PAPER – 7: INFORMATION TECHNOLOGY AND STRATEGIC MANAGEMENT

SECTION – A: INFORMATION TECHNOLOGY

QUESTIONS

1. Define the following terms briefly:
   (i) Read Only Memory
   (ii) Expenditure Cycle in Accounts BPM
   (iii) Network Contention
   (iv) Site Blocking
   (v) Micro Waves
   (vi) Database Management Systems (DBMS)
   (vii) Data Flow Diagram
   (viii) Desktop Publishing
   (ix) Digital Signatures
   (x) Error Handling in Computer-based Information Systems
2. Differentiate between the following:
   (i) Terrestrial Microwave and Radio Wave
   (ii) Print Server and Network Server
   (iii) Connection Oriented Networks and Connectionless Networks
   (iv) Economic Feasibility and Technical Feasibility
   (v) Parallel Conversion and Phased Conversion
   (vi) Physical Security of System and Logical Security of System
   (vii) Transaction Processing System (TPS) and Management Information System (MIS)
   (viii) Storage Virtualization and Network Virtualization
   (ix) Serial Transmission and Parallel Transmission
   (x) Hardware Resources and Software Resources
3. Write short note on the following:
   (i) Information as a Business Asset
   (ii) Data Processing Cycle
   (iii) System Implementation Phase in System Development Life Cycle (SDLC)
   (iv) Business-to-Consumer (B2C) e-Commerce
   (v) Training Management
   (vi) Source based Application

(vii) MS Office Applications

(viii) Credit Card Transaction

(ix) Principle of Least Privilege

(x) Micro Architecture

E-R Diagram

4. Discuss different types of relationships that exist in E-R Diagrams.

Central Processing Unit

5. Discuss the functional units of CPU (Central Processing Unit).

Peer-to-Peer (P2P) Network

6. What do you understand by 'Peer-to-Peer Networks? Discuss in detail its advantages and disadvantages.

Artificial Intelligence (AI)

7. Discuss some of the commercial applications of Artificial Intelligence (AI).

Business Process Management Systems (BPMS)

8. Give some reasons why Documentation is important to Information Systems?

Business Process Automation

9. What is 'Business Process Automation?' From IT perspective, what are the IT processes that are usually involved in any typical business enterprise.

Flowchart

10. A bicycle shop in a city hires bicycles by the day at different rates for different models as given below:

Model No.	Hire rate per day
Model No. 1	₹ 10
Model No. 2	₹ 9
Model No. 3	₹ 8
Model No. 4	₹ 7

In order to attract customers, the shopkeeper gives a discount of 15 percent to all those customers, who hire a bicycle for more than one-week period. Further to attract women customer, he gives additional discount of 10 percent irrespective of hire period. For every bicycle hired; a security deposit of ₹ 25 must be paid. Draw a flow chart to print out the details of each customer such as name of customer, bicycle model number, number of days a bicycle is hired for, hire charges, discount and total charges including deposits.

Information Systems' Controls

11. How the Information Systems' Controls are categorized on the basis of "Audit function"?

Network Management

12. Discuss the ways of characterizing common functions of Network Management.

Vulnerability

13. What do you understand by the term "Vulnerability" in Network Security? What factors are responsible for occurrence of vulnerabilities in the software?

Types of Information Systems

14. How the Information Systems are classified? Who use these Information Systems?

Core Banking System (CBS)

15. Discuss Core Banking Systems (CBS) and their basic functions.

SUGGESTED ANSWERS / HINTS

1. (i) Read Only Memory (ROM): It is non volatile in nature wherein contents remain even in absence of power. Usually, it is used to store small amount of information for quick reference by CPU. In ROM, Information can be read not modified. Generally, it is used by manufacturers to store data & programs like translators that are used repeatedly.

   (ii) Expenditure Cycle in Accounts BPM: This includes transactions surrounding the recognition of expenditures involving accounts like Purchases, Accounts Payable, Cash Disbursements, Inventory and General Ledger. This further incorporates preparation and recording of purchase orders; receipt of goods and the recording of the cost of inventory; receipt of vendor invoices; recording of accounts payable and preparation and recording of cash disbursements. The cycle also includes the preparation of employee pay-checks and the recording of payroll activities.

   (iii) Network Contention: Network Contention refers to the situation that arises when there is a conflict for some common resource in a network. For example, network contention could arise when two or more computer systems try to communicate at the same time.

   (iv) Site Blocking: Site blocking is a software-based approach that prohibits access to certain websites that are deemed inappropriate by management. For example, sites that contain explicit objectionable material can be blocked to prevent employee's from accessing these sites from company Internet servers. In addition to blocking sites, companies can also log activities and determine the amount of time spent on the Internet and identify the sites visited.

(v) Micro Waves: Microwaves are radio waves with wavelengths ranging from as long as one meter to as short as one millimeter, or equivalently, with frequencies between 300 MHz (0.3 GHz) and 300 GHz. These are used for communication, radar systems, radio astronomy, navigation and spectroscopy.

(vi) Database Management Systems (DBMS): Database Management Systems (DBMS) are software that aid in organizing, controlling and using the data needed by the application programme. Various operations on the files such as adding new files to database; deleting existing files from database; inserting data in existing files; modifying data in existing files; deleting data in existing files, and retrieving or querying data from existing files. They provide the facility to create and maintain a well-organized database. Applications access the DBMS, which then accesses the data. Commercially available Data Base Management Systems are Oracle, My SQL, SQL Servers and DB2 etc.

(vii) Data Flow Diagram (DFD): A Data Flow Diagram (DFD) is a graphical representation of the flow of data through an information system. A DFD illustrates technical or business processes with the help of the external data stored, the data flowing from a process to another, and the results. A DFD may be partitioned into levels that represent increasing information flow and functional detail. Therefore, the DFD provides a mechanism for functional modeling as well as information flow modeling.

(viii) Desktop Publishing: The Desktop Publishing systems are often supported with laser printers, inkjet printers, scanners and other such devices for producing good quality documents. The desktop publishing systems help in quick production of multiple copies of the document with quality printing.

(ix) Digital Signatures: In computer system, Digital Signatures establish the privacy and authenticity of persons, integrity of data and prevent the denial of messages or contracts when data is exchanged electronically (non-repudiation).

(x) Error Handling in Computer-based Information Systems: This ensures that errors detected at any stage of processing receive prompt corrective action and are reported to the appropriate level of management.

2. (i) Terrestrial Microwave: Terrestrial microwave involves earth-bound microwave systems, which transmit high-speed radio signals in a line-of-sight path between relay stations spaced approximately 30 miles apart. Terrestrial microwave media uses the atmosphere as the medium through which to transmit signals, and is used extensively for high-volume as well as long-distance communication of both data and voice in the form of electromagnetic waves. However major disadvantage of terrestrial microwave is that it cannot bend around the curvature of the earth.

Radio Waves: Wireless networks do not require any physical media or cables for data transmission. Radio waves are an invisible form of electromagnetic radiation

that varies in wavelength from around a millimeter to 100,000 km, making it one of the widest ranges in the electromagnetic spectrum. Radio waves are most commonly used transmission media in the wireless Local Area Networks.

(ii) Print Server: A print server, or printer server, is a device that connects printers to client computers over a network. It accepts print jobs from the computers and sends the jobs to the appropriate printers, queuing the jobs locally to accommodate the fact that work may arrive more quickly than the printer can actually handle.

Network Server: A network server is a computer system, which is used as the central repository of data and various programs that are shared by users in a network.

(iii) Connection Oriented Networks: In connection oriented service, a connection is first established and then data is exchanged like it happens in case of telephone networks. When connection is established we send the message or the information and then we release the connection.

Connectionless Networks: In connectionless networks, the data is transferred in one direction from source to destination without checking that destination is still there or not, or if it is prepared to accept the message. Data which is being exchanged in fact has a complete contact information of recipient and at each intermediate destination, it is decided how to proceed further like it happens in case of postal networks. Example of Connectionless service is UDP (User Datagram Protocol) protocol.

(iv) Economic Feasibility: The purpose of the economic feasibility assessment is to determine the positive economic benefits to the organization that the proposed system will provide. It assesses the answers of the questions like - Is the proposed system cost-effective?; If benefits outweigh costs?; or if it's worth going ahead?

Technical Feasibility: This assessment is based on an outline design of system requirements, to determine whether the company has the technical expertise to handle completion of the project. This answers the question like - Does the technology exist to implement the proposed system or is it a practical proposition?

(v) Parallel Conversion: Parallel conversion involves running both the old system and the new system together for some period of time say few weeks or months. At some pre-determined time, the current system is withdrawn entirely and all the users and participants interact solely with the new system.

Phased Conversion: Phased conversion is used with larger systems that can be broken down unto individual modules which can be implemented separately at different times and is mainly used with larger systems.

(vi) Physical Security of System: A Physical Security of system is implemented to protect the physical systems' assets of an organization like the personnel, hardware, facilities, supplies and documentation.

Logical Security of System: A Logical Security of system is intended to protect data/information and software. Security administrators tend to have responsibility for controls over malicious and non-malicious threats to physical security, and malicious threats to logical security itself.

(vii) Transaction Processing System (TPS): A Transaction Processing System (TPS) may be defined as a type of Information System that collects, stores, modifies and retrieves the day-to-day data transactions of an enterprise. TPS systems are designed to process transactions virtually instantly to ensure that customer data is available to the processes that require it.

Management Information System (MIS): Management Information System (MIS) is an old management tool, which has been long used by people for superior management and scientific decision making. MIS is primarily dependent upon information and is an example of Management Level systems that help middle managers who are responsible for carrying out the goals set by Top Management.

(viii) Storage Virtualization: Storage virtualization is the apparent pooling of data from multiple storage devices, even different types of storage devices, into what appears to be a single device that is managed from a central console. Storage virtualization helps the storage administrator perform the tasks of backup, archiving, and recovery more easily - and in less time - by disguising the actual complexity of a Storage Area Network (SAN). Administrators can implement virtualization with software applications or by using hardware and software hybrid appliances. The servers connected to the storage system aren't aware of where the data really is. Storage virtualization is sometimes described as "abstracting the logical storage from the physical storage".

Network Virtualization: Network virtualization is a method of combining the available resources in a network by splitting up the available bandwidth into channels, each of which is independent from the others, and each of which can be assigned (or reassigned) to a particular server or device in real time. This allows a large physical network to be provisioned into multiple smaller logical networks and conversely allows multiple physical LANs to be combined into a larger logical network. This behaviour allows administrators to improve network traffic control, enterprise and security. Network virtualization is intended to optimize network speed, reliability, flexibility, scalability, and security.

Various equipment and software vendors offer network virtualization by combining any of the Network hardware such as Switches and Network Interface Cards (NICs); Network elements such as firewalls and load balancers; Networks such as virtual LANs (VLANs); Network storage devices; Network machine-to-machine elements such as telecommunications devices; Network mobile elements such as laptop computers, tablet computers, smart phones and Network media such as Ethernet and Fibre Channel.

(ix)

Serial Transmission	Parallel Transmission
In this, the data bits are transmitted serially one after another.	In this, the data bits are transmitted simultaneously.
Data is transmitted over a single wire.	Data is transmitted over 8 different wires.
It is a cheaper mode of transferring data.	It is relatively expensive mode of transferring data.
It is useful for long distance data transmissions.	Not practical for long distance communications as it uses parallel paths, so cross talk may occur.
It is relatively slower.	It is relatively faster.

(x) Hardware Resources: Hardware resources involve machines and media wherein Machines include computers, video monitors, magnetic disk drives, printers, optical scanners and Media includes floppy disks, magnetic tape, optical disks, plastic cards, paper forms.

Software Resources: Software resources include programs and procedures wherein Programs include operating system programs, spreadsheet programs, word processing programs, payroll programs and Procedures include data entry procedures, error correction procedures, pay-check distribution procedures.

3. (i) Information as a Business Asset: Information becomes an asset for an organization if it is useful, digital, accessible, relevant, accurate, trust-worthy, searchable, understandable, spatially enabled and shareable at the time when required. Information can be treated as a valuable commodity if it can be used effectively. Information that is accurate and encompassing will allow decision-makers to better an organization's performance. Without reliable information, the decision-making process can be badly hampered and an informed decision impossible to make. Where a business is geographically dispersed, with servers hosted in different locations, or a business has a network of applications, there can also be the obstacle of replicating data across the network. In short, without effectively management of information the result can be information chaos.

(ii) Data Processing Cycle: In the Data Processing Cycle, the processes of business activities about which data must be collected and processed are identified. Further, the activities, resources affected by that event, the agents who participate in that event and the event of interest could be the input, output, processing, storage, alerts, controls and feedback. It consists of following basic steps with alerts, controls and feedback at each step:

- Data input: This involves the activities like capturing the data, implementing control procedures, recording in journals, posting to ledgers and preparation of reports.

- Data storage: This involves organizing the data in master file or reference file of an automated system for easy and efficient access.
- Data processing: This involves addition, deletion and updating of the data in the transaction file, master file or reference file.
- Information output: This involves generation of documents and managerial reports in printable or electronic form for addressing queries, to control operational activities and help the management in decision making.

(iii) System Implementation Phase in System Development Life Cycle (SDLC): This phase examines that 'How will the Solution be put into effect'? This phase involves Coding and Testing of the system; Acquisition of hardware and software; and either installation of the new system or conversion of the old system to the new one. The phase includes Installing the new hardware; Training the users on the new system; and Conversion of master files to the new system or creation of new master files.

(iv) Business-to-Consumer (B2C) e-Commerce: Business-to-Consumer (B2C) e-Commerce is defined as the exchange of services, information and/or products from a business to a consumer, as opposed to between one business and another. Typically, a B2C e-Commerce business has a virtual store front for consumers to purchase goods and services eliminating the need to physically view or pick up the merchandise. The Business-to-Consumer (B2C) model can save time and money by doing business electronically but customers must be provided with safe and secure as well as easy-to-use and convenient options when it comes to paying for merchandise. This minimizes internal costs created by inefficient and ineffective supply chains and creates reduces end prices for the customers. Advantages of B2C E-Commerce include faster and more convenient shopping; instant offerings and prices; integration of Call centres with the website and enhanced buying experience due to broadband telecommunications.

(v) Training Management: It is one of the key modules under Human Resource Management Systems (HRMS) in which training programs can be entered with future dates that allow managers to track progress of employees through these programs, examine the results of courses taken and reschedule specific courses when needed. The module tracks the trainer or training organization; costs associated with training schedules, tracks training locations and required supplies and equipment and registered attendees. All employees are linked to a skills profile. The skill profile lists the skills brought with them and acquired through training after they were hired. The skills profile is updated automatically through the training module.

(vi) Source based Application: This refers to the sources from where the application has been bought.

- Custom-built Application: Whether they are for one function or integrate processes across the company like an Enterprise Resource Planning (ERP) – these are the easiest ones to customize. These applications can however be

configured to meet a particular company's requirements. Customization involves additional coding while configuration is based on settings which are inputted by the user. Example – Billing, Inventory, Attendance etc.

- Packaged Software: These are the standard applications which are not free but are licensed. Customization to suit business requirements may or may not be allowed. For Example -Tally, Oracle 9i, etc.
- Leased application: A new method for getting applications is being used today, i.e. leased applications, where user pays fixed rent for using the application for agreed terms. Many specialized vendors provide users with option to get their job done by paying monthly rent; this is referred to as outsourcing.

(vii) MS Office Applications: These are various office automation systems made available by Microsoft Corporation which include MS Word, MS Excel, MS Power Point, MS Access, etc. Each of these software help to achieve automation of various tasks in the office. They have features such as customized ribbon, backstage view, built-in graphics toolset, enhanced security, excel spark lines, pivot for Excel, Power Point broadcast, Power Point compression, paste, preview and outlook conversation view.

(viii) Credit Card Transaction: In a credit card transaction, the consumer presents preliminary proof of his ability to pay by presenting his credit card number to the merchant. The merchant can verify this with the bank, and create a purchase slip for the consumer to endorse. The merchant then uses this purchase slip to collect funds from the bank, and, on the next billing cycle, the consumer receives a statement from the bank with a record of the transaction. Authorization; Batching; Clearing; and Funding are the steps that are involved in any credit card transaction.

(ix) Principle of Least Privilege: This is a fundamental principle of Information Security which refers to give only those privileges to a user account, which are essential to that user's work. For example - A backup user does not need to install software; hence, the backup user has rights only to run backup and backup-related applications. Any other privileges, such as installing new software, should be blocked. The principle applies also to a personal computer user, who usually does work in a normal user account, and opens a privileged, password protected account (that is, a super user) only when the situation absolutely demands it. When applied to users, it refers to the concept that all user accounts at all times should run with as few privileges as possible, and also launch applications with as few privileges as possible. The principle of least privilege is widely recognized as an important design consideration in enhancing the protection of data and functionality from any kind of compromises towards security.

(x) Micro Architecture: Micro Architecture, also known as Computer Organization, is a lower level detailed description of the system that is sufficient for completely

describing the operation of all parts of the computing system, and how they are inter-connected and inter-operate in order to implement the Information Systems Architecture (ISA). This describes the data paths, data processing elements and data storage elements, and describes how they should implement ISA. The Micro architecture can be seen as how the ISA does and what it does. It's how everything is ultimately organized on the chip or processor.

4. The various types of relationships that exist in an E-R Diagram are as follows:

   (i) One-to-One relationship (1:1) - A One-to-One relationship is shown on the diagram by a line connecting the two entities.

   Example: A student has one and only one Report card. Each report card is owned by one and only one student.

   (ii) One-to-Many relationship (1:N) – A One-to-Many relationship is shown on the diagram by a line connecting the two entities with a "crow's foot" symbol denoting the 'many' end of the relationship.

   Example: A student may borrow some books from the library. A book in the library may be borrowed by at most a student.

   (iii) Many-to-One relationship (M:1) – It is the reverse of One-to-Many relationship. Example: As in two or more parent records to a single child record.

   (iv) Many-to-Many relationships (M:N) - A Many-to-Many relationship is shown on the diagram by a line connecting the two entities with 'crow's foot' symbols at both ends.

   Example: A student enrolls in atleast one course. A course is enrolled by at least one student.

5. Central Processing Unit (CPU) consists of the following three functional units:

   - Control Unit (CU): Control Unit controls the flow of data and instruction to and from memory, interprets the instruction and controls which tasks to execute and when.
   - Arithmetic and Logical Unit (ALU): This performs arithmetic operations such as addition, subtraction, multiplication, and logical comparison of numbers: Equal to, Greater than, Less than, etc.

- Registers: These are high speed memory units within CPU for storing small amount of data (mostly 32 or 64 bits). Registers could be:
  - Accumulators: They can keep running totals of arithmetic values.
  - Address Registers: They can store memory addresses which tell the CPU as to where in the memory an instruction is located.
  - Storage Registers: They can temporarily store data that is being sent to or coming from the system memory.
  - Miscellaneous: These are used for several functions for general purpose.

6. Peer-to-Peer Network: A Peer-to-Peer (P2P) network is created with two or more PCs connected together and share resources without going through a separate server computer. A P2P network can be an ad-hoc connection - a couple of computers connected via a universal serial bus to transfer files. A P2P network also can be a permanent infrastructure that links half-dozen computers in a small office over copper wires. Example – Napster, Freenet etc.

   Characteristics of Peer to Peer (P2P) network

   - The prime objective goal of a P2P (Peer-to-Peer) file-sharing network is that many computers mainly the home computers come together and pool their resources to form a content distribution system. They do not need to be machines in Internet data centers.
   - The computers are called peers because each one can alternately act as a client to another peer, fetching its content, and as a server, providing content to other peers.
   - Though there is no dedicated infrastructure, P2P networks handle a very high volume of file sharing traffic by distributing the load across many computers on the Internet. Everyone participates in the task of distributing content, and there is often no central point of control.
   - Configured computers in P2P workgroups allow sharing of files, printers and other resources across all of the devices. Peer networks allow data to be shared easily in both directions, whether for downloads to the computer or uploads from the computer.
   - Because they do not rely exclusively on central servers, P2P networks both scale better and are more resilient than client-server networks in case of failures or traffic bottlenecks.
   - A P2P network can be a network on a much grander scale in which special protocols and applications set up direct relationships among users over the Internet.

   Advantages of Peer-to-Peer Networks

   - Peer-to-Peer Networks are easy and simple to set up and only require a Hub or a Switch to connect all the computers together.

- It is very simple and cost effective.
- If one computer fails to work, all other computers connected to it continue to work.

Disadvantages of Peer-to-Peer networks

- There can be problem in accessing files if computers are not connected properly.
- It does not support connections with too many computers as the performance gets degraded in case of high network size.
- The data security is very poor in this architecture.

7. Some of the commercial applications of Artificial Intelligence (AI) are as follows:

Decision Support

- Intelligent work environment that will help you capture the "why" as well as the "what" of engineered design and decision making.
- Intelligent Human–Computer Interface (HCI) systems that can understand spoken language and gestures, and facilitate problem solving by supporting organization wide collaborations to solve particular problems.
- Situation assessment and resource allocation software for uses that range from airlines and airports to logistics centres.

Information Retrieval

- AI-based Intranet and Internet systems that distill tidal waves of information into simple presentations.
- Natural language technology to retrieve any sort of online information, from text to pictures, videos, maps, and audio clips, in response to English questions.
- Database mining for marketing trend analysis, financial forecasting, and maintenance cost reduction, and more.

Virtual Reality

- X-ray–like vision enabled by enhanced-reality visualization that allows brain surgeons to "see through" intervening tissue to operate, monitor, and evaluate disease progression.
- Automated animation interfaces that allow users to interact with virtual objects via touch (e.g., medical students can "feel" what it's like to stitch severed aortas).

Robotics

- Machine-vision inspections systems for gauging, guiding, identifying, and inspecting products and providing competitive advantage in manufacturing.
- Cutting-edge robotics systems, from micro-robots and hands and legs.

8. Documentation is important to Information Systems for some of the following reasons that are as follows:

   - Depicting how the system works: In computerized systems, the processing is electronic and invisible. Therefore documentation is required to help employees understand how a system works, assist accountants in designing controls for it, demonstrates to managers that it will meet their information needs, and assists auditors in understanding the systems that they test and evaluate.
   - Training users: Documentation also includes user guides, manuals, and similar operating instructions that help people learn how an Information System operates. These documentation aids help train users to operate Information systems hardware and software, solve operational problems, and perform their jobs better.
   - Designing new systems: Documentation helps system designers develop new systems in much the same way that blueprints help architects design building, Well-written documentation and related graphical systems-design methodologies play key roles in reducing system failures and decreasing the time spent correcting emergency errors.
   - Controlling system development and maintenance costs: Personal computer applications typically employ prewritten, off-the-shelf software that is relatively reliable and inexpensive. Good documentation helps system designers develop object-oriented software, which is software that contains modular, reusable code that further avoid writing duplicate programs and facilitate changes when programs must be modified later.
   - Standardizing communications with others: Documentation aids such as E-R Diagrams, System Flowcharts, and Data Flow Diagrams are more standardized tools, and they are more likely to be interpreted the same way by all parties viewing them. Thus, documentation tools are important because they help describe an existing or proposed system in a common language and help users communicate with one another about these systems.
   - Auditing Information Systems: Documentation helps depict audit trails, For example- when investigation and Accounting Information system, the auditors typically focus on internal controls. In such circumstances, documentation helps auditors determine the strengths and weaknesses of a system's controls and therefore the scope and complexity of the audit.
   - Documenting business processes: Understanding business processes can lead to better systems and better decision. Documentation helps managers better understand how their businesses operate what controls are involved or missing from critical organizational activities, and how to improve core business activities.

9. Business Process Automation: It may be defined as the automation of business processes which removes the human element from existing business processes by

automating the repetitive or standardized process components. On its own, BPA automates processes that are part of business function.

To achieve this automation, we would need IT infrastructure, hardware and software to manage the same. Further, all the systems have to be networked so that information can flow seamlessly. In addition, the need would be for database so that the data and information can be stored and retrieved in a desired and appropriate manner.

From IT perspective, following IT processes are usually involved in a typical business enterprise:

- Database access and changes: It provides access to data via ODBC (Open DataBase Connectivity) connections, data updates, and file transfers.
- File replication and data backup: It protects valuable data by backing up databases and key systems.
- Systems and event log monitoring: It reviews and analyzes the event log and critical systems, and create multistep corrective action, such as restarting a server service. With BPA, these processes run automatically when certain events occur.
- Job scheduling: It automates processes that perform a variety of daily or unscheduled tasks.
- Application integration: It automates IT and business processes by combining applications that drive business. Complex processes such as database queries, data transformation and spreadsheet integration can be automated.
- File transfers: It can be automated to deliver and retrieve data on set schedules.
- Printing: It is automated to simplify print jobs.

10. Abbreviations used are as follows:

HCHG: Hire Charges

DAYS: No. of days bicycle is hired for

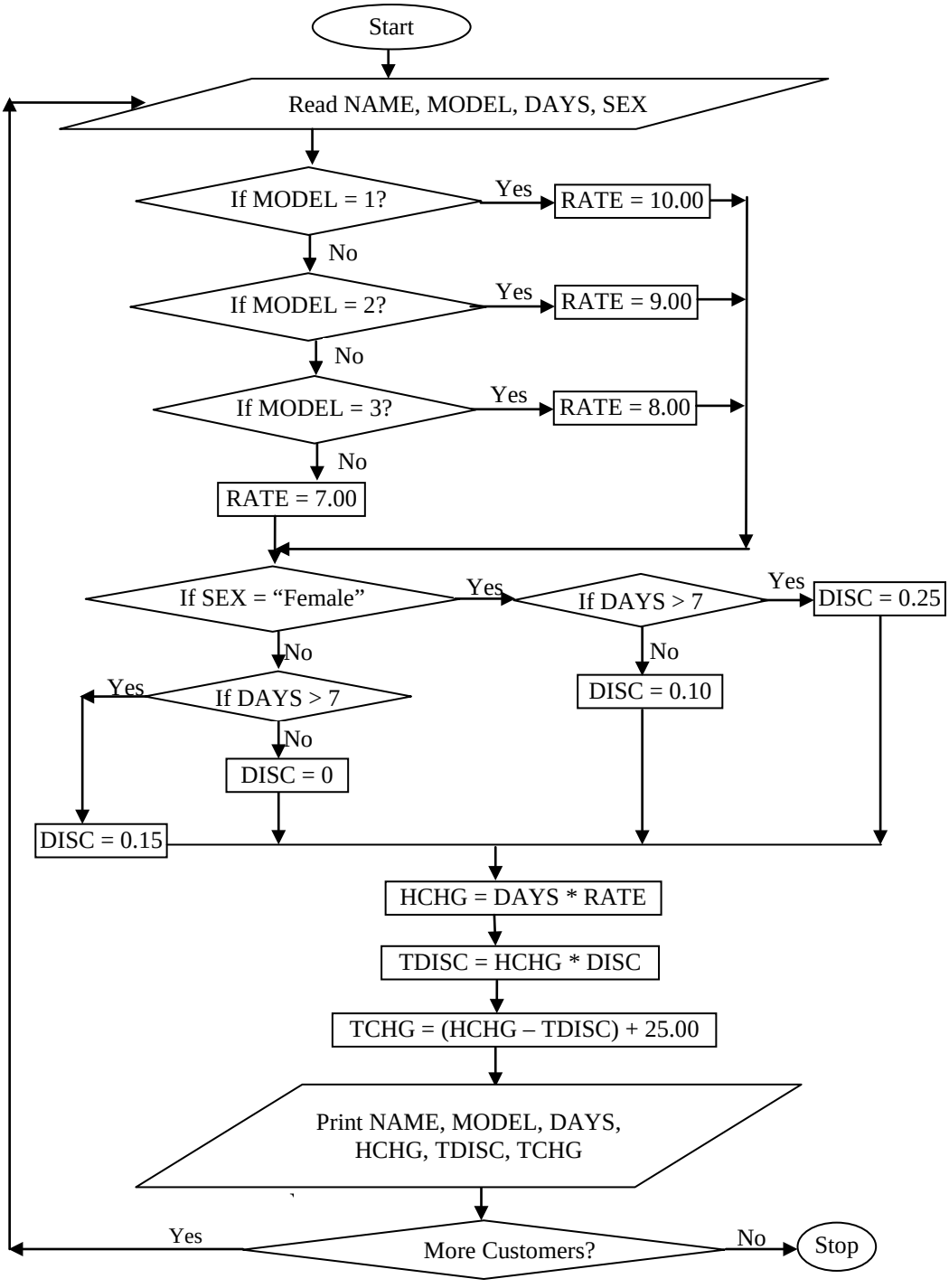
NAME: Name of customer

TCHG: Total Charges

MODEL: Bicycle Model No.

TDISC: Total Discount

The required flowchart is given below:



11. On the basis of Audit, the controls are divided into two parts – Managerial controls and Application Controls.

- Managerial Controls: Managerial functions that must be performed to ensure the development, implementation, operation and maintenance of information systems in a planned and controlled manner in an organization. The controls at this level provide a stable infrastructure in which information systems can be built, operated, and maintained on a day-to-day. Types of Management Subsystem and their description are as follows:
  - Top Management: Top management must ensure that information systems function is well managed. It is responsible primarily for long – run policy decisions on how Information Systems will be used in the organization.
  - Information Systems Management: IS management has overall responsibility for the planning and control of all information system activities. It also provides advice to top management in relation to long-run policy decision making and translates long-run policies into short-run goals and objectives.
  - Systems Development Management: Systems Development Management is responsible for the design, implementation, and maintenance of application systems.
  - Programming Management: It is responsible for programming new system; maintain old systems and providing general systems support software.
  - Data Administration: Data administration is responsible for addressing planning and control issues in relation to use of an organization's data.
  - Quality Assurance Management: It is responsible for ensuring information systems development; implementation, operation, and maintenance conform to established quality standards.
  - Security Administration: It is responsible for access controls and physical security over the information systems function.
  - Operations Management: It is responsible for planning and control of the day-to-day operations of information systems.
- Application Controls: Application functions need to be in place to accomplish reliable information processing. Types of Application Subsystem and their description are as follows:
  - Boundary: Comprises the components that establish the interface between the user and the system.
  - Input: Comprises the components that capture, prepare, and enter commands and data into the system.

- Communication: Comprises the components that transmit data among subsystems and systems.
- Processing: Comprises the components that perform decision making, computation, classification, ordering, and summarization of data in the system.
- Output: Comprises the components that retrieve and present data to users of the system.
- Database: Comprises the components that define; add; access; modify; and delete data in the system.

12. A common way of characterizing network management functions is FCAPS - Fault, Configuration, Accounting, Performance and Security. FCAPS is the ISO Telecommunications Management Network model and framework for network management.

(i) Fault Management - A fault is an event that has a negative significance. The goal of fault management is to recognize, isolate, correct and log faults that occur in the network. Most fault management systems poll the managed objects for error conditions and present this information to the network manager. Fault management identifies and isolates network issues, proposes problem resolution, and subsequently logs the issues and associated resolutions.

(ii) Configuration Management - Monitors network and system configuration information so that the impact on network operations (hardware and software elements) can be tracked and managed. Network changes, additions, and deletions need to be coordinated with the network management personnel.

(iii) Accounting Management - Accounting management is concerned with tracking network utilization information, such that individual users, departments, or business units can be appropriately billed or charged for accounting purposes. For non-billed networks, accounting refers to administration whose primary goal is to administer the set of authorized users by establishing users, passwords, and permissions and to administer the operations of the equipment such as by performing software backup and synchronization.

(iv) Performance Management - Measures and makes network performance data available so that performance can be maintained and acceptable thresholds. It enables the manager to prepare the network for the future, as well as to determine the efficiency of the current network. The network performance addresses the throughput, network response times, packet loss rates, link utilization, percentage utilization, error rates and so forth.

(v) Security Management - Controls access to network resources as established by organizational security guidelines. Most network management systems address security regarding network hardware, such as someone logging into a router. Security management functions include managing network authentication,

authorization, and auditing, such that both internal and external users only have access to appropriate network resources, configuration and management of network firewalls, intrusion detection systems, and security policies (such as access lists).

Functions that are performed as part of network management accordingly include controlling, planning, allocating, deploying, coordinating, and monitoring the resources of a network, network planning, frequency allocation, predetermined traffic routing to support balancing, cryptographic distribution authorization, configuration management, fault management, security management, management, bandwidth management, Route analytics and accounting management.

13. Vulnerability: Vulnerability is an inherent weakness in the design, configuration, or implementation of a network or system that renders it susceptible to a threat. The following facts are responsible for occurrence of vulnerabilities in the software:

- Software Bugs - Software bugs are so common that users have developed techniques to work around the consequences, and bugs that make saving work necessary every half an hour or crash the computer every so often are considered to be a normal part of computing. For example - buffer overflow, failure to handle exceptional conditions, access validation error, input validation errors are some of the common software flaws.
- Timing Windows - This problem may occur when a temporary file is exploited by an intruder to gain access to the file, overwrite important data, and use the file as a gateway for advancing further into the system.
- Insecure default configurations - Insecure default configurations occur when vendors use known default passwords to make it as easy as possible for consumers to set up new systems. Unfortunately, most intruders know these passwords and can access systems effortlessly.
- Trusting Untrustworthy information - This is usually a problem that affects routers, or those computers that connect one network to another. When routers are not programmed to verify that they are receiving information from a unique host, bogus routers can gain access to systems and do damage.
- End users - Generally, users of computer systems are not professionals and are not always security conscious. For example, when the number of passwords of an user increases, user may start writing them down, in the worst case to places from where they are easy to find. In addition to this kind of negligence towards security procedures users do human errors, for example save confidential files to places where they are not properly protected.

14. The classification of Information Systems is as follows:

- Strategic-Level Systems: For strategic managers to track and deal with strategic issues, assisting long-range planning. A principle area is tracking changes in the external conditions (market sector, employment levels, share prices, *etc*.) and matching these with the internal conditions of the organization.
- Management-Level Systems: Used for the monitoring, controlling, decision-making, and administrative activities of middles management. Some of these systems deal with predictions or "what if…" type questions. e.g. "What would happen to our profits if the completion of the new production plant was delayed by 6 months?" Tracking current progress in accord with plans is another major function of systems at this level.
- Knowledge-Level Systems: These systems support discovery, processing and storage of knowledge and data workers. These further control the flow of paper work and enable group working.
- Operational-Level Systems: Support operational managers tracking elementary activities. These can include tracking customer orders, invoice tracking, etc. Operational-level systems ensure that business procedures are followed.

The aforementioned Information Systems are used by different set of people and is described as below:

- Strategic Level: These are senior managers or Top-level managers that hold the titles such as Chief Executive Officers, Chief Financial Officers, Chief Operational Officers, Chief Information Officers and Chair Person of the Board, President, Vice President and Corporate Head Managers take decisions that will affect the entirety of the organization. Top Managers do not direct the day-to-day activities of the firm; rather they set goals for the organization and direct the company to achieve them. Top Managers are ultimately responsible for the performance of the organization, and often, these managers have very visible jobs.
- Management Level: These are Middle Managers that are in the levels below top managers and hold the job titles like General Manager, Regional manager etc. Middle-level Managers are responsible for carrying out the goals set by Top Management. They do so by setting goals for their department and other business units. Middle Managers can motivate and assist First-line Managers achieve business objectives. Middle Managers may also communicate upwards, by offering suggestions and feedback to Top Managers. Because Middle Managers are more involved in the day-to-day workings of a company, they may provide valuable information to Top Managers to help improve the performance of an organization.

- Knowledge Level: These include knowledge and data workers who are selected, recruited and trained in a special manner than the non-knowledge workers. The knowledge resides in the heads of knowledge workers and these are the most precious resource an organization possesses.
- Operational Level: These include Operational Managers or supervisors that are responsible for the daily management of the line workers who actually produce the product or offer the service. There are First-line Managers in every work unit in the organization. Although First-line Managers typically do not set goals for the organization, they have a very strong influence on the company. These are the managers that most employees interact with on a daily basis, and if the managers perform poorly, employees may also perform poorly, may lack motivation, or may leave the company.

15. Core Banking Systems: Core Banking Systems are the heart of a bank where CORE stands for "Centralized Online Real-time Environment". Core Banking Systems may be defined as the set of basic software components that manage the services provided by a bank to its customers through its branches (branch network). The absolute bank's branches access applications from centralized data centres. All transactions budge through core systems, which, at an absolute minimum, must remain running and responsive during business hours. Increasingly, these systems are running 24x7 to support Internet banking, global operations, and real time transactions via ATM, Internet, phone, and debit card. The various elements of core banking include Making and servicing loans; Opening new accounts; Processing cash deposits and withdrawals; Processing payments and cheques; Calculating interest; Customer relationship management (CRM) activities; Managing customer accounts; Establishing criteria for minimum balances, interest rates, number of withdrawals allowed and so on; Establishing interest rates; and maintaining records for all the bank's transactions.

    Normal core banking functions will include deposit accounts, loans, mortgages and payments. Banks make these services available across multiple channels like ATMs, Internet banking, and branches. Examples of major core banking products include Infosys' Finacle, Nucleus FinnOne and Oracle's Flexcube application (from their acquisition of Indian IT vendor i-flex).

SECTION – B: STRATEGIC MANAGEMENT

Correct/Incorrect with reasoning

1. State with reasons which of the following statements are correct/incorrect:
   (a) Cooperation is generated automatically in businesses owned by members of same family.
   (b) The concept of experience curve is relevant for a number of areas in strategic management.
   (c) Strategic planning gives direction to the organization.
   (d) The characteristics of strategic management decisions differ depending upon the levels of management of an organisation.
   (e) Competition adversely hits the organizational growth.
   (f) Changes in strategy may lead to changes in organizational structure.
   (g) A strategic vision delineates organisation's aspirations for the business.
   (h) There are many other reasons for changes in industryother than its position in life cycle.
   (i) Kieretsus is a loosely-coupled group of companies, usually in related industries.
   (j) Market penetration is a growth strategy where the business focuses on selling new products into new markets.
   (k) Benchmarking is a process of one-time improvement in search for competitive advantage.
   (l) Key success factors vary from industry to industry.
   (m) Good strategy and proper implementation ensures organisational success

Differences between the two concepts

2. Distinguish between the following:
   (a) Vertically integrated diversification and Horizontally integrated diversification.
   (b) TQM and Traditional management practices.
   (c) Vision and Mission.

Short notes

3. Write short notes on the following:
   (a) Strategic Group Mapping.
   (b) Role of Global Industries.

(c) Premise Control.

(d) Network structure.

Brief answers

4. Briefly answer the following questions:

(a) Briefly explain 'shared vision' and 'vision shared'.

(b) "Six sigma is not merely a quality initiative, it is a business initiative." Elucidate.

(c) Explain briefly the reasons necessary for globalization of companies.

(d) Briefly explain the implementation steps in BPR.

Descriptive answers

Chapter 1-Business Environment

5. Explain five forces model given by Michael Porter in context of an organization that is manufacturing motor cycles in India.

6. It is difficult to determine exactly what business should do in response to a particular situation in the environment. Explain the various strategic approaches for it.

7. What is business environment? Briefly explain macro environmental factors that affect an organization's strategy.

Chapter 2-Business Policy and Strategic Management

8. What is Corporate Strategy? How would you argue that 'corporate strategy 'ensures the correct alignment of the firm with its environment'?

9. "Strategy is partly proactive and partly reactive." Do you agree? Give reasons for your answer.

10. Decision making is an important managerial function in strategic management. Discuss. What are the major dimensions of strategic decisions?

Chapter 3-Strategic Analysis

11. Discuss GE 9 cell matrix. How is it related to traffic control lights?

12. What is SWOT analysis? Discuss its significance?

13. Strategists need to assess the industry outlook carefully to decide on attractiveness of business. Discuss the factors to base such assessment and decisions.

Chapter 4-Strategic Planning

14. Michael E. Porter has suggested three generic strategies. Briefly explain them. What is the basic objective to follow a generic strategy? In what situations can the three strategies be used?

15. A large Textile Mill, which is in the verge of collapse, has approached you to suggest turnaround strategies. What can be the action plan while recommending turnaround strategies for such a firm?

Chapter 5-Formulation of Functional Strategy

16. What are strategic roles of a human resource manager in a large manufacturing and distribution company?
17. Successful implementation of any project needs additional funds. What are the different sources of raising funds and their impact on the financial strategy which you as a Financial Manager will consider?
18. What is logistics strategy? What are the areas to examine while developing a logistics strategy?

Chapter 6-Strategic Implementation and Control

19. "Management of internal linkages in the value chain could create competitive advantage in a number of ways". Briefly explain.
20. How a corporate culture can be both strength and weakness of an organisation?
21. What are the issues to be considered while implementing strategies?

Chapter 7-Reaching Strategic Edge

22. Define each of the following and analyse its role in strategic implementation:
    (1) B.P.R.
    (2) ERP
    (3) Benchmarking
23. Trace the role of information technology in business process reengineering.
24. What is Six Sigma? Briefly discuss the key methodology for adopting six sigma for a new product.

SUGGESTED ANSWERS/HINTS

1. (a) Incorrect: Although, cooperation should generate automatically in businesses owned by members of a same family, many times internal strifes and tussles lead to challenges in cooperation. Sometimes, quarrels and conflicts among the managing members of the family on family matters tend to distort their behaviour in management of business and thereby damage its functioning. Family owned organisations often face succession and ownership issues that are tough to resolve and lead fights and divisions.

(b) Correct: Experience curve results from a variety of factors such as learning effects, economies of scale, product redesign and technological improvements in production. The concept of experience curve is relevant for a number of areas in strategic management. For instance, experience curve is considered a barrier for new firms contemplating entry in an industry. It is also used to build market share and discourage competition.

(c) Correct: Strategic planning is process of determining organizational strategy. It gives direction to the organization and involves making decisions and allocating resources to pursue the strategy. It is the formal consideration of future course of an organization. It determines where an organization is going over the next year or more and the ways for going there.

(d) Correct: There are three main strategic levels of management - corporate, business and functional. The characteristics of strategic management decisions vary in terms of type, measurability, frequency, relation to present activities, risk, profit potential, cost, time horizon, flexibility, co-operation required differ depending upon the levels of management in an organisation. Functional decisions are taken to bifurcate and implement business strategies that are created within the ambit of corporate strategies.

(e) Incorrect: All organizations have competition. Multinationals and large organizations clash directly on every level of product and service. Mid-sized and small business also chases same customers and finds that prices and product quality are bounded by the moves of their competitors. Competition can challenge organizations to work better, improve and grow. Lack of competition can make organizations complacent with their present positions.

(f) Correct: Changes in strategy may require changes in structure as the structure dictates how resources will be allocated. Structure should be designed to facilitate the strategic pursuit of a firm and, therefore, should follow strategy. Without a strategy or reasons for being, companies find it difficult to design an effective structure.

(g) Correct: A strategic vision delineates organisation's aspirations for the business, providing a panoramic view of the position where the organisation is going. A strategic vision points an organization in a particular direction, charts a strategic path for it to follow in preparing for the future, and moulds organizational identity.

(h) Correct: There are more causes of industry's changes than its position in the life cycle. All industries are characterized by trends and new developments that gradually produce changes important enough to require a strategic response from participating firms. The life-cycle stages are strongly linked to changes in the overall industry growth rate. Industry and competitive conditions change because forces are dynamic. The most dominant forces are called driving forces because they have

the biggest influence on what kinds of changes will take place in the industry's structure and competitive environment.

(i) Correct: Kieretsus is a loosely-coupled group of companies, usually in related industries. It is a Japanese term which is used for large cooperative networks of businesses. Kieretsus members are peers and may own significant amounts of each other's stock and have many board members in common.

(j) Incorrect: Market penetration is a growth strategy where the business focuses on selling existing products into existing markets. It is achieved by making more sales to present customers without changing products in any major way. Penetration might require greater spending on advertising or personal selling.

(k) Incorrect: Benchmarking is a process of continuous improvement in search for competitive advantage. Firms can use benchmarking process to achieve improvement in diverse range of management function like maintenance operations, assessment of total manufacturing costs, product development, product distribution, customer services, plant utilisation levels and human resource management.

(l) Correct: Key success factors vary from industry to industry and even from time to time within the same industry as driving forces and competitive conditions change. Only rarely does an industry have more than three or four key success factors at any one time. And even among these three or four, one or two usually outrank the others in importance.

(m) Incorrect: Strategic management process does not end when the firm decides what strategies to pursue. There must be a translation of strategic thought into action through the process of implementation. A sound strategy with excellent implementation would lead to organisational success but cannot ensure it. Organisational environment is dynamic and can be hostile jeopardising best of the strategies. It is not feasible to accurately predict the future environmental conditions that have bearing on the success of strategy.

2. (a) In vertically integrated diversification, firms opt to engage in businesses that are related to their existing businesses. The firm remains vertically within the same process. Sequence moves forward or backward in the chain and enters specific product/process steps with the intention of making them into new businesses for the firm.

On the other hand, horizontal integrated diversificationisthe acquisition of one or more similar business operating at the same stage of the production-marketing chain that is going into complementary products, by-products or taking over competitors' businesses.

(b) Total Quality Management is different from traditional management practices, requiring changes in organisational processes, beliefs and attitudes, and

behaviours. The nature of TQM differs from common management practices in many respects. Some of the key differences are as follows:

(i) Strategic Planning and Management: Quality planning and strategic business planning is indistinguishable in TQM. Customer satisfaction, defect rates and process cycle times receive very high attention on TQM which is not the case in traditional management.

(ii) Changing Relationships with customers and suppliers: Distinguishable, innovation is essential to meet and exceed customers' needs. In TQM quality is defined as product and services. Traditional management places customers outside of the enterprises and within the domain of marketing and sales.

(iii) Organizational Structure: TQM is also distinguishable as it views enterprise as a system of interdependent processes. Every process contains sub-processes and is also contained within a higher process.

(iv) Organizational Change: In TQM the environment in which the enterprise interacts is considered to be changing constantly. Management's job, therefore, is to provide the leadership for continual improvement and innovation in processes and systems, products, and services. TQM recognises the inevitability of external change and focuses on shaping the future.

(v) Teamwork: In TQM, individuals cooperate in team structure such as quality circles, steering committees, and self-directed work teams. Departments work together toward system optimization through cross-functional teamwork.

(vi) Motivation and Job Design: TQM managers provide leadership and motivation rather than overt intervention in the processes of their subordinates who are viewed as process managers rather than functional specialists.

(c) The vision describes a future identity while the Mission serves as an on-going and time-independent guide.

The vision statement can galvanize the people to achieve defined objectives, even if they are stretch objectives, provided the vision is specific, measurable, achievable, and relevant and time bound. A mission statement provides a path to realize the vision in line with its values. These statements have a direct bearing on the bottom line and success of the organization.

A mission statement defines the purpose or broader goal for being in existence or in the business and can remain the same for decades if crafted well while a vision statement is more specific in terms of both the future state and the time frame. Vision describes what will be achieved if the organization is successful.

3. (a) Strategic group mapping is a technique for displaying the different markets or competitive positions that rival firms occupy in the industry. A strategic group is a cluster of firms in an industry with similar competitive approaches and market

positions. An industry contains only one strategic group when all sellers pursue essentially identical strategies and have comparable market positions. It involves plotting firms on a two-variable map using pairs of differentiating characteristics such as price/quality range; geographic coverage and so on.

(b) The term global industry specifically means an industry where a firm's competitive position in one country is affected by its position in other countries. A global industry is one that by operating in more than one country gains R&D, production, marketing and financial advantages in its costs and reputation that are not available to purely domestic competitors. The global business organisation views the world as one market, minimises the importance of national boundaries, sources material, raises capital and markets wherever it can do the job best. The industries reveals global pattern in today's world include automobiles, television sets, commercial aircrafts and boats, sporting equipment, watches, clothing, semiconductors, copiers and also the transfer of funds.

(c) Premise control: A strategy is formed on the basis of certain assumptions or premises about the complex and turbulent organizational environment. Premise control is a tool for systematic and continuous monitoring of the environment to verify the validity and accuracy of the premises on which the strategy has been built. It primarily involves monitoring two types of factors:

(a) Environmental factors such as economic (inflation, liquidity, interest rates), technology, social and regulatory.

(b) Industry factors such as competitors, suppliers, substitutes.

It is neither feasible nor desirable to control all types of premises in the same manner. Different premises may require different amount of control. Thus, managers are required to select those premises that are likely to change and would severely impact the functioning of the organization and its strategy.

(d) A newer and somewhat more radical organizational design, the network structure is an example of what could be termed a "non-structure" by its virtual elimination of in house business functions. Many activities are outsourced. A corporation organized in this manner is often called a virtual organization because it is composed of a series of project groups or collaborations linked by constantly changing non-hierarchical, cobweb-like networks.

The network structure becomes most useful when the environment of a firm is unstable and is expected to remain so. Under such conditions, there is usually a strong need for innovation and quick response. Instead of having salaried employees, it may contract with people for a specific project or length of time. Long-term contracts with suppliers and distributors replace services that the company could provide for itself through vertical integration. Electronic markets and sophisticated information systems reduce the transaction costs of the marketplace,

thus justifying a "buy" over a "make" decision. Rather than being located in a single building or area, an organization's business functions are scattered worldwide.

The organization is, in effect, only a shell, with a small headquarters acting as a "broker", electronically connected to some completely owned divisions, partially owned subsidiaries, and other independent companies. In its ultimate form, the network organization is a series of independent firms or business units linked together by computers in an information system that designs, produces, and markets a product or service.

4. (a) Individuals in organisations relate themselves with the vision of their organisations in different manner. When the individuals are able to bring organisational vision close to their hearts and minds they have "shared vision". Shared vision is a force that creates a sense of commonality that permeates the organization and gives coherence to diverse activities. However, 'vision shared' shows imposition of vision from the top management. It may demand compliance rather than commitment. For success of organisations having shared vision is better than vision shared.

(b) Six Sigma is a total management commitment and philosophy of excellence, customer focus, process improvement. Six Sigma is about making every area of the organization better able to meet the changing needs of customers, markets, and technologies - with benefits for employees, customers, and shareholders. So the six sigma is not merely a quality initiative, it is a business initiative.

(c) Reasons necessary for Globalization of companies are as follows:

- The rapid shrinking of time and distance across the globe resulting in faster communication, speedier transportation, growing financial flows and rapid technological changes.
- Domestic market is not large enough to absorb whatever is produced. Some European companies have gone global for this reason.
- Justification of foreign investment keeping in view the size of foreign market.
- Securing a reliable and cheaper source of raw-materials. Some companies, by contrast, have often ventured overseas to protect old markets or to seek new ones. For example cheap labour in India lure foreign investors.
- Reducing the high transportation costs by setting up overseas plants that ultimately leads to reducing the higher ratio of the unit cost to the selling price per unit.

(d) Companies begin business process re-engineering by creating a plan of action based on the gap between the current and proposed processes, technologies and structures. Steps usually followed to implement BPR are as follows:

(i) Determining objectives and framework: Objectives are the desired end results of the redesign process which the management and organization

attempts to achieve. It helps in building a comprehensive foundation for the reengineering process.

(ii) Identify customers and determine their needs*:* The designers have to understand customers – their profile, their steps in acquiring, using and disposing a product. The purpose is to redesign business process that clearly provides added value to the customer.

(iii) Study the existing process: The existing processes will provide an important base for the redesigners.

(iv) Formulate a redesign process plan: Formulation of redesign plan is the real crux of the reengineering efforts. Customer focused redesign concepts are identified and formulated.

(v) Implement the redesign: Implementation of the redesigned process and application of other knowledge gained from the previous steps is key to achieve dramatic improvements.

5. Michael Porter Five forces model holds that the state of competition in an industry is a composite of competitive pressures in five areas. These help in systematically diagnosing the significant competitive pressures in the market and assessing their strength and importance.

The Motor Cycle industry is highly competitive with many manufactures including Bajaj Auto, Hero MotoCorp, Royal Enfield, TVS Motor, etc. These are vying for same customers.

1. Threat of new entrants: New entrants are powerful source of competition. The new capacity and product range they bring in throw up new competitive pressure. In the motor cycle industry there is always a probability of entry of new firms.

2. Bargaining power of customers: The bargaining power of the buyers influences not only the prices that the producer can charge but can also influence costs and investments. Customers in the motor cycle industry are quite fragmented. While they may not have significant collaborative bargaining power, individually they always try to negotiate to get better rates.

3. Bargaining power of suppliers: Suppliers, particularly when they are limited in numbers, exercise considerable bargaining power. In motor cycle industry, this bargaining power will be low from suppliers of routine items such as nut and bolts. In case of specialised items such as engines the suppliers may exert considerable bargaining power.

4. Rivalry among current players: The rivalry among existing players is normally understood as competition. Competitors influence strategic decisions at different strategic levels. This rivalry is often intense in motor cycle industry with strong advertising, promotion schemes, easy finance and so on.

5. Threats from substitutes: Substitute products are a latent source of competition in an industry. Substitute products offering a price advantage and/or performance improvement to the consumer can drastically alter the competitive character of an industry. Motor cycles compete with scooters, mopeds,cars and other mode of commuting. Tata Nano car was initially targeted as an alternative to motor cycles. Availability of effective public transport can also impact the industry.

6. The business organization and its many environments have innumerous interrelationship that at times it becomes difficult to determine exactly where the organization ends and where its environment begins. It is also difficult to determine exactly what business should do in response to a particular situation in the environment. Strategically, the businesses should make efforts to exploit the opportunity and avoid the threats.

   In this context following are the approaches:

   (i) Least resistance: Some businesses just manage to survive by way of coping with their changing external environments. They are simple goal-maintaining units. They are very passive in their behaviour and are solely guided by the signals of the external environment. They are not ambitious but are content with taking simple paths of least resistance in their goal-seeking and resource transforming behaviour.

   (ii) Proceed with caution: At the next level, are the businesses that take an intelligent interest to adapt with the changing external environment. They seek to monitor the changes in that environment, analyse their impact on their own goals and activities and translate their assessment in terms of specific strategies for survival, stability and strength. This is a sophisticated strategy than to wait for changes to occur and then take corrective-adaptive action.

   (iii) Dynamic response: At a still higher sophisticated level, are those businesses that regard the external environmental forces as partially manageable and controllable by their actions. Their feedback systems are highly dynamic and powerful. They not merely recognise and ward off threats; they convert threats into opportunities. They are highly conscious and confident of their own strengths and the weaknesses of their external environmental 'adversaries'. They generate a contingent set of alternative courses of action to be picked up in tune with the changing environment.

7. Environment is sum of several external and internal forces that affect the functioning of business. Macro environment is explained as one which is largely external to the enterprise and thus beyond the direct influence and control of the organization, but which exerts powerful influence over its functioning. Important elements of macro environment are:

   - Demographic environment: The term demographics denote characteristics of population. It includes factors such as race, age, income, educational attainment, asset ownership, home ownership, employment status and location. Marketers and

other social scientists often group populations into categories based on demographic variables.

- Economic environment: The economic environment refers to the nature and direction of the economy in which a company competes or may compete. The economic environment includes general economic situation in the region and the nation.
- Political-Legal Environment: This is partly general to all similar enterprises and partly specific to an individual enterprise. There are three important elements in political-legal environment are Government, legal and political.
- Socio-Cultural environment: Socio-cultural environment consist of factors related to human relationships and the impact of social attitudes and cultural values which has bearing on the business of the organization. The beliefs, values and norms of a society determine how individuals and organizations should be interrelated.
- Technological environment: The most important factor, which is controlling and changing people's life, is technology. Technology has changed the ways of how business operates now. Technology can act as both opportunity and threat to a business.
- Global environment: Today's competitive landscape requires that companies must analyse global environment as it is also rapidly changing. The new concept of global village has changed how individuals and organizations relate to each other. Further, new migratory habits of the workforce as well as increased offshore operations are changing the dynamics of business operation.

8. Corporate strategy helps an organisation to achieve and sustain success. It is basically concerned with the choice of businesses, products and markets. It is often correlated with the growth of the firm.

   Corporate strategy in the first place ensures the growth of the firm and its correct alignment with the environment. Corporate strategies are concerned with the broad and long-term questions of what businesses the organization is in or wants to be in, and what it wants to do with those businesses. They set the overall direction the organization will follow. It serves as the design for filling the strategic planning gap. It also helps to build the relevant competitive advantages. A right fit between the firm and its external environment is the primary contribution of corporate strategy. Basically the purpose of corporate strategy is to harness the opportunities available in the environment and countering the threats embedded therein. With the help of corporate strategy, organizations match their unique capabilities with the external environment so as to achieve its vision and mission.

9. Yes, strategy is partly proactive and partly reactive. In proactive strategy, organizations willanalyze possible environmental scenarios and create strategic framework after proper planning, set procedures and work on these strategies in a predetermined manner.

However, in reality no company can forecast both internal and external environment exactly. Everything cannot be planned in advance. It is not possible to anticipate moves of rival firms, consumer behaviour, evolving technologies and so on. There can be significant deviations between what was visualized and what actually happens.

Strategies need to be attuned or modified in light of possible environmental changes. There can be significant or major strategic changes when the environment demands. Reactive strategy is triggered by the changes in the environment and provides ways and means to cope with the negative factors or take advantage of emerging opportunities.

10. Decision making is a managerial process and function of choosing a particular course of action out of several alternative courses for the purpose of accomplishment of the organizational goals. There are a number of major and minor decisions that an organisation takes. Strategic decisions are different from other decisions which are taken at various levels of the organization during day-to-day working of organizations. Strategic decisions are taken at the top level and have organisation wide impact. They are critical as they charter the future of organisations.

    The major dimensions of strategic decisions are given below:

    - *Strategic issues require top-management decisions*: Strategic issues involve thinking in totality of the organizations and also there is lot of risk involved. Hence, problems calling for strategic decisions require to be considered by top management.
    - *Strategic issues involve the allocation of large amounts of company resources*:It may require huge financial investment to venture into a new area of business or the organization may require huge number of manpower with new set of skills in them.
    - *Strategic issues are likely to have a significant impact on the long term prosperity of the firm*:Generally the results of strategic implementation are seen on a long term basis and not immediately.
    - *Strategic issues are future oriented*:Strategic thinking involves predicting the future environmental conditions and how to orient for the changed conditions.
    - *Strategic issues usually have major multifunctional or multi-business consequences*: As they involve organization in totality they affect different sections of the organization with varying degree.
    - *Strategic issues necessitate consideration of factors in the firm's external environment*: Strategic focus in organization involves orienting its internal environment to the changes of external environment.

11. GE 9 cells matrix, is a business model for portfolio analysis. In portfolio analysis top management views its product lines and business units as a series of investments from which it expects returns.

The strategic planning approach in this model has been linked to traffic control lights. The lights that are used at crossings to manage traffic are: green for go, amber or yellow for caution, and red for stop.

This model uses two factors while taking strategic decisions: Business Strength and Market Attractiveness. The vertical axis indicates market attractiveness and the horizontal axis shows the business strength in the industry. The market attractiveness is measured by a number of factors that includes size of market, its growth, competitions and other factors of the market. On the other hand business strength is measured by considering, market share, its growth, brand image, customer loyalty, management competence and other business related factors. Products and businesses are fitted in matrix as follows:

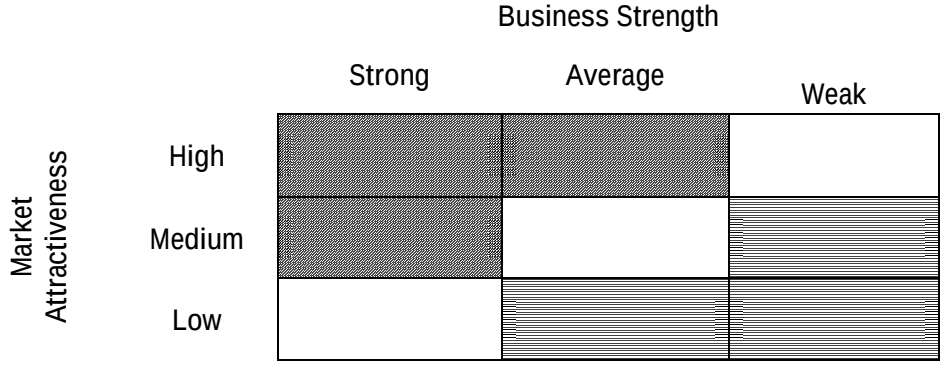
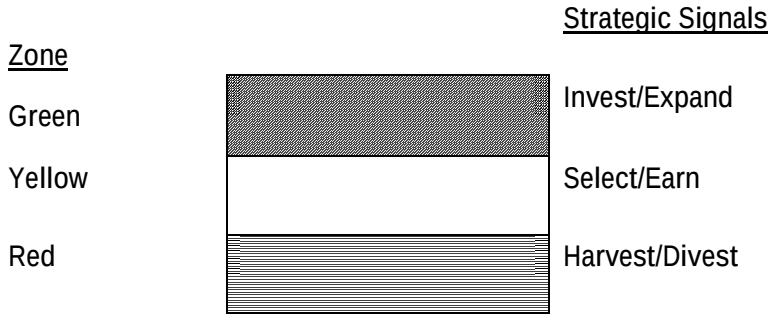


Figure : The GE Portfolio Matrix



If a product falls in the green section, the business is at advantageous position. To reap the benefits, the strategic decision can be to expand, to invest and grow. If a product is in the amber or yellow zone, it needs caution and managerial discretion is called for making the strategic choices. If a product is in the red zone, it will eventually lead to losses that would make things difficult for organisations. In such cases, the appropriate strategy should be retrenchment, divestment or liquidation.

12. The comparison of strengths, weaknesses, opportunities, and threats is normally referred to as a SWOT analysis

- *Strength*: Strength is an inherent capability of the organization which it can use to gain strategic advantage over its competitors.
- *Weakness*: A weakness is an inherent limitation or constraint of the organization which creates strategic disadvantage to it.
- *Opportunity*: An opportunity is a favourable condition in the organisation's environment which enables it to strengthen its position.
- *Threat*: A threat is an unfavourable condition in the organisation's environment which causes a risk for, or damage to, the organisation's position.

The significance of SWOT analysis lies in the following points:

- *It provides a logical framework:*It helps in systematic and sound thrashing of issues having bearing on the business situation, generation of alternative strategies and the choice of a strategy.
- *It presents a comparative account:* SWOT analysis presents the information about both external and internal environment in a structured form where it is possible to compare external opportunities and threats with internal strengths and weaknesses.
- *It guides the strategist in strategy identification:* It is natural that a strategist faces problem of mismatch in the four patterns. It is possible that the organization may have several opportunities and some serious threats. In such situations, SWOT analysis guides the strategist to think of overall position of the organization that helps to identify the major purpose of the strategy under focus.

13. The final step of industry and competitive analysis is to draw conclusions about the relative attractiveness or unattractiveness of the industry, both near-term and long-term. Company strategists are obligated to assess the industry outlook carefully, deciding whether industry and competitive conditions present an attractive business opportunity for the organisation or whether its growth and profit prospects are gloomy.

    The important factors on which to base such conclusions include:

    - The industry's growth potential.
    - Whether competition permits adequate profitability?
    - Whether industry profitability will be favourable?
    - Strength of competitive position in the industry.
    - Potential to capitalize on weaknesses of rivals
    - Ability to defend against counteracting industrial factors.
    - Degree of future risk and uncertainty in industry.
    - Severity of problems confronting industry.
    - Synergistical benefits of remaining in industry.

As a general proposition, if an industry's overall profit prospects are above average, the industry can be considered attractive; if its profit prospects are below average, it is unattractive. However, it is a mistake to think of industries as being attractive or unattractive to all industry participants and all potential entrants. Attractiveness is relative, not absolute.

14. According to Porter, strategies allow organizations to gain competitive advantage from three different bases: cost leadership, differentiation, and focus. These bases form different generic strategies as follows:

- Cost leadership emphasizes producing standardized products at a very low per-unit cost for consumers who are price-sensitive. It frequently results from productivity increases and aggressive pursuit of cost reduction throughout the development, production, marketing, and distribution processes. It allows a firm to earn higher profits than its competitors.
- Differentiation is a strategy aimed at producing products and services considered unique industry wide and directed at consumers who are relatively price-insensitive. It concerns with distinguishing a product/service from that of its competitors through unique design features, technological leadership, unique uses of products and attributes like quality, environmental impact and customer service.
- Focus means producing products and services that fulfil the specific needs of small groups of consumers. It involves selecting or focussing a market or customer segment in which to operate.

The basic purpose of following a generic strategy is to gain competitive advantage so as to ensure long-time survival and growth.

Situations under which these generic strategies can be used are:

Cost Leadership - When the market is price-sensitive, not much room is left for differentiation. Cost leadership is a better option when buyers do not care much about differences between the brands.

Differentiation – This strategy is suitable when the customers want or can get attracted to specific attribute(s) of the products. It is directed towards creating separate market with a product with different attribute(s). The strategy is useful in a perfectly competitive market where all products look similar.

Focus - Smaller firms may compete on a focus basis. When the customers have distinctive preferences or requirements and the rival firms are not attempting to specialise in the same target segment.

15. A textile mill which is on the verge of collapse should carefully analyse its present position, gravity of problems, whether there exist ways to overcome these problems, available resourcesand so on. The action plan for turnaround strategy can be as follows:

Stage One – Assessment of current problems: The first step is to assess the current problems and get to the root causes and the extent of damage the problem has caused. Once the problems are identified, the resources should be focused toward those areas essential to efficiently work on correcting and repairing any immediate issues. The problems can be internal such as low morale of workers in the textile or environment driven such as huge influx of cheap cloth from foreign markets.

Stage Two – Analyze the situation and develop a strategic plan: Before you make any major changes; determine the chances of the business's survival. Identify appropriate strategies and develop a preliminary action plan. For this one should look for the viable core businesses, adequate bridge financing and available organizational resources. Analyze the strengths and weaknesses in the areas of competitive position. Once major problems and opportunities are identified, develop a strategic plan with specific goals and detailed functional actions.

Stage Three – Implementing an emergency action plan: If the organization is in a critical stage, an appropriate action plan must be developed to stop the bleeding and enable the organization to survive. The plan typically includes human resource, financial, marketing and operations actions to restructure debts, improve working capital, reduce costs, improve budgeting practices, prune product lines and accelerate high potential products. A positive operating cash flow must be established as quickly as possible and enough funds to implement the turnaround strategies must be raised.

Stage Four – Restructuring the business: The financial state of the organization's core business is particularly important. If the core business is irreparably damaged, then the outlook for the entire organization may be bleak. Prepare cash forecasts, analyze assets and debts, review profits and analyze other key financial functions to position the organization for rapid improvement.

During the turnaround, the "product mix" may be changed, requiring the organization to do some repositioning. The 'people mix' is another important ingredient in the organization's competitive effectiveness.

Stage Five – Returning to normal: In the final stage of turnaround strategy process, the organization should begin to show signs of profitability, return on investments and enhancing economic value-added. Emphasis is placed on a number of strategic efforts such as carefully adding new products and improving customer service, creating alliances with other organizations, increasing the market share, etc.

16. The prominent areas where the human resource manager can play strategic role are as follows:

    1. Providing purposeful direction: The human resource management must be able to lead people and the organization towards the desired direction involving people. The management has to ensure harmony between organisational objectives and individual objectives. Objectives are specific aims which must be in the line with the

goal of the organization and the all actions of each person must be consistent with them.

2. Creating competitive atmosphere: In the present business environment, maintaining competitive position or gains is an important objective of any business. Having a highly committed and competent workforce is very important for getting a competitively advantageous position.
3. Facilitation of change: The human resource manager will be more concerned about furthering the organization not just maintaining it. He has to devote more time to promote acceptance of change rather than maintaining the status quo.
4. Diversion of workforce: In a modern organization, management of diverse workforce is a great challenge. Workforce diversity can be observed in terms of male and female, young and old, educated and uneducated, unskilled and professional employee and so on. Maintaining a congenial healthy work environment is a challenge for HR Manager. Motivation, maintaining morale and commitment are some of the key task that a HR manager has to perform.
5. Empowerment of human resources: Empowerment involves giving more power to those who, at present, have little control what they do and little ability to influence the decisions being made around them.
6. Building core competency: The human resource manager has an important role to play in developing core competency by the firm. A core competence is a unique strength of an organization which may not be shared by others. Organization of business around core competence implies leveraging the limited resources of a firm. It needs creative, courageous and dynamic leadership having faith in organization's human resources.
7. Development of works ethics and culture: A vibrant work culture will have to be developed in the organizations to create an atmosphere of trust among people and to encourage creative ideas by the people. Far reaching changes with the help of technical knowledge will be required for this purpose.

17. Successful strategy implementation often requires additional capital. Besides net profit from operations and the sale of assets, two basic sources of capital for an organization are debt and equity. Being a financial manager to determine an appropriate mix of debt and equity in a firm's capital structure can be vital to successful strategy implementation. Fixed debt obligations generally must be met, regardless of circumstances. This does not mean that stock issuances are always better than debt for raising capital. If ordinary stock is issued to finance strategy implementation; ownership and control of the enterprise are diluted. This can be a serious concern in today's business environment of hostile takeovers, mergers, and acquisitions.

    The major factors regarding which strategies have to be made by a financial manager are: capital structure; procurement of capital and working capital borrowings; reserves

and surplus as sources of funds; and relationship with lenders, banks and financial institutions. Strategies related to the sources of funds are important since they determine how financial resources will be made available for the implementation of strategies. Organizations have a range of alternatives regarding the sources of funds. While one company may rely on external borrowings, another may follow a policy of internal financing.

18. Management of logistics is a process that integrates the flow of supplies into, through and out of an organization to achieve a level of service that facilitate movement and availability of materials in a proper manner. When a company creates a logistics strategy it is defining the service levels at which its logistics is smooth and is cost effective.

    A company may develop a number of logistics strategies for specific product lines, specific countries or specific customers because of constant changes in supply chains. There are different areas that should be examined for each company that should be considered and should include:

    - Transportation: Does the current transportation strategies help service levels required by the organisation?
    - Outsourcing: Areas of outsourcing of logistics function are to be identified. The effect of partnership with external service providers on the desired service level of organisation is also to be examined.
    - Competitors: Review the procedures adopted by competitors. It is also to be judged whether adopting the procedures followed by the competitors will be overall beneficial to the organisation. This will also help in identifying the areas that may be avoided.
    - Availability of information: The information regarding logistics should be timely and accurate. If the data is inaccurate then the decisions that are made will be incorrect. With the newer technologies it is possible to maintain information on movement of fleets and materials on real time basis.
    - Strategic uniformity: The objectives of the logistics should be in line with overall objectives and strategies of the organisation. They should aid in the accomplishment of major strategies of the business organisation.

19. The management of internal linkages in the value chain could create competitive advantage in a number of ways:

    - There may be important linkages between the primary activities. For example, a decision to hold high levels of finished stock might ease production scheduling problems and provide for a faster response time to the customer. However, an assessment needs to be made whether the value added to the customer by this faster response through holding stocks is greater than the added cost.

- It is easy to miss this issue of managing linkages between primary activities in an analysis if, for example, the organization's competences in marketing activities and operations are assessed separately. The operations may look good because they are geared to high-volume, low-variety, low-unit-cost production. However, at the same time, the marketing team may be selling speed, flexibility and variety to the customers. So competence in separate activities need to be compatible.
- The management of the linkages between a primary activity and a support activity may be the basis of a core competence. It may be key investments in systems or infrastructure which provides the basis on which the company outperforms competition. Computer-based systems have been exploited in many different types of service organization and have fundamentally transformed the customer experience.
- Linkages between different support activities may also be the basis of core competences. For example, the extent to which human resource development is in tune with new technologies has been a key feature in the implementation of new production and office technologies. Many companies have failed to become competent in managing this linkage properly and have lost out competitively.

20. The most important phenomenon which often distinguishes one organisation with another is its corporate culture. Corporate culture refers to a Company's values, beliefs, business principles, traditions, and ways of operating and internal work environment. Every corporation has a culture that exerts powerful influences on the behaviour of managers.

    As a Strength: Culture can facilitate communication, decision making and control and instil cooperation and commitment. An organization's culture could be strong and cohesive when it conducts its business according to clear and explicit set of principle and values, which the management devotes considerable time to communicating to employees and which values are shared widely across the organisation.

    As a Weakness: Culture, as a weakness can obstruct the smooth implementation of strategy by creating resistance to change. An organization's culture could be characterised as weak when many sub-cultures exists, few values and behavioural norms are shared and traditions are rare. In such organizations, employees do not have a sense of commitment, loyalty and sense of identity.

21. The different issues involved in strategy implementation cover practically everything that is included in the discipline of management studies. A strategist, therefore, has to bring to his or her task a wide range of knowledge, skills, attitudes, and abilities. The implementation tasks put to test the strategists' abilities to allocate resources, design structures, formulate functional policies, and take into account the leadership styles required, besides dealing with various other issues.

    - The strategic plan devised by the organization proposes the manner in which the strategies could be put into action. Strategies, by themselves, do not lead to action.

- Strategies should lead to plans. For instance, if stability strategies have been formulated, they may lead to the formulation of various plans. Plans result in different kinds of programmes. A programme is a broad term, which includes goals, policies, procedures, rules, and steps to be taken in putting a plan into action.
- Programmes lead to the formulation of projects. A project is a highly specific programme for which the time schedule and costs are predetermined. It requires allocation of funds based on capital budgeting by organizations.
- Projects create the needed infrastructure for the day-to-day operations in an organization. They may be used for setting up new or additional plants, modernising the existing facilities, installation of newer systems, and for several other activities that are needed for the implementation of strategies.

Implementation of strategies is not limited to formulation of plans, programmes, and projects. Projects would also require resources. After that is provided, it would be essential to see that a proper organizational structure is designed, systems are installed, functional policies are devised, and various behavioural inputs are provided so that plans may work.

Given below in sequential manner the issues in strategy implementation which are to be considered:

- Project implementation
- Procedural implementation
- Resource allocation
- Structural implementation
- Functional implementation
- Behavioural implementation

22. (1) BPR: BPR stands for business process reengineering. It refers to the analysis and redesign of workflows both within and between the organisation and the external entities. Its objective is to improve performance in terms of time, cost, quality, and responsiveness to customers. It implies giving up old practices and adopting the improved ones. It is an effective tool of realising new strategies.

Improving business processes is paramount for businesses to stay competitive in today's marketplace. New technologies are rapidly bringing new capabilities to businesses, thereby raising the strategical options and the need to improve business processes dramatically. Even the competition has become harder. In today's market place, major changes are required to just stay even.

(2) ERP: ERP stand for enterprise resource planning which is an IT based system linking isolated information centres across the organisation into an integrated enterprise wide structured functional and activity bases. ERP is successor to MRP

systems (material requirements and manufacturing resource planning systems). ERP is used for strengthening the procurement and management of input factors.

Modern ERP systems deliver end-to-end capabilities to support the entire performance management of an organisation. It helps in consolidated financial reporting, financial management, planning, budgeting, performance management and so on.

(3) Benchmarking: It is a process of finding the best practices within and outside the industry to which an organisation belongs. Knowledge of the best helps in standards setting and finding ways to match or even surpass own performances with the best performances.

Benchmarking is a process of continuous improvement in search for competitive advantage. Firms can use benchmarking process to achieve improvement in diverse range of management function like maintenance operations, assessment of total manufacturing costs, product development, product distribution, customer services, plant utilisation levels and human resource management

23. The Role of IT in BPR: The accelerating pace at which information technology has developed during the past few years had a very large impact in the transformation of business processes. Various studies have conclusively established the role of information technology in the transformation of business processes. Information technology is playing a significant role in changing the business processes during the years to come, has been established beyond doubt.

A reengineered business process, characterized by IT-assisted speed, accuracy, adaptability and integration of data and service points, is focused on meeting the customer needs and expectation quickly and adequately, thereby enhancing his/her satisfaction level. With the help of tools of information technology organizations can modify their processes to make them automatic, simpler, time saving. Thus IT can bring efficiency and effectiveness in the functioning of business.

24. Primarily six sigma means maintenance of the desired quality in processes and end products. It is a highly disciplined process that helps in developing and delivering near-perfect products and services. Improvements in these areas usually represent dramatic cost savings to businesses, as well as opportunities to retain customers, capture new markets, and build a reputation for top performing products and services.

For implementing sixsigma,the key methodology for adopting six sigma for a new product is known as DMADV.

DMADV is an acronym for Define, Measure, Analyze, Design, and Verify. DMADV is a strategy for designing new products, processes and services.

- Define: As in case of DMAIC six sigma experts have to formally define goals of the design activity that are consistent with strategy of the organization and the demands of the customer.

- Measure: Next identify the factors that are critical to quality (CTQs). Measure factors such as product capabilities and production process capability. Also assess the risks involved.
- Analyze: Develop and design alternatives. Create high-level design and evaluate to select the best design.
- Design: Develop details of design and optimise it. Verify designs may require using techniques such as simulations.
- Verify: Verify designs through simulations or pilot runs. Verified and implemented processes are handed over to the process owners.