1. Which factors of the environment are opportunities for the organisation; and which factors are threats for the organisation?
 2. What is the significance of various environmental factors for the operational life of the organisation?
 3. What is the probability of change in various environmental factors? and so on.
- **ETOP (Environmental Threats and Opportunities Profile)**
Technique:
- For purposes of environmental diagnosis, a very popular technique is the preparation of ETOP. ETOP is a type of chart which summarizes environmental factors in terms of opportunities and threats. ETOP gives an overall view of the relevant environmental opportunities and threats at a glance. Following is an imaginary example of ETOP

(III) Environmental Diagnosis:

ETOP

Environmental factors	Impact (+) opportunity (-) Threat
Political-legal	(+) Stable government with specific business sector policies (+) Tax concessions for export promotion (-) Mismanaged law and order situation
Social-religiuous-cultural	(+) Expanding markets emerging due to population growth (-) Changing social values making for uncertain business situations due to unpredictable consumer behaviour.
Economic	(+) A high rate of economic growth, favouring business expansion, diversification philosophies. (-) Price escalation creating problems for manufacturers.
Technological	(+) Availability of super-advanced technology (-) High cost of technology acquisition
Financial	(-) Depression in the stock market, because of frequent securities scams

Competitive	(-)	Large number of entrants to industry, because of attractiveness of industry
	(-)	Lower prices charged by established competitors
International	(-)	Ever rising petrol and diesel prices
	(-)	Intense competition in the international market.

(III) Environmental Diagnosis:

Explanation to the Diagnostic Chart:

- In the diagnostic chart, under each category of factors, the strategist has to mark a tick (√) in each column of the chart meant for showing-nature, impact and probability of change.

-

An appropriate tick mark will indicate whether:

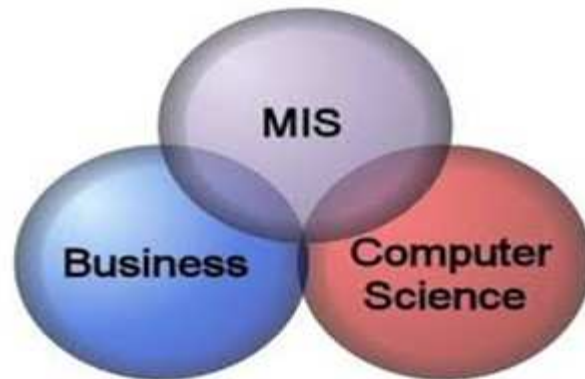
- 1. The factor is an opportunity or a threat
- 2. The impact of the factor is severe/moderate/low
- 3. The probability of change in factor is high/moderate/low/uncertain
- Further, in each category of factors, there may be not one but a number of sub-factors, belonging to that category. Hence this diagnostic chart could be as comprehensive and detailed, as the analyst or the strategist requires it to be.

MIS

UNIT -1

DEFINITION OF MIS

- Management information system is an information system that is used within the organization to achieve its desired objectives. MIS collects and processes information and then provides the information to the management of an organization.
- MIS is a well structured method which combines the principles, theories and practices of management and plays an important role in business organization for planning and decision making process. It provides managers with different tools to organize, evaluate and run their departments efficiently.



MIS=MANAGEMENT+INFORMATION+SYSTEM

Management is defined as the art of getting things done through people by dividing them into organized groups and designing each group to do a unique job. The manager manages the organization. The key activities of a manager are:-

- **Planning**-The process of determining the goals and objectives of a future project in advance.
- **Organizing**-The process of arranging the activities required to meet the objectives derived during the planning process.
- **Staffing**-The process of assigning the right person for the right job.
- **Directing**-The process of guiding and motivating the people involved in the project by the managers to achieve the predetermined goals and objectives.

INFORMATION

Information, in MIS, means the processed data that helps the management in planning, controlling and operations. Data means all the facts arising out of the operations of the concern. Data is processed i.e. recorded, summarized, compared and finally presented to the management in the form of MIS report.

- **Structured:-** It is well defined and thus its processing is not difficult. Eg: monthly production schedule
- **Unstructured-**It is not well defined and the processing becomes difficult.eg:-prediction about future of org.
- **External:-**It is achieved from a source located outside the operations of the organization .Eg population growth in the market in which an organization serves.
- **Internal:-**It is by product of various internal operations.Eg total purchase conducted by the organisation in a particular work.

SYSTEM

Data is processed into information with the help of a system. A system is made up of inputs, processing, output and feedback or control. A system is a collection of various subsystems that work to achieve a common objective.

- Open-An open system interacts with its environment and exchanges the input and output with the external environment. E.g every organization is sensitive to demands and expectations of the customer.
- Closed-A closed system neither interact nor exchanges input and output with its environment. e.g a computer system that takes input and produces output in a defined format.

OBJECTIVES OF MIS

- To provide the requisite information to the decision makers at each level of management to carry out their functions
- To help highlight the critical factors for successful functioning of the organization.
- To support decision making in both structured and unstructured problem environments.
- To provide a system of people, computers, procedures, interactive query facilities documents for collecting, storing, retrieving and transmitting information to the users.

MIS Functions

- **Data Capturing:** MIS captures data from various internal and external sources of an organization. Data capturing may be manual or through computer terminals. End users typically, record data about transactions on some physical medium, such as a paper form, or enter it directly into a computer system.
- **Processing of Data:** The captured data is processed to convert it into the required management information. Processing of data is done by activities such as calculating, comparing, sorting, classifying and summarizing. These activities organize, analyze, and manipulate data using various statistical, mathematical, operations research and other business models.
- **Storage of Information:** MIS stores processed or unprocessed data for future use. If any information is not immediately required, it is saved as an organizational record. In this activity, data and information are retained in an organized manner for later use. Stored data is commonly organized into fields, records, files and databases.
- **Retrieval of Information:** MIS retrieves information from its stores when required by various users. As per the requirements of management users, the retrieved information is either disseminated as such or it is processed again to meet the exact MI demands.
- **Dissemination/Distribution of MI:** Management Information, which is a finished product of MIS, is disseminated to the users in the organization

Role of MIS

- MIS plays very vital role in the management, administration and operation of the organization.
- The system ensures that an appropriate data is collected from various sources, processed and sent further wherever and whenever required.
- Fulfill the information needs of an individual and top management
- At every phase of the management process, managers constantly need information in order to make effective decisions and this information is provided by MIS.
- MIS is required by managers as they make their decisions, such as number of staff required to be employed by each department, their training requirements, career development plans, budgets, overall forecasts, surveys, and progress reports on socio economic conditions.
- Timely and Accurate Transaction Processing.
- Streamlining Accounting and Records Management.
- Providing Managers with ad hoc and interactive support in decision-making.

CONTD....

- Provision of an easy and systematic way in digging out critical information tailored according to specific requirements, and customized in preferred formats.
- Enables an organization to gain competitive advantage over others
- Better communication, inter-organizational computing, and internet-working. Supports business operations and successful management of business enterprises.
- Better use of executive resources by automating routine functions.
- Increased ability to make sound, rational and informed decisions involving complex combinations of factors, and doing so with more confidence and speed.
- Better use of time by making facilities available every time they are required.
- Improved customer services and improved personnel relations within the organization

Impact of MIS

- creates an impact on the organizations functions, performance and productivity
- the management of marketing, finance, production and personnel become more efficient
- forecasting and long- term perspective planning
- A disciplined information reporting system creates a structured data and a knowledge base for all the people in the organization
- systematization of the business operation for an effective system design
- It improves the decision making ability considerably. Since the MIS works on the basic systems such as transaction processing and database

MIS WITH RESPECT TO MANAGEMENT LEVELS



3- strategic
Planning levels

2- Management
Control Level

1- OPERATIONAL
CONTROL LEVEL):

NATURE & SCOPE OF ORGANIZATION

MIS NEITHER SCIENCE NOR ART



The concept of MIS is inter-disciplinary in nature i.e. it has borrowed its concept from Management Accounting, Management Science/Theory, Organizational behavior, Operations Research, Computer Science etc. as illustrated in the figure.

- **Management Accounting**
- Accounting is broadly classified into two parts:
- a) ***Financial accounting***: Financial accounting is concerned with measurement of income for specific periods of time and reporting of financial positions at the end of the period. Its reports are more oriented towards investors. As a result, it has limited usefulness for managerial decision making.
- b) ***Management accounting***: Management accounting includes the methods and concepts necessary for effective planning, choosing among alternative business actions and control through evaluation and interpretation of performances. Thus, management accounting provides inputs for decision making in the areas of planning and control.

- The MIS concept includes much of management accounting; however, the support systems which provide users with access to data and models are beyond the scope of traditional management accounting. Contemporary organizational practices are to retain the cost and budget analysis within the management accounting function and to have the MIS function provides data and model support.
- **Management and Organization Theory**
- **Management Science Techniques and Principles** are inseparable part of decision-making. They explain the dynamics of decision-making process, specify management functions at various levels, and thereby facilitate development of MIS. MIS has to be developed and implemented in an organizational context.
- **Organizational Theory/ Behavior** enables MIS professional to understand organizations, their types, cultures and behavior. These are valuable inputs as the success of MIS would depend on how it adopts/adapts to the specific organizational requirements.
- Because of its **interdisciplinary nature**, MIS is neither termed as a pure science nor an art; rather it is considered as a combination of both.

MIS is a support system for effective organizational functioning. Therefore, it draws heavily from management and organization theory. The fields of management and organization theory provide several concepts which are key to understanding the function of MIS in an organization. Some of the major concepts are behavioral theory of organizational and individual decision making, group processes and group decision making, individual motivation and leadership processes, organizational change process and organization structure design. The knowledge of these concepts helps the designer of MIS to ascertain the types of decisions made at different levels of an organization and to align the MIS to provide relevant information for making these decisions.

- **Operations Research**

- Operations research is applied decision theory where the managers seek rationality while dealing with problems through the use of scientific, logical or mathematical means. In operation research, various elements of a problem on which decision is to be made are expressed in numerical forms, the relationship among these elements are established and the decision is made on the basis of analysis of these relationships. Operation research is quite relevant to MIS because it has developed procedures for the analysis and computer based solutions of many types of decision problems. The systematic approach to problem solving, use of models, and computer based solutions are generally incorporated in the decision support system concept of MIS.

- **Computer Science**
- Computer science deals with hardware and software of computer systems. The knowledge of computer science has enabled speedy information storage, processing and retrieval. Computer science is important for MIS because it covers topics such as algorithms, computation, software and data structures. However, modern MIS is not merely an extension of computer science but the emphasis in MIS is on the applications of the technical capabilities that computer science has made available.
- An *information system* is a logical system, which is considered as a combination of both. It is a logical system, which is concerned with how something is being accomplished and thus may be differentiated from physical system, which is the process itself and is concerned with the content or what's going on.
- MIS is considered as more of management subject after enormous debate because of the simple logic that computers are just a tool in the hands of the managers. Computers are used for their characteristics like accuracy, speed and capacity to handle large amount of data. Thus, computers find application in MIS and because of this, MIS may be termed as Computer Based MIS (CBMIS)

- Information systems may be manual or computer based. Manual, where people use tools such as pencils, paper or even some machines such as typewriter or calculators to concert raw data into information.
- Computer applications have increased the scope of MIS to a great extent. MIS finds application in all functional areas of every type of business organizations at all levels.
- MIS caters to information needs of managers in an organization, thus its scope lies in structured as well as unstructured type of information which could be gathered from internal as well as external sources of information. Therefore, MIS represents a confluence of different areas of knowledge.

Misconceptions (Myths) about MIS

- Any computer-based information system is an MIS.
- Any repository system is an MIS.
- MIS is a philosophy and not any specific entity.
- MIS is a management technique
- MIS is a bunch of technologies.
- MIS is an implementation of organizational systems and procedures. MIS is a course on file structures.

FACTORS CONTRIBUTING TO SUCCESS OR FAILURE OF MIS

SUCCESS	FAILURE
MIS is integrated into the management function. It sets clear objectives to ensure that MIS focuses on the major issues of the business.	MIS is conceived as a data processing and not as an information system
MIS is kept under continuous surveillance, so that its open system is modified according to the changing information needs.	Underestimating the complexity in the business systems and not recognizing it in the MIS design leads to problems in the successful implementation.
MIS focuses on results and goals, and highlights the factors and reasons for no achievements	Lack of training and appreciation that the users of the information and the generators of the data are different, and they have to play an important role in the MIS
MIS is oriented, defined and designed in terms of the users	MIS is developed without streamlining the transaction

Characteristic of MIS

- **Management oriented**
- **Management directed**
- **Integrated**
- **Common data flows**
- **Flexibility and ease of use**
- **Sub System concept**
- **Comprehensive**

Location of MIS in an organization(Levels of Management)-concept/design



Top-level managers

- Top management lays down the objectives and broad policies of the enterprise.
- b. It issues necessary instructions for preparation of department budgets, procedures, schedules etc.
- c. It prepares strategic plans & policies for the enterprise.
- d. It appoints the executive for middle level i.e. departmental managers.
- e. It controls & coordinates the activities of all the departments.
- f. It is also responsible for maintaining a contact with the outside world.
- g. It provides guidance and direction.

Middle-level managers

- They execute the plans of the organization in accordance with the policies and directives of the top management.
- They make plans for the sub-units of the organization.
- They participate in employment & training of lower level management.
- They interpret and explain policies from top level management to lower level.
- They are responsible for coordinating the activities within the division or department.
- It also sends important reports and other important data to top level management.
- They evaluate performance of junior managers.
- They are also responsible for inspiring lower level managers towards better performance.
- Designing and implementing effective group and intergroup work and information systems.
- Defining and monitoring group-level performance indicators.
- Diagnosing and resolving problems within and among work groups.

Low-level managers

- First-level managers are role models for employees that provide:
- Basic supervision.
- Motivation.
- Career planning.
- Performance feedback.

Characteristics of MIS :

- 1. Systems Approach :** The information system follows a systems approach. Systems approach means taking a comprehensive view or a complete look at the interlocking sub-systems that operate within an organization.
- 2. Management Oriented :** Management oriented characteristic of MIS implies that the management actively directs the system development efforts. For planning of MIS, top-down approach should be followed. Top down approach suggests that the system development starts from the determination of management's needs and overall business objective. To ensure that the implementation of system's policies meet the specification of the system, continued review and participation of the manager is necessary.
- 3. Need Based :** MIS design should be as per the information needs of managers at different levels.
- 4. Exception Based :** MIS should be developed on the exception based also, which means that in an abnormal situation, there should be immediate reporting about the exceptional situation to the decision –makers at the required level.

5. **Future Oriented** : MIS should not merely provide past of historical information; rather it should provide information, on the basis of future projections on the actions to be initiated.
6. **Integrated** : Integration is significant because of its ability to produce more meaningful information. Integration means taking a comprehensive view or looking at the complete picture of the interlocking subsystems that operate within the company.
7. **Common Data Flow** : Common data flow includes avoiding duplication, combining similar functions and simplifying operations wherever possible. The development of common data flow is an economically sound and logical concept, but it must be viewed from a practical angle.
8. **Long Term Planning** : MIS is developed over relatively long periods. A heavy element of planning should be involved.
9. **Sub System Concept** : The MIS should be viewed as a single entity, but it must be broken down into digestible sub-systems which are more meaningful.
10. **Central database** : In the MIS there should be common data base for whole system

Prerequisites of an Effective MIS

Essential Requirement of an Effective MIS :

- (i) **Qualified System and Management Staff** : The prerequisite of an effective MIS is that it should be managed by qualified officers. These officers should have a mutual understanding about the roles and responsibilities of each other. They should understand clearly the view of their fellow officers. For this, each organization should have two categories of officers :
 - (a) System and Computer Experts who in addition to their expertise in their subject area, they should also be capable of understanding management concepts to facilitate the understanding of problems asked by concern. They should also be clear about the process of decision making and information requirements for planning.
 - (b) Management experts who should also understand quite-clearly the concepts and operations of a computer. This basic knowledge of computer will be useful will place them in a comfortable position, while working with systems, technicians in designing or otherwise, of the information system.

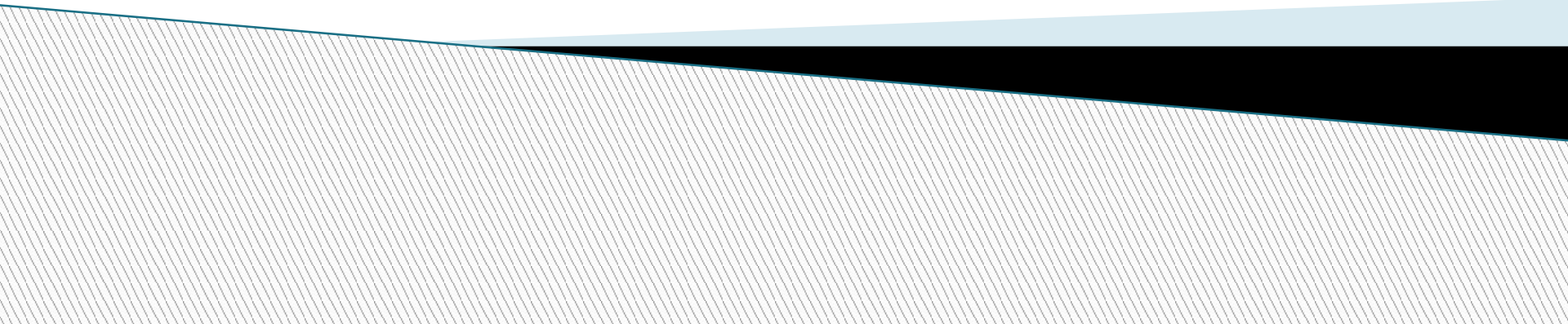
- (ii) **Futuristic Perspective** : An effective MIS should be capable of meeting the future requirements of its executives as well. This capability can be achieved by regular monitoring and updating the MIS.
- (iii) **Support of Top Management** : For a management information system to be effective, it must receive the full support of top management. The Reasons for this are :
 - (a) Subordinate managers are usually lethargic about activities which do not receive the support of their superiors.
 - (b) The resources involved in computer based information system are larger and are growing larger and larger in view of importance gained by management information system.
- (iv) **Common Database** : It is an integrated collection of data and information which is utilized by several information subsystems of an organization. A common database may be defined as a super file which consolidates and integrates data records formerly stored in a separate data file. Such a database can be organized as an integrated collection of data records into a single super file or it can be organized as an integrated collection of several data file.

(V) Control and maintenance of MIS : Control of the MIS means the operation of the system as it was designed to operate. Some times, users develop their own procedures or short cut methods to use the system which reduces its effectiveness.

Difference between MIS & Computer system

MIS	COMPUTER SYSTEM
Management information system refers to the formal system installed in an organization for purposes of collecting, organizing, storing and processing data and presenting useful information to management at various levels.	Computer system is designed to process the data and give information to the user.
Businesses use management information systems to inform them on how to resource their companies and initiatives in the areas of people, technology and information like statistics.	Computer system is an operating system that is programmed in various ways to allow for many different tasks.
The main thrust is streamlining information useful to the Management	The main focus of computer system is to facilitate processing of data with speed and accuracy.
'Management Information System' does more than just an ordinary computer system does, it has a different purpose which helps in decision making	Computer system do not have such a specific task and do not supply specific information for decision making
MIS works with help of computer system.	Computer system does not require MIS to operate its functions.
'Management Information System' is mainly needed by management.	'Computer System' need is not restricted to management alone.

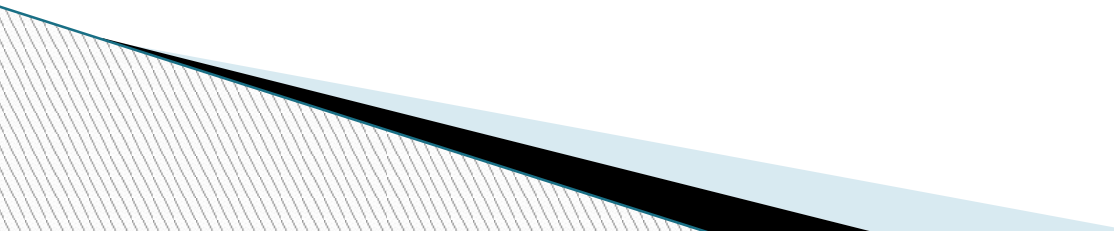
Decision Making Process



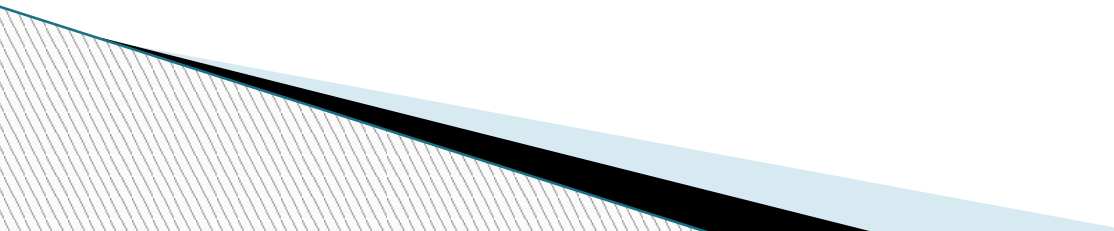
Decision Making Process

It involves the following steps:

- ▶ Determine existence of problems and/or opportunities.
- ▶ Generate alternative courses of action
- ▶ Analyse/choose/select a course of action
- ▶ Implement the course of action
- ▶ Monitor, follow up & initiate course corrective action



Steps in decision making process as illustrated by Griffin

- ▶ Recognizing & defining the situation: Some stimulus indicates that a decision must be made. The stimulus must be positive or negative.
 - ▶ Identifying alternatives: Both obvious and creative alternatives are desired. In general, the more significant the decision, the more alternatives should be generated.
 - ▶ Evaluating alternatives: Each alternative is evaluated to determine its feasibility, its satisfactoriness and its consequences
 - ▶ Selecting the best alternative: Consider all situational factors and choose the alternative that best fits the manager's situation
 - ▶ Implementing the chosen alternative: The chosen alternative is implemented into organizational system.
 - ▶ Follow up and evaluation: At some time in the future, the manager should ascertain the extent to which the alternative chosen in step4 and implemented in step5 has worked.
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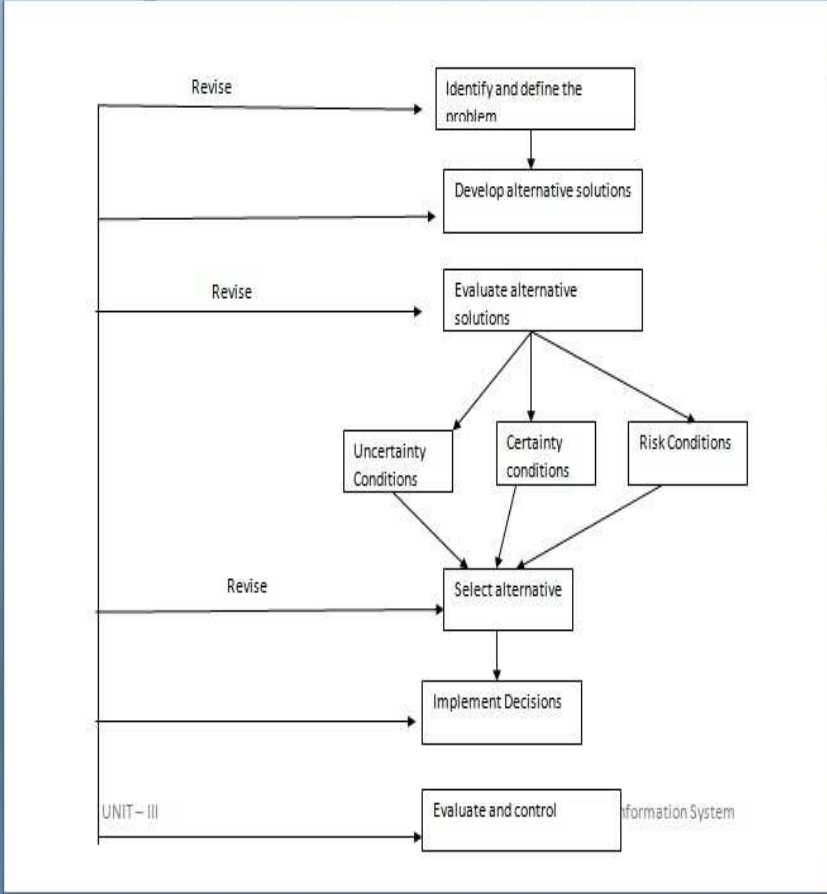
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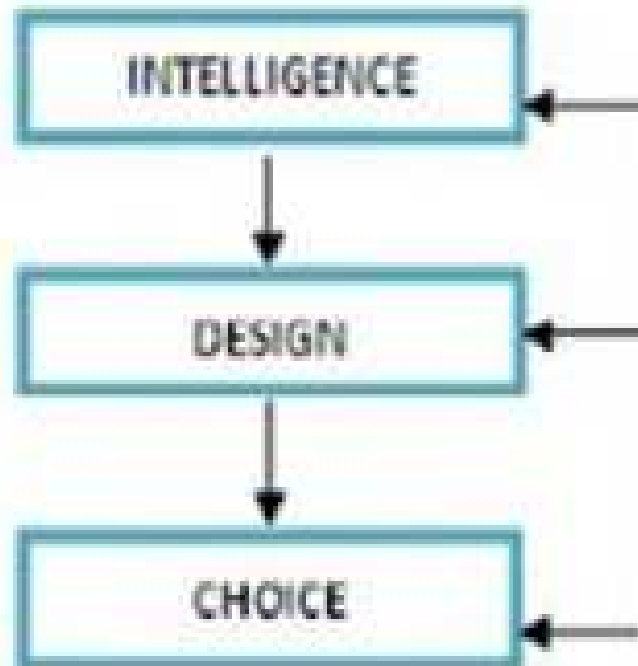
▶ HERBERT SIMON MODEL

▶ Decision-making is a process in which the decision-maker uses information to arrive at a decision. The core of this process is described by Herbert Simon in a model. He describes the model in three phases as shown in the figure below:

I. Intelligence: raw data collected, processed and examined, Identifies a problem calling for a decision.

II. Design: inventing, developing and analyzing the different decision alternatives and testing the feasibility of implementation. Assess the value of the decision outcome.

III. Choice: select one alternative as a decision based on the selection criteria



HERBERT SIMON MODEL OF DECISION-MAKING

- ▶ In the intelligence phase, the MIS collects the data. The data is scanned, examined, checked and edited. Further, the data is sorted and merged with other data and computations are made, summarized and presented. In this process, the attention of the manager is drawn to all problem situations by highlighting the significant differences between the actual and the expected, the budgeted or the targeted.
- ▶ In the design phase, the manager develops a model of the problem situation on which he can generate and test the different decision alternatives, he then further moves into phase of selection called as choice.
- ▶ In the phase of choice, the manager evolves

- ▶ In these phases, if the manager fails to reach a decision, he starts the process all over again and again. An ideal MIS is supposed to make a decision for the manager.
- ▶ An example of the Simon model would illustrate further its use in the MIS. For example, a manager finds on collection and through the analysis of the data that the manufacturing plant is underutilized and the products which are being sold are not contributing to the profits as desired.
- ▶ The problem identified, therefore, is to find a product mix for the plant, whereby the plant is fully utilized within the raw material and the market constraints, and the profit is maximized.

- The product mix so given is examined by the management committee. It is observed that the market constraints were not realistic in some cases and the present plant capacity can be enhanced to improve the profit.
- The same model is used again to tool the revised position. Therefore, additional data is collected and an analysis is made to find out whether the average 20 percent utilization of the capacity can be increased.
- A market research for some products is made and it is found that some constraints need to be removed and reduced. Based on the revised data **linear programming model** is used and a better optimum solution is obtained.

Types of decisions

Organizational decisions differ in a number of ways. The following basis is used to classify the decisions:

1) Purpose of Decision-making

- ▶ On the basis of the purpose of decision-making activities, the organizational decisions are divided into 3 categories:
- ▶ **Strategic Planning Decisions:** Strategic planning decisions are those decisions in which the decision-maker develops objectives and allocates resources to achieve these objectives. Such decisions are taken by strategic planning level (top level) managers.
- ▶ **Management Control Decisions:**

2) Levels of Programmability

- ▶ Simon on the basis of level of the programmability of a decision, proposed two types of decisions:
- ▶ Programmed, also known as structured decisions
- ▶ Non-programmed, also known as unstructured decisions.
- ▶ **Programmed/Structured Decisions**
- ▶ Programmed or structured are those decisions, which are well defined and some specified procedure or some decision rule might be applied to reach a decision. Such decisions are routine and repetitive and require little time for developing alternatives in the initial phase. Programmed decisions

3) Knowledge of Outcomes

- ▶ Another approach of classifying decisions is the level of knowledge of outcomes. An outcome defines what will happen, if a decision is made or course of action taken. When there is more than one alternative, the knowledge of outcome becomes important. On the basis of the level of knowledge of outcomes, decision-making can be classified into three categories.
- ▶ **Decision under certainty:** Decision-making under certainty takes place when the outcome of each alternative is fully known. There is only one outcome for each alternative.
- ▶ **Decision under risk:** Decision-making

Rational Decision Making

- ▶ A Rational decision is the one which effectively and efficiently ensures the achievement of the goals for the decision is made.
- ▶ If it is raining, it is rational to look for the cover so that you do not get wet. If you are in business and want to make profit, then you must produce goods and sell them at price higher than cost of production. In reality there is no right or wrong decision but a rational and irrational decision.
- ▶ Basically it is a **logical, sequential** model where the emphasis is on listing many potential options and then working out which is the best.
- ▶ The rational aspect indicates that there is considerable reasoning and thinking done in order to select the optimum choice.
- ▶ People would love to know what the future holds, which makes these models popular. Because the reasoning and rationale behind the various steps is that if you do x, then y should happen.

Rational decisions are made on the following assumptions:

- ▶ The problem is clear and unambiguous
- ▶ A single, well-defined goal is to be achieved
- ▶ All alternatives and consequences are known
- ▶ Preferences are clear
- ▶ Preferences are constant and stable
- ▶ There are no time or cost constraints
- ▶ Final choice will maximize economic payoffs

Characteristics of Rational Decision Making:

- ▶ Decision making will follow a process or orderly path from problem to solution.
- ▶ There is a single best or optimal outcome. Rational decisions seek to optimize or maximize utility.
- ▶ The chosen solution will be in agreement with the preferences and beliefs of the decision maker.
- ▶ The rational choice will satisfy conditions of logical consistency and deductive completeness.
- ▶ Decision making will be objective, unbiased and based on

Characteristics of Rational Decision Making:

- ▶ Information is gathered for analysis during the decision making process.
- ▶ Future consequences are considered for each decision alternative.
- ▶ Structured questions are used to promote a broad and deep analysis of the situation or problem requiring a solution.
- ▶ Risk and uncertainty are addressed with mathematically sound approaches.

Cost benefit Analysis

- ▶ **Cost-benefit analysis (CBA)**, sometimes called **benefit-cost analysis (BCA)**, is a systematic process for calculating and comparing benefits and costs of a project, decision or government policy.
- ▶ CBA has two purposes:
 1. To determine if it is a sound investment/decision
 2. To provide a basis for comparing projects. It involves comparing the total expected cost of each option against the total expected benefits to see whether the benefits outweigh

- ▶ In CBA, benefits and costs are expressed in money terms, and are adjusted for the time value of money, so that all flows of benefits and flows of project costs over time (which tend to occur at different points in time) are expressed on a common basis in terms of their "**net present value.**"
- ▶ Costs are either one-off, or may be ongoing. Benefits are most often received over time. We build this effect of time into our analysis by calculating a payback period. This is the time it takes for the benefits of a change to repay its costs. Many companies look for payback over a specified period of time – e.g. three years.
- ▶ In its simple form, cost-benefit analysis is carried out using only financial costs and financial benefits. For **example**, a simple cost/benefit analysis of a road scheme would measure the cost of building the road, and subtract this from the economic benefit of improving transport links.

Example:

- ▶ A sales director is deciding whether to implement a new computer-based contact management and sales processing system. His department has only a few computers, and his salespeople are not computer literate. He is aware that computerized sales forces are able to contact more customers and give a higher quality of reliability and service to those customers. They are more able to meet commitments, and can work more efficiently with fulfillment and delivery staff.
- ▶ His financial cost/benefit analysis is shown below:
- ▶ **Costs:**
 1. **New computer equipment:**
 - 10 network-ready PCs with supporting software @ \$2,450 each
 - 1 server @ \$3,500A
 - 3 printers @ \$1,200 each
 - Cabling & Installation @ \$4,600
 - Sales Support Software @ \$15,000
 2. **Training costs.**

3. Other costs:

- Lost time: 40 man days @ \$200 / day
- Lost sales through disruption: estimate: \$20,000
- Lost sales through inefficiency during first months: estimate: \$20,000

Total cost: \$114,000

Benefits:

- Tripling of mail shot capacity: estimate: \$40,000 / year
- Ability to sustain telesales campaigns: estimate: \$20,000 / year
- Improved efficiency and reliability of follow-up: estimate: \$50,000 / year
- Improved customer service and retention: estimate: \$30,000 / year
- Improved accuracy of customer information: estimate: \$10,000 / year
- More ability to manage sales effort: \$30,000 / year

Payback time: $\$114,000 / \$180,000 = 0.63$ of a year = approx.
8 months

Key Points:

- ▶ Cost/Benefit Analysis is a powerful, widely used and relatively easy tool for deciding whether to make a change.
- ▶ Where costs or benefits are paid or received over time, work out the time it will take for the benefits to repay the costs.
- ▶ Cost/Benefit Analysis can be carried out using only financial costs and financial benefits. You may, however, decide to include intangible items within the analysis. As you must estimate a value for these, this inevitably brings an element of subjectivity into the process.

Net Present Value (NPV)

- ▶ NPV can be described as the “Difference Amount” between the sums of discounted; cash inflows and cash outflows. It compares the present value of money today to the present value of money in future, taking inflation and returns into account.
- ▶ If the NPV of a prospective project is positive, it should be accepted. However, if NPV is negative, the project should probably be rejected because cash flows will also be negative.

NPV = Present Value of Inflow - Present Value of Outflow

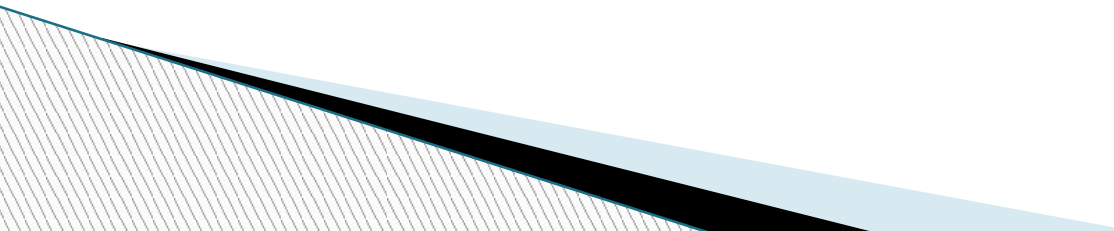
- ▶ If a retail clothing business wants to purchase an existing store, it would first estimate the future cash flows that store would generate, and then discount those cash flows into one lump-sum present value amount, say \$565,000.
- ▶ If the owner of the store was willing to sell his business for less than \$565,000, the purchasing company would likely accept the offer as it presents a positive NPV investment.
- ▶ Conversely, if the owner would not sell for less than \$565,000, the purchasing company would not buy the store, as the

- ▶ An investment of \$1,000 today at 10 percent will yield \$1,100 at the end of the year; therefore, the present value of \$1,100 at the desired rate of return (10 percent) is \$1,000. The amount of investment (\$1,000 in this example) is deducted from this figure to arrive at net present value which here is zero (\$1,000-\$1,000). A zero net present value means the project repays original investment plus the required rate of return.

Return on Investment (ROI)

- ▶ ROI is the profit generated by the money a business owner puts into the business. ROI is usually expressed as a percentage return.
- ▶ A performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments.
- ▶ To calculate ROI, the benefit (return) of an investment is divided by the cost of the investment; the result is expressed as a percentage or a ratio.
The return on investment formula:

$$\text{ROI} = \frac{(\text{Gain from Investment} - \text{Cost of Investment})}{\text{Cost of Investment}}$$

- ▶ In the above formula "gains from investment", refers to the proceeds obtained from selling the investment of interest.
 - ▶ Return on investment is a very popular metric because of its versatility and simplicity.
 - ▶ That is, if an investment does not have a positive ROI, or if there are other opportunities with a higher ROI, then the investment should be not be undertaken.
- 

Portfolio Analysis

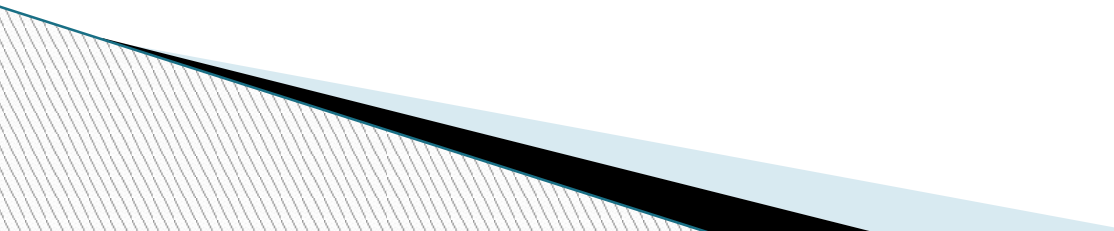
- ▶ In financial terms, 'portfolio analysis' is a study of the performance of specific portfolios under different circumstances. It includes the efforts made to achieve the best trade-off between risk tolerance and returns. The analysis of a portfolio can be conducted either by a professional or an individual investor who may utilize specialized software.
- ▶ The analysis of a portfolio extends to all classes of investments such as bonds, equities, indexes, commodities, funds, options and securities. Portfolio analysis gains importance because each asset class has peculiar risk factors and returns associated with it. Hence, the composition of a portfolio affects the rate of return of the overall investment.

Portfolio Analysis Tools

- ▶ Several specialized portfolio analysis software's are available in the market to ease the task for an investor. These application tools can analyze and predict future trends for almost every investment asset. They provide essential data for decision making on the allocation of assets, calculation of risks and attainment of investment objectives.

Advantages and Disadvantages of Portfolio Analysis

Portfolio analysis offers the following advantages:

1. It encourages management to evaluate each of the organization's businesses individually and to set objectives and allocate resources for each.
 2. It stimulates the use of externally oriented data to supplement management's intuitive judgment.
 3. It raises the issue of cash flow availability for use in expansion and growth.
 4. The technique is forward looking and can play an important role in delivering improved overall returns for shareholders over the medium to long terms.
 5. It can help understanding of diversification and identifying risks in a company's portfolio, for example by drawing attention to an overemphasis on particular areas.
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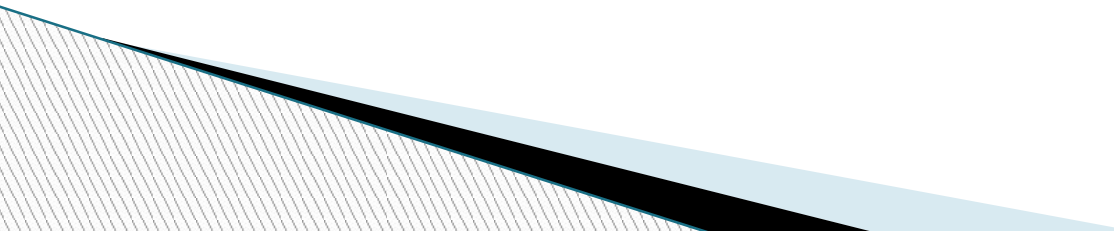
Portfolio analysis does, however, have some **limitations**.

1. It is not easy to define product/market segments.

2. It provides an illusion of scientific rigor when some subjective judgments are involved.

3. It relies heavily on estimates of future patterns. Even a slight change in a forecast can significantly impact the results of the analysis.

- ▶ **Organizational need of MIS and how decision characteristics are linked to the levels of management**
- ▶ The rise and fall of a company or corporation hinges on the real-time decision-making ability of top-level and middle-level managers.
- ▶ To make good decisions, managers must have access to the latest and most accurate corporate data. Management information systems are designed to deliver this information to managers in a timely manner.
- ▶ MIS is considered of recent origin in management but it had always been in existence in past as well. Of course, It was not in a refined form then.

- ▶ **Management** is to plan, organize, staff , direct and control business resources to achieve predetermined objectives. For performing all these functions, a manager has to take an array of decisions. For taking rational decisions, information's is an essential input.
 - ▶ **Information**, which is processed data becomes Information when it is used in decision-making and follows certain characteristics, like it is timely, relevant, accurate, current, adequate without superfluous data, clear in form and non repetitive.
 - ▶ **System** is a set of interrelated elements joined together to achieve a common objective and has input, process, output, feedback and control elements. It gathers data from the internal and external sources of an organization processes it and supplies Management Information to assist decision-making by managers in an organization.
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INFORMATION CONCEPTS

UNIT 3

Information Concepts

- The word 'information' is used commonly in our day to day working. In MIS, information has a precise meaning and it is different from data.
- The information has a value in decision making while data does not have. Information brings clarity and creates an intelligent human response in the mind.
- Data is like raw materials while the information is equivalent to the finished goods produced after processing the raw material.
- Information is a critical resource in the operation and management of organizations. Timely availability of relevant information is vital for effective performance of managerial functions such as planning, organizing, leading, and control.
- An information system in an organization is like the nervous system in the human body: it is the link that connects all the organization's components together and provides for better operation and survival in a competitive environment.
- Indeed, today's organizations run on information. The term information system usually refers to a computer-based system, one that is designed to support the operations, management, and decision functions of an organization.
- Information systems in organizations thus provide information support for decision makers



Data	Information
Data is raw fact and figures. For eg. 87 is data	Data when stored in some form like marks is 89, and then it becomes information.
Data is not significant to a business organisation.	Information is significant to a business organization.
Data are atomic level pieces of the information.	Information is organized and meaningful collection of data.
It doesn't help in decision making.	It helps in decision making process
It is generally unorganized.	It is in organized form.
Data is collected from the source directly and hence is not dependent on information.	Information is dependent on the data that is gathered.
Example: If we say 45, 87, 99 are the numbers then it becomes data.	Example: If we say 45, 87, 99 are the marks of three subjects then it becomes information.

Characteristics of Information

- The characteristics of good information are relevance, timeliness, accuracy, cost-effectiveness, reliability, usability, exhaustiveness, and aggregation level.
- Information is relevant if it leads to improved decision making. It might also be relevant if it reaffirms a previous decision. If it does not have anything to do with your problem, it is irrelevant.
- For example, information about the weather conditions in Paris in January is relevant if you are considering a visit to Paris in January. Otherwise, the information is not relevant.
- The parameters of a good quality are difficult to determine for information. Quality of information refers to its fitness for use, or its reliability. Following are the essential characteristic features :

i) **Timeliness:** Timeliness means that information must reach the recipients within the prescribed timeframes. For effective decision-making, information must reach the decision-maker at the right time, i.e. recipients must get information when they need it. Delays destroy the value of information. The characteristic of timeliness, to be effective, should also include up-to-date, i.e. current information.

ii) **Accuracy :** Information should be accurate. It means that information should be free from mistakes, errors & clear. Accuracy also means that the information is free from bias. Wrong information given to management would result in wrong decisions. As managers decisions are based on the information supplied in MIS reports, all managers need accurate information.

iv) **Adequacy** :Adequacy means information must be sufficient in quantity, i.e. MIS must provide reports containing information which is required in the deciding processes of decision-making. The report should not give inadequate or for that matter, more than adequate information, which may create a difficult situation for the decision-maker. Whereas inadequacy of information leads to crisis, information overload results in chaos.

v) **Completeness** :The information which is given to a manager must be complete and should meet all his needs. Incomplete information may result in wrong decisions and thus may prove costly to the organization.

vi) **Explicitness** :A report is said to be of good quality if it does not require further analysis by the recipients for decision making.

vii) **Impartiality** :Impartial information contains no bias and has been collected without any distorted view of the situation.

Importance of Information in Decision making process

- Information is not only relevant but also critical for decision maker as the quality of decision making is dependent on the quality of information.

Information is useful for decision makers as:

- Improves representation of an entity
- Updates the level of knowledge

- Information does not have an absolute universal value. Its value is related to those who use it, when it is used, and in what situation it is used.
- In this sense, information is similar to other commodities. For example, the value of a glass of water is different for someone who has lost his way in Arctic glaciers than it is to a wanderer in the Sahara Desert. The concept of normative value of information has been developed by economists and statisticians and is derived from decision theory.
- The basic premise of the theory is that we always have some preliminary knowledge about the occurrence of events that are relevant to our decisions.
- Additional information might modify our view of the occurrence probabilities and consequently change our decision and the expected payoff from the decision.
- The value of additional information is, hence, the difference in expected payoff obtained by reduced uncertainty about the future event.
- Information supports decisions, decisions trigger actions, and actions affect the achievements or performance of the organization.
- If we can measure the differences in performance, we can trace the impact of information, provided that the measurements are carefully performed, the relationships among variables are well defined, and possible effects of irrelevant factors are isolated.
- The measured difference in performance due to informational factors is called the realistic value over revealed value of information.

- The decision-making process often is obscure and the outcomes are scaled by multiple and incomparable dimensions.
- In such cases, we may either attempt to perform a multi-attribute analysis or derive an overall subjective value.
- The subjective value reflects people's comprehensive impression of information and the amount they are willing to pay for specific information. As mentioned before the five classical functions of a manager are:
 1. Planning- the direction a company takes e.g. diversifying, where to operate.
 2. Organizing- resources such as people, space, equipment and services.
 3. Coordinating- the activities of various departments.
 4. Decision-making- about the organization, products or services made or sold, the employees, use of I.T.
 5. Controlling- monitoring and supervising the activities of others. The role of a management information system(MIS) is to provide a manager with sufficient information to make informed decisions to help him to carry out the above functions.

Information involved at various levels of Management

- Within an organization planning, control and decision-making is carried out at various levels within the structure of the organization.
- The three levels at which information can be used are strategic, tactical and operational and there is a direct correlation between the levels of importance of individuals or groups within an organization and the level of information that is being communicated.

1. Strategic information

- □ Strategic information is used at the very top level of management within an organisation. These are chief executives or directors who have to make decisions for the long term.
- □ Strategic information is broad based and will use a mixture of information gathered from both internal and external sources.
- □ In general a timescale may be from one to five years or even longer depending on the project. Some oil related projects are planned from the outset to last for 25 or more years. A supermarket building a new superstore will look at a timescale of 20 years or so, whilst even a small business may have a five-year strategy.
- □ Strategic plans will have little or no detail in them and more detailed strategic plans will be made slightly lower down the managerial ladder. A good strategic plan will be easier to flesh out lower down than a poor or vague strategic plan. Similarly, well constructed and more detailed plans will be easier to implement

2. **Tactical information**

- The next level down is the tactical level, and tactical planning and decision-making takes place within the guidelines set by the strategic plan.
- Tactical information will be mostly internal with a few external sources being used. Internal information is likely to be function related: for example, how much 'down time' a production line must allocate for planned maintenance.
- Tactical information is used by middle management (employees) when managing or planning projects. The timescale is usually at least between 6 months and 5 years (depending on the scale of the strategic project).
- Circumstances vary but a small project may have a tactical timescale of between one and six months. Tactical plans have a medium level of detail and will be very specific; they deal with such matters as who is doing what and within what specific budgets and timescales.
- These plans have medium scope and will address details at the operational level. They will generally have specific objectives and be geared towards implementation by operational level employees.

3. **Operational information**

- The lowest level is operational and operational planning takes place based on the tactical plans.
- The lowest level of management or workers in an organisation implements operational plans. These may be section leaders or foremen in a large

- The timescale is usually very short, anything from immediately, daily or at most a week or month.
- Results of operational work will usually be passed upwards to let the tactical planners evaluate their plans.

MANAGEMENT HIERARCHY AND INFORMATION NEEDS

**Volume of
Information**

Low
condensed

Medium
moderately
processed

Large
Detailed Reports

**Type of
Information**

Unstructured

Moderately
structured

Highly
structured



Strategic-
Long range planning

Tactical
Short range improvement

Operational
Day to day policies

Sources of Information

- There are 2 major sources of information
- Primary Sources
- Secondary Sources

1. Primary Sources

- These sources gather 2 types of data
- Primary Data
- Secondary Data

Primary and Secondary Data: Data are the raw materials used for obtaining information

- Data is derived from number of sources, both internal as well as external.
- If the data is collected for the first time by the researcher, it is classified as Primary Data.
- If the data is borrowed by the researcher from other sources, it is referred to as Secondary Data

2. Secondary Sources

Types of Information

- The information can be classified in a number of ways to provide better understanding.

1. Action and Non-action

Action Information: The information which induces action is called an Action Information

- Ex: When attendance of students for a particular subject falls down to 40%, it calls for immediate action

Non-action Information: These type of information communicates only the status of a situation

- Ex: While watching a live cricket match, we understand that India's current run rate is 4 per over whereas it's required run rate is 7 per over. We have this information but this is non-action information.

2. Recurring and non recurring Information

Recurring: The information that is generated at regular intervals.

- Ex: Monthly sales report, accounts statement

3. Internal and External information

- **Internal**: The information generated through the internal sources of the organization.
- **External**: The information through the external sources. Ex: Govt, reports, industry surveys etc.

SYSTEM CONCEPTS

MIS

Types of systems

- The frame of reference within which one views a system is related to the use of the systems approach for analysis.
- Systems have been classified in different ways. Common classifications are: (1) physical or abstract, (2) open or closed, and (3) “man - made” information systems.

1. Physical or abstract systems

Physical System

- These are tangible entities that may be static or dynamic in operation. For example- parts of a computer center are the desks, chairs etc. that facilitate operation of the computer. They are static and a programmed computer is dynamic.
- They can be seen and counted; they are static. In contrast, a programmed computer is a dynamic system.
- Data, programs, output, and applications change as the user's demands or the priority of the information requested changes.

Abstract System -

- These are conceptual or non physical entities. For example- the abstract conceptualization of physical situations. A model is a representation of a real

2. Open or Closed Systems

- Another classification of systems is based on their degree of independence. An **open system** has many interfaces with its environment.
- It permits interaction across its boundary; it receives inputs from and delivers outputs to the outside.
- An information system falls into this category, since it must adapt to the changing demands of the user.
- A **closed system** is isolated from environmental influences. In reality, a completely closed system is rare.
- In systems analysis, organizations, applications and computers are invariably open, dynamic systems influenced by their environment.

Characteristics of Open Systems •

1. Input from outside- Open systems are self adjusting and self regulating. When functioning properly open system reaches a steady state or equilibrium.
2. Entropy- Dynamic systems run down over time resulting in loss of energy or entropy. Open systems resist entropy by seeking new input or modifying the processes to return to a steady state.
3. Process, output and cycles- Open system produce useful output and operate in cycles, following a continuous flow path.

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3.Deterministic or Probabilistic System

- Deterministic System - It operates in a predictable manner and the interaction between parts is known with certainty. For example: Two molecules of hydrogen and one molecule of oxygen makes water.
- Probabilistic System - It shows probable behavior. The exact output is not known. For example: weather forecasting, mail delivery.

4.Social, Human Machine, Machine System

- Social System- It is made up of people. For example: social clubs, societies
- Human Machine System- When both human and machines are involved to perform a particular a particular task to achieve a target. For example:- Computer.
- Machine System- Where human interference is neglected. All the tasks are performed by the machine.

5.Natural and Manufactured Natural System

- The system which is natural. For example- Solar system, Seasonal System.
Manufactured System- System made by man is called manufactured system.
For example- Rockets, Dams, Trains.

6. Permanent or Temporary System

- Permanent System- Which persists for long time. For example- policies of business.
- Temporary System- Made for specified time and after that they are dissolved. For example- setting up DJ system.

7. Adaptive and Non Adaptive System

- Adaptive System- respond to change in the environment in such a way to improve their performance and to survive. For example- Human beings, animals.
- Non Adaptive System-The system which doesn't respond to the environment. For example- Machines

8. Man Made Information Systems

- Information System may be defined as a set of devices, procedures, and operating systems designed around user based criteria to produce information and communicate it to the user for planning, control and performance.

System Development Life Cycle

- System life cycle is an organizational process of developing and maintaining systems.
- It helps in establishing a system project plan, because it gives overall list of processes and sub-processes required for developing a system.
- System development life cycle means combination of various activities. In other words we can say that various activities put together are referred as system development life cycle.
- In the System Analysis and Design terminology, the system development life cycle also means software development life cycle. Following are the different phases of system development life cycle:
 1. Preliminary study
 2. Feasibility study
 3. Detailed system study
 4. System analysis
 5. System design

PHASES OF SYSTEM DEVELOPMENT LIFE CYCLE

(1) Preliminary System Study:

- Preliminary system study is the first stage of system development life cycle.
- This is a brief investigation of the system under consideration and gives a clear picture of what actually the physical system is?
- In practice, the initial system study involves the preparation of a “System Proposal” which lists the Problem Definition, Objectives of the Study, Terms of reference for Study, Constraints, Expected benefits of the new system, etc. in the light of the user requirements.
- The system proposal is prepared by the System Analyst (who studies the system) and places it before the user management.
- The management may accept the proposal and the cycle proceeds to the next stage. The management may also reject the proposal or request some modifications in the proposal.
- In summary, we would say that system study phase passes through the following steps: • problem identification and project initiation • background analysis • inference or findings (system proposal)

(2) Feasibility Study:

- In case the system proposal is acceptable to the management, the next phase is to examine the feasibility of the system.
- The feasibility study is basically the test of the proposed system in the light of its work ability, meeting user's requirements, effective use of resource and of course, the cost effectiveness.
- These are categorized as technical, operational, economic and schedule feasibility.
- The main goal of feasibility study is not to solve the problem but to achieve the scope.
- In the process of feasibility study, the cost and benefits are estimated with greater accuracy to find the Return on Investment(ROI).
- This also defines the resources needed to complete the detailed investigation. The result is a feasibility report submitted to the management. This may be accepted or accepted with modifications or rejected. The system cycle proceeds only if the management accepts it.

(3) Detailed System Study:

- The detailed investigation of the system is carried out in accordance with the objectives of the proposed system.
- This involves detailed study of various operations performed by a system and their relationships within and outside the system.

- Keeping in view the problems and new requirements
- Workout the pros and cons including new areas of the system
- All the data and the findings must be documented in the form of detailed data flow diagrams (DFDs), data dictionary, logical data structures and miniature specification.
- The main points to be discussed in this stage are:
 - Specification of what the new system is to accomplish based on the user requirements.
 - Functional hierarchy showing the functions to be performed by the new system and their relationship with each other.
 - Functional network, which are similar to function hierarchy but they highlight the functions which are common to more than one procedure.
 - List of attributes of the entities - these are the data items which need to be held about each entity (record)

(4) System Analysis:

- Systems analysis is a process of collecting factual data, understand the processes involved, identifying problems and recommending feasible suggestions for improving the system functioning.
- This involves studying the business processes, gathering operational data, understand the information flow, finding out bottlenecks and evolving solutions for overcoming the weaknesses of the system so as to achieve the organizational goals.
- System Analysis also includes subdividing of complex process involving the entire system, identification of data store and manual processes.
- The major objectives of systems analysis are to find answers for each business process: What is being done, How is it being done, Who is doing it, When is he doing it, Why is it being done and How can it be improved?
- It is more of a thinking process and involves the creative skills of the System Analyst. It attempts to give birth to a new efficient system that satisfies the current needs of the user and has scope for future growth within the organizational constraints.
- The result of this process is a logical system design. Systems analysis is an iterative process that continues until a preferred and acceptable solution emerges.

(5) System Design:

- Based on the user requirements and the detailed analysis of the existing system, the new system must be designed.
- This is the phase of system designing. It is the most crucial phase in the developments of a system.
- The logical system design arrived at as a result of systems analysis is converted into physical system design.
- Normally, the design proceeds in two stages:
 - Preliminary or General Design
 - Structured or Detailed Design :
- **In the preliminary or general design**, the features of the new system are specified. The costs of implementing these features and the benefits to be derived are estimated. If the project is still considered to be feasible, we move to the detailed design stage.
- **Structured or Detailed Design:** In the detailed design stage, computer oriented work begins in earnest.
- At this stage, the design of the system becomes more structured. Structure design is a blue print of a computer system solution to a given problem having the same components and interrelationships among the same components as the original problem.
- Input, output, databases, forms, codification schemes and processing specifications are drawn up in detail. In the design stage, the programming

There are several tools and techniques used for describing the system design of the system. These tools and techniques are:

- Flowchart
- Data flow diagram (DFD)
- Data dictionary
- Structured English
- Decision table
- Decision tree

The system design involves:

- i. Defining precisely the required system output
- ii. Determining the data requirement for producing the output
- iii. Determining the medium and format of files and databases
- iv. Devising processing methods and use of software to produce output
- v. Determine the methods of data capture and data input
- vi. Designing Input forms
- vii. Designing Codification Schemes
- viii. Detailed manual procedures
- viii. Documenting the Design

(6) Coding:

- The system design needs to be implemented to make it a workable system.
- This demands the coding of design into computer understandable language, i.e., programming language.
- This is also called the programming phase in which the programmer converts the program specifications into computer instructions, which we refer to as programs.
- It is an important stage where the defined procedures are transformed into control specifications by the help of a computer language.
- The programs coordinate the data movements and control the entire process in a system.
- It is generally felt that the programs must be modular in nature.
- This helps in fast development, maintenance and future changes, if required.

(7) Testing:

- Before actually implementing the new system into operation, a test run of the system is done for removing the bugs, if any. It is an important phase of a successful system.
- After codifying the whole programs of the system, a test plan should be developed and run on a given set of test data.
- The output of the test run should match the expected results. Sometimes, system testing is considered a part of implementation process.
- Using the test data following test run are carried out: • Program test • System test

Program test:

- When the programs have been coded, compiled and brought to working conditions, they must be individually tested with the prepared test data.
- Any undesirable happening must be noted and debugged (error corrections)

System Test:

- After carrying out the program test for each of the programs of the system and errors removed, then system test is done.
- At this stage the test is done on actual data. The complete system is executed on the actual data. At each stage of the execution, the results or output of the system is analysed

(8) Implementation:

- After having the user acceptance of the new system developed, the implementation phase begins.
- Implementation is the stage of a project during which theory is turned into practice. The major steps involved in this phase are:
 - Acquisition and Installation of Hardware and Software • Conversion • User Training • Documentation
- The hardware and the relevant software required for running the system must be made fully operational before implementation.
- The conversion is also one of the most critical and expensive activities in the system development life cycle.
- The data from the old system needs to be converted to operate in the new format of the new system.
- The database needs to be setup with security and recovery procedures fully defined.
- During this phase, all the programs of the system are loaded onto the user's computer. After loading the system, training of the user starts.
- Main topics of such type of training are:
 - How to execute the package • How to enter the data • How to process the data (processing details) • How to take out the reports

(i) **Direct Changeover:** This is the complete replacement of the old system by the new system. It is a risky approach and requires comprehensive system testing and training.

(ii) **Parallel run:** In parallel run both the systems, i.e., computerized and manual, are executed simultaneously for certain defined period. The same data is processed by both the systems. This strategy is less risky but more expensive because of the following:

- Manual results can be compared with the results of the computerized system.

- The operational work is doubled.

- Failure of the computerized system at the early stage does not affect the working of the organization, because the manual system continues to work, as it used to do.

(iii) **Pilot run:** In this type of run, the new system is run with the data from one or more of the previous periods for the whole or part of the system.

- The results are compared with the old system results. It is less expensive and risky than parallel run approach.

- This strategy builds the confidence and the errors are traced easily without affecting the operations. The documentation of the system is also one of the most important activity in the system development life cycle.

- This ensures the continuity of the system. There are generally two types of

(9) Maintenance:

- Maintenance is necessary to eliminate errors in the system during its working life and to tune the system to any variations in its working environments.
- It has been seen that there are always some errors found in the systems that must be noted and corrected.
- It also means the review of the system from time to time.
- The review of the system is done for:
 - knowing the full capabilities of the system
 - knowing the required changes or the additional requirements
 - studying the performance.
- If a major change to a system is needed, a new project may have to be set up to carry out the change. The new project will then proceed through all the above life cycle phases.