

PAPER – 7: INFORMATION TECHNOLOGY AND STRATEGIC MANAGEMENT

SECTION – A: INFORMATION TECHNOLOGY

QUESTIONS

1. Define the following terms briefly:
 - (i) Total Quality Management
 - (ii) Accounting Information System
 - (iii) Mobile Communication
 - (iv) Network as a Service (NaaS) in Cloud Computing
 - (v) Network Contention
 - (vi) MODEM
 - (vii) Read Only Memory (ROM)
 - (viii) General Purpose Planning Languages
 - (ix) TALLY
 - (x) Plastic Cards
2. Differentiate between the following:
 - (i) Data Store of DFD and Data Flow of DFD
 - (ii) One-to-Many Relationship (1:N) and Many-to-Many (M:N) Relationship in E-R Diagram
 - (iii) Routing and Resilience
 - (iv) Private Clouds and Community Clouds
 - (v) Public Data Network and Private Data Network
 - (vi) Network Layer and Data Link Layer of OSI Model
 - (vii) Knowledge Level System and Operational Level Systems
 - (viii) Information and Knowledge
 - (ix) Topological Controls and Internetworking Controls
 - (x) Confidentiality and Integrity
3. Write short note on the following:
 - (i) SmartPhone
 - (ii) Information as a Business Asset
 - (iii) Secondary Memory
 - (iv) System Investigation under SDLC
 - (v) Coaxial Cables

- (vi) Centralized Computing
- (vii) Training Management
- (viii) Quality Assurance Management Controls
- (ix) Application areas of Grid Computing
- (x) Computerized Information Processing Cycle

BPM's Principles

4. Discuss Business Process Management (BPM) Principles.

Processing Controls in BPA

5. Discuss Processing Controls and their categories in Application Controls.

System Security

6. (a) Discuss the types of System Security.
(b) Distinguish between Threat and Vulnerability.

Business Intelligence

7. Discuss Business Intelligence and its tools.

Business Process Automation

8. Discuss the steps involved in implementing Business Process Automation.

Telecommunication Network Model

9. Discuss, in brief, the components of Telecommunication Network Model.

Relational Database Model

10. Discuss Relational Database Model.

Cloud Computing

11. Discuss Cloud Computing architecture.
12. Discuss advantages and disadvantages of Cloud Computing.

Network Protocols

13. Discuss Network Protocols in detail.

Executive Information Systems

14. Discuss Executive Information System (EIS) and its components.

Mapping Systems

15. (a) Discuss advantages and limitations of using Data Flow Diagram.
(b) Discuss the concept of Decision Table in brief.

SUGGESTED ANSWERS/HINTS

1. (i) **Total Quality Management:** Total Quality Management (TQM) is a comprehensive and structured approach to organizational management that seeks to improve the quality of products and services through ongoing refinements in response to continuous feedback. TQM can be applied to any type of organization; it originated in the manufacturing sector. TQM is based on quality management from the customer's point of view. TQM processes are divided into four sequential categories: Plan, Do, Check, and Act (PDCA).
- (ii) **Accounting Information System:** An Accounting Information System (AIS) is defined as a system of collection, storage and processing of financial and accounting data that is used by decision makers. An AIS is generally a computer-based method for tracking accounting activity in conjunction with information technology resources. The resulting statistical reports can be used internally by management or externally by other interested parties including investors, creditors and tax authorities.
- (iii) **Mobile Communication:** Mobile Communication refers to the infrastructure put in place to ensure that seamless and reliable communication goes on. These would include devices such as Protocols, Services, Bandwidth and Portals necessary to facilitate and support the stated services. The data format is also defined at this stage. The signals are carried over the air to intended devices that can receive and sending similar kinds of signals. It will incorporate all aspects of wireless communication.
- (iv) **Network as a Service (NaaS) in Cloud Computing:** It is a category of cloud services where the capability provided to the cloud service user is to use network/transport connecting services. NaaS involves optimization of resource allocation by considering network and computing resources. Some of the examples are Virtual Private Network, Mobile Network Virtualization etc.
- (v) **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.

- (vi) **MODEM:** A MODEM is a device that converts a digital computer signal into an analog telephone signal (i.e. it modulates the signal) and converts an analog telephone signal into a digital computer signal (i.e. it demodulates the signal) in a data communication system. The word "modem" is a contraction of modulate and demodulate. Modems are required to send computer data with ordinary telephone lines because computer data is in digital form but telephone lines are analog.
 - (vii) **Read Only Memory (ROM):** This is non-volatile in nature that means contents remain even in absence of power. Usually, these are used to store small amount of information for quick reference by CPU. Information can be read not modified. It is generally used by manufacturers to store data & programs like translators that is used repeatedly.
 - (viii) **General-purpose planning languages:** These languages allow users to perform many routine tasks, for example; retrieving various data from a database or performing statistical analyses. The languages in most electronic spreadsheets are good examples of general-purpose planning languages. These languages enable user to tackle a broad range of budgeting, forecasting, and other worksheet-oriented problems.
 - (ix) **TALLY:** It is an accounting application that helps entity to automate processes relating to accounting of transactions. It also helps to achieve automation of few processes in inventory management. The latest version has been upgraded to help user achieve TAX compliances also. It has features such as Remote Access Capabilities, Tax Audit and Statutory Compliance, Payroll, Excise for Manufacturers, Multilingual Support, VAT Composition Returns, TDS, VAT (Value Added Tax), Rapid Implementation, Real Time Processing, Dynamic Interactive Reports and Unique Drill-Down Facility, Unlimited Companies and Periods of Accounting.
 - (x) **Plastic Cards:** Plastic Cards are used to store information required in an authentication process. These cards that are used to identify a user need to go through procedural controls like application for a card, preparation of the card, issue of the card, use of the card and return of the card or card termination phases
2. (i) **Data Store of DFD:** A data store is where a process stores data between processes for later retrieval by that same process or another one. Files and tables are considered data stores. Data store names (plural) are simple but meaningful, such as "customers", "orders" and "products." Data stores are usually drawn as a rectangle with the right hand side missing and labeled by the name of the data storage area it represents, though different notations do exist.

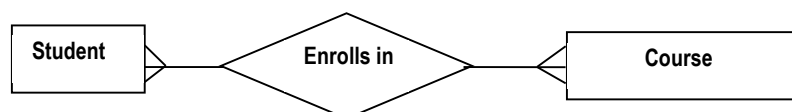
Data Flow of DFD: Data flow is the movement of data between the entity, the process and the data store. Data flow portrays the interface between the components of the DFD. The flow of data in a DFD is named to reflect the nature of the data used (these names should also be unique within a specific DFD). Data flow is represented by an arrow, where the arrow is annotated with the data name.

- (ii) **One-to-Many relationship (1:N)** – A One-to-Many relationship is shown on the E-R 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.



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



- (iii) **Routing:** It refers to the process of deciding on how to communicate the data from source to destination in a network.

Resilience: It refers to the ability of a network to recover from any kind of error like connection failure, loss of data etc.

- (iv) **Private Clouds:** This cloud computing environment resides within the boundaries of an organization and is used exclusively for the organization's benefits. These are also called internal clouds. They are built primarily by IT departments within enterprises who seek to optimize utilization of infrastructure resources within the enterprise by provisioning the infrastructure with applications using the concepts of grid and virtualization. The benefit of a Private Cloud is that it enables an enterprise to manage the infrastructure and have more control, but this comes at the cost of IT department creating a secure and scalable cloud.

Community Clouds: This is the sharing of computing infrastructure in between organizations of the same community. For example, all Government organizations within India may share computing infrastructure on the cloud to manage data. The risk is that data may be stored with the data of competitors.

- (v) **Public Data Network:** A Public Data Network is defined as a network shared and accessed by users not belonging to a single organization. It is a network established and operated by a telecommunications administration, or a recognized private operating agency, for the specific purpose of providing data transmission services for the public. The Internet is an example of a Public Data Network.

Private Data Network: Private Data Networks provide businesses, government agencies and organizations of all sizes as a dedicated network to continuously receive and transmit data critical to both the daily operations and mission critical needs of an organization.

- (vi) **Network Layer:** The Network Layer provides the functional and procedural means of transferring variable length data sequences from a source to a destination via one or more networks, while maintaining the quality of service requested by the Transport Layer. The Network Layer makes a choice of the physical route of transmission, creates a virtual circuit for upper layers to make them independent of data transmission and switching, establishes, maintains, terminates connections between the nodes and ensure proper routing of data.

Data Link Layer: The Data Link Layer responds to service requests from the Network Layer and issues service requests to the Physical Layer. The Data Link Layer is the protocol layer which transfers data between adjacent network nodes in a wide area network or between nodes on the same local area network segment. This layer is also a hardware layer which specifies channel access control method and ensures reliable transfer of data through the transmission medium. It provides the functional and procedural means to transfer data between network entities and to detect and possibly correct errors that may occur in the Physical Layer.

- (vii) **Knowledge Level Systems:** 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 System: 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.

(viii) Differences between Information and Knowledge are as follows:

Information	Knowledge
Information is piecemeal, fragmented, particular.	knowledge is structured, coherent, and often universal.
Information is timely, transitory, perhaps even short-lived.	Knowledge is of enduring significance.
Information is a flow of messages.	Knowledge is a stock, largely resulting from the flow, in the sense that the “input” of information may affect the stock of knowledge by adding to it, restructuring it, or changing it in any way.
Information is acquired by being told.	Knowledge can be acquired by thinking. Thus, new knowledge can be acquired without new information being received.

(ix) **Topological Controls:** A communication network topology specifies the location of nodes within a network, the ways in which these nodes will be linked, and the data transmission capabilities of the links between the nodes. Some of the four basic topologies include Bus, Ring, Star and Tree Topology.

Internetworking Controls: Internetworking is the process of connecting two or more communication networks together to allow the users of one network to communicate with the users of other networks. Three types of devices are used to connect sub-networks in an Internet: Bridge, Router and Gateway.

(x) **Confidentiality:** This feature in Business Process Automation ensures that data is only available to persons who have right to see the same.

Integrity: This feature in Business Process Automation ensures that no unauthorized amendments can be made in the data.

3. (i) **SmartPhone:** A SmartPhone is a mobile phone built on a mobile operating system, with more advanced computing capability connectivity than a feature phone. A smart phone could be considered to be the combination of the traditional PDA and cellular phone, with a bigger focus on the cellular phone part. These handheld devices integrate mobile phone capabilities with the more common features of a handheld computer or PDA. Smartphone's allow users to store information, e-mail and install

programs, along with using a mobile phone in one device. A smart phone's features are usually more oriented towards mobile phone options than the PDA-like features. Modern smart phones also include high-resolution touch screens and web browsers that display standard web pages as well as mobile-optimized sites. High-speed data access is provided by Wi-Fi and mobile broadband.

- (ii) **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.
- (iii) **Secondary Memory:** Secondary storage differs from primary storage in that it is not directly accessible by the CPU. The secondary memories are available in bigger sizes; thus, programs and data can be stored on secondary memories. The computer usually uses its input/output channels to access secondary storage and transfers the desired data using intermediate area in primary storage. Secondary storage does not lose the data when the device is powered down: it is non-volatile. The features of secondary memory devices are non-volatility, greater capacity, greater economy and slow speed. Storage devices could differ amongst each other in terms of speed and access time, cost/ portability, capacity and type of access. Based on these parameters most common forms of secondary storage are: USB Pen Drives, Floppy drive, Hard Drive, CD, DVD, Blue ray Disks and Smart cards.
- (iv) **System Investigation under SDLC:** This phase examines that 'What is the problem and is it worth solving'? Feasibility study is done under the following dimensions:
 - ◆ **Technical feasibility:** Does the technology exist to implement the proposed system or is it a practical proposition?
 - ◆ **Economic feasibility:** Is proposed system cost-effective: if benefits do not outweigh costs, it's not worth going ahead?
 - ◆ **Legal feasibility:** Is there any conflict between the proposed system and legal requirements?

- ◆ **Operational feasibility:** Are the current work practices and procedures adequate to support the new system?
 - ◆ **Schedule feasibility:** How long will the system take to develop, or can it be done in a desired time-frame?
- (v) **Coaxial Cables:** This telecommunications media consists of copper or aluminium wire wrapped with spacers to insulate and protect it. Insulation minimizes interference and distortion of the signals the cable carries. Coaxial cables can carry a large volume of data and allows high-speed data transmission used in high-service metropolitan areas for cable TV systems, and for short-distance connection of computers and peripheral devices. These cables can be bundled together into a much larger cable for ease of installation and can be placed underground and laid on the floors of lakes and oceans. It is used extensively in office buildings and other work sites for local area networks. The only disadvantage of coaxial cable is that it is more expensive than twisted pair.
- (vi) **Centralized Computing:** Centralized computing is computing done at a central location, using terminals that are attached to a central computer. The computer itself may control all the peripherals directly (if they are physically connected to the central computer), or they may be attached via a terminal server. It offers greater security over decentralized systems because all the processing is controlled in a central location. In addition, if one terminal breaks down, the user can simply go to another terminal and log in again, and all their files will still be accessible. Depending on the system, they may even be able to resume their session from the point they were at before, as if nothing had happened.
- (vii) **Training Management:** Training programs can be entered with future dates which 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. The module also tracks training locations, 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.
- (viii) **Quality Assurance Management Controls:** Organizations are increasingly producing safety-critical systems and users are becoming more demanding in terms of the quality of the software they employ to undertake their work. Organizations are undertaking more ambitious information systems projects that

require more stringent quality requirements and are becoming more concerned about their liabilities if they produce and sell defective software.

(ix) Application Areas of Grid Computing are as follows:

- ◆ Civil engineers collaborate to design, execute, & analyze shake table experiments.
- ◆ An insurance company mines data from partner hospitals for fraud detection.
- ◆ An application service provider offloads excess load to a compute cycle provider.
- ◆ An enterprise configures internal & external resources to support e-Business workload.
- ◆ Large-scale science and engineering are done through the interaction of people, heterogeneous computing resources, information systems and instruments, all of which are geographically and organizationally dispersed.

(x) **Computerized Information Processing Cycle:** These are systems where computers are used at every stage of transaction processing. The components of a computerized information processing cycle include the following:

- ◆ **Input:** Entering data into the computer;
- ◆ **Processing:** Performing operations on the data;
- ◆ **Storage:** Saving data, programs, or output for future use; and
- ◆ **Output:** Presenting the results.

4. BPM's Principles are as follows:

- **Processes are assets:** BPM's first principle is **processes are assets** that create value for customers. They are to be managed and continuously improved. Because processes are assets, core processes and processes that generate the most value to customers should be carefully managed.
- **Value to customers:** A managed process produces consistent **value to customers** that entails the tasks of measuring, monitoring, controlling, and analyzing business processes. Measuring of business processes provides information regarding these business processes. Process information allows organizations to predict, recognize, and diagnose process deficiencies, and it suggests the direction of future improvements.
- **Continuous improvement:** The third principle is **continuous improvement** of processes. This is a natural result of process management. Process improvement

is facilitated by the availability of process information. The business environment usually dictates that organizations need to improve to stay competitive. Business processes are central to an organization's value creation. It follows that processes should be continuously improved.

5. **Processing Controls:** Data processing controls perform validation checks to identify errors during processing of data. They are required to ensure both the completeness and accuracy of the data being processed. However, adequate controls should be enforced through the front end application system also, to have consistency in the control process. Some of them are as follows:
 - **Run-to-Run Totals:** These help in verifying data that is subject to process through different stages. A specific record (probably the last record) can be used to maintain the control total.
 - **Reasonableness Verification:** Two or more fields can be compared and cross verified to ensure their correctness.
 - **Edit Checks:** Edit checks similar to the data validation controls can also be used at the processing stage to verify accuracy and completeness of data.
 - **Field Initialization:** Data overflow can occur, if records are constantly added to a table or if fields are added to a record without initializing it, i.e., setting all values to zero before inserting the field or record.
 - **Exception Reports:** Exception reports are generated to identify errors in data processed.
 - **Existence/Recovery Controls:** The check-point/restart logs, facility is a short-term backup and recovery control that enables a system to be recovered if failure is temporary and localized.
6. (a) There are two types of Systems Security.
 - ◆ **Physical Security:** A Physical security is implemented to protect the physical systems assets of an organization like the personnel, hardware, facilities, supplies and documentation.
 - ◆ **Logical Security:** A Logical security is intended 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.
- (b) **Threat:** A Threat is a possible danger that can disrupt the operation, functioning, integrity, or availability of a network or system. Network security threats can be

categorized into four broad themes - Unstructured Threats, Structured Threats, External Threats and Internal Threats.

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 facts that are responsible for occurrence of vulnerabilities in the software are software bugs, timing windows, insecure default configurations, trusting untrustworthy information, and end users.

7. **Business Intelligence:** Business Intelligence (BI) may be defined as the delivery of accurate, useful information to the appropriate decision makers within the necessary time frame to support effective decision making for business processes. BI is comprised of information that contains patterns, relationships, and trends about customers, suppliers, business partners and employees. BI is essentially timely, accurate, high-value, and actionable business insights, and the work processes and technologies used to obtain them. Business intelligence systems process, store and provide useful information to the user who need it, when they need it. BI can handle large amounts of information to help identify and develop new opportunities. Making use of new opportunities and implementing an effective strategy can provide a competitive market advantage and long-term stability.

Business Intelligence Tools

Business Intelligence tools are a type of software that is designed to retrieve, analyze and report data. Some of the key Business Intelligence tools are given as follows:

- **Simple Reporting and Querying:** This involves using the data warehouse to get response to the query: "Tell me what happened." The objective of a BI implementation is to turn operational data into meaningful knowledge. This requires that BI must be connected with the enterprise data and all the necessary data is available in one place, in one common format. Data warehousing (DW) provides the perfect architecture to combine all the data dispersed throughout the enterprise in different applications in a variety of formats, on a range of hardware, which could be anywhere to be cleaned up, summarized, converted and integrated into one common format and available centrally for further processing. There are reporting tools used to arrange information into a readable format and distribute it to the people who need it.
- **Business Analysis:** This involves using the data to get response to the query: "Tell me what happened and why." Business analysis refers to presenting visualizing data in a multidimensional manner. Business analysis allows the user to plot data in row and column coordinates to further understand the intersecting

points. ETL (Extract, Transform, Load) tools bring in data from outside sources, transform it to meet business specified operational needs, and then load the results into the company database. Metadata tools gather and analyze metadata, helping to increase data quality.

- **Dashboards:** This involves using the information gathered from the data warehouse and making it available to users as snapshots of many different things with the objective of getting response to the query: “Tell me a lot of things, but without too much effort”. Dashboards are flexible tools that can be bent into as many different shapes as per user requirements. It includes a collection of graphs, reports, and KPIs that can help monitor such business activities as progress on a specific initiative.
 - **Scorecards:** This involves providing a visual representation of the enterprise strategy by taking critical metrics and mapping them to strategic goals throughout the enterprise. Scorecards offer a rich, visual gauge to display the performance of specific initiatives, business units, or the enterprise as a whole and the individual goals in the context of larger enterprise strategy. Scorecards distil information into a small number of metrics and targets and provide users with an at-a-glance perspective of information. A scorecard has a graphical list of specific, attainable strategic milestones, combined with metrics that serve as benchmarks. Specific measures on how well the company has actually performed specified activities are linked in the scorecard with graphical display highlighting the status of each goal.
 - **Data Mining or Statistical Analysis:** This involves using statistical, artificial intelligence, and related techniques to mine through large volumes of data and providing knowledge without users even having to ask specific questions. The objective is to provide interesting and useful information to users by design even without their querying. Data Mining involves data analysis for discovering useful patterns that are “hidden” in large volume of diverse data.
8. The steps in implementing Business Process Automation are discussed as below:
- (i) **Step 1: Define why we plan to implement a BPA?**
- The primary purpose for which an enterprise implements automation may vary from enterprise to enterprise. A list of generic reasons for going for BPA may include any or combination of the following:
- ◆ Errors in manual processes leading to higher costs.
 - ◆ Payment processes not streamlined, due to duplicate or late payments, missing early pay discounts, and losing revenue.

- ◆ Paying for goods and services not received.
- ◆ Poor debtor management leading to high invoice aging and poor cash flow.
- ◆ Not being able to find documents quickly during an audit or lawsuit or not being able to find all documents.
- ◆ Lengthy or incomplete new employee or new account on-boarding.
- ◆ Unable to recruit and train new employees, but where employees are urgently required.
- ◆ Lack of management understanding of business processes.
- ◆ Poor customer service.

(ii) Step 2: Understand the rules / regulation under which enterprise needs to comply with?

One of the most important steps in automating any business process is to understand the rules of engagement, which include following the rules, adhering to regulations and following document retention requirements. This governance is established by a combination of internal corporate policies, external industry regulations and local, state, and central laws. Regardless of the source, it is important to be aware of their existence and how they affect the documents that drive the processes. It is important to understand that laws may require documents to be retained for specified number of years and in a specified format. Entity needs to ensure that any BPA adheres to the requirements of law.

(iii) Step 3: Document the process, we wish to automate

At this step, all the documents that are currently being used need to be documented. The following aspects need to be kept in mind while documenting the present process:

- ◆ What documents need to be captured?
- ◆ Where do they come from?
- ◆ What format are they in: Paper, FAX, email, PDF etc.?
- ◆ Who is involved in processing of the documents?
- ◆ What is the impact of regulations on processing of these documents?
- ◆ Can there be a better way to do the same job?
- ◆ How are exceptions in the process handled?

The benefit of the above process for user and entity being that it provides clarity on the process, helps to determine the sources of inefficiency, bottlenecks, and problems and allows to re-design the process to focus on the desired result with workflow automation.

(iv) Step 4: Define the objectives/goals to be achieved by implementing BPA

Once the above steps have been completed, entity needs to determine the key objectives of the process improvement activities – **SMART** (Specific: Clearly defined, Measurable: Easily quantifiable in monetary terms, Attainable: Achievable through best efforts, Relevant: Entity must be in need of these, and Timely: Achieved within a given time frame.)

(v) Step 5: Engage the business process consultant

This is again a critical step to achieve BPA. To decide as to which company/consultant to partner with, depends upon the following:

- ◆ Objectivity of consultant in understanding/evaluating entity situation.
- ◆ Does the consultant have experience with entity business process?
- ◆ Is the consultant experienced in resolving critical business issues?
- ◆ Whether the consultant is capable of recommending and implementing a combination of hardware, software and services as appropriate to meeting enterprise BPA requirements?
- ◆ Does the consultant have the required expertise to clearly articulate the business value of every aspect of the proposed solution?

(vi) Step 6: Calculate the Return on Investment (RoI) for project

The right stakeholders need to be engaged and involved to ensure that the benefits of BPA are clearly communicated and implementation becomes successful. Hence, the required business process owners have to be convinced so as to justify the benefits of BPA and get approval from senior management. Some of the methods for justification of a BPA proposal may include cost savings in terms of eliminating fines to be paid by entity due to delays, cost of audits and lawsuits and reduced cost of space regained from paper, file cabinets; reduction in required manpower leading to no new recruits; ensuring complete documentation for all new accounts; taking advantage of early payment discounts and eliminating duplicate payments; ensuring complete documentation for all new discounts; ensuring complete documentation for all new accounts; building

business by providing superior levels of customer service and charging for instant access to records etc.

(vii) Step 7: Developing the BPA

Once the requirements have been document, ROI has been computed and top management approval to go ahead has been received, the consultant develops the requisite BPA. The developed BPA needs to meet the objectives for which the same is being developed.

(viii) Step 8: Testing the BPA

Once developed, it is important to test the new process to determine how well it works and identify where additional “exception processing” steps need to be included. The process of testing is an iterative process, the objective being to remove all problems during this phase.

Testing allows room for improvements prior to the official launch of the new process, increases user adoption and decreases resistance to change. Documenting the final version of the process will help to capture all of this hard work, thinking and experience which can be used to train new people.

9. Telecommunication Network Model: Generally, a communication network is any arrangement where a sender transmits a message to a receiver over a channel consisting of some type of medium. The model consists of five basic categories of components:

- (i) Terminals:** Terminals are the starting and stopping points in any telecommunication network environment. Any input or output device that is used to transmit or receive data can be classified as a terminal component. These include Video Terminals, Microcomputers, Telephones, Office Equipment, Telephone and Transaction Terminals.
- (ii) Telecommunications Processors:** Telecommunications Processors support data transmission and reception between terminals and computers by providing a variety of control and support functions. They include Network Interface Card, Modem, Multiplexer and Internetworked Processors such as switches, routers, hubs, bridges, repeaters and gateways.
- (iii) Telecommunications Media/Channels:** Telecommunications channels are the part of a telecommunications network that connects the message source with the message receiver. Data are transmitted and received over channels, which use a variety of telecommunications media. Telecommunications media are grouped into Guided Media and Unguided Media. Some of the common examples of guided

media are Twisted Pair, Coaxial cable and Fiber optics. Some of the common examples of unguided media are Terrestrial Microwave, Radio waves, Micro Waves, Infrared Waves and Communications Satellites.

- (iv) **Computers:** In a telecommunications networks, computers of all sizes and types are connected through media to perform their communication assignments. They include Host Computers (mainframes), Front-End Processors (minicomputers) and Network Servers (microcomputers).
- (v) **Telecommunications Control Software:** This consists of programs that control telecommunications activities and manage the functions of telecommunications networks. They include Telecommunication Monitors, Network Operating Systems for network servers, Network Management Components and Communication Packages. This software can reside on almost any component of the network and can provide such features as performance monitoring, activity monitoring, priority assigning, transmission error correction and network problem mitigation.

10. **Relational Database Model:** A relational database allows the definition of data and their structures, storage and retrieval operations and integrity constraints that can be organized in a table structure. A table is a collection of records and each record in a table contains the same fields. Both the hierarchical and network data structures require explicit relationships, or links, between records in the database. Both structures also require that data be processed one record at a time. The relational database structure departs from both these requirements. Three key terms are used extensively in relational database models: **relations**, **attributes**, and **domains**. A Relation is a table with columns and rows. The named columns of the relation are called Attributes, and the Domain is the set of values the attributes are allowed to take.

All relations in a relational database have to adhere to some basic rules to qualify as relations. First, the ordering of columns is immaterial in a table. Second, there can't be identical record in a table. And third, each record will contain a single value for each of its attributes.

11. **Cloud Computing Architecture:** Cloud Computing Architecture refers to the components and subcomponents that typically consist of a front end platform (fat client, thin client, mobile device), back end platforms (servers, storage), a cloud based delivery, and a network (Internet, Intranet, Intercloud). Combined, these components make up cloud computing architecture. Cloud architecture typically involves multiple cloud components communicating with each other over a tight or loose coupling of cloud resources, services, middleware, and software components.

A cloud computing architecture consists of two parts - **Front End** and a **Back End** that connect to each other through a network, usually the Internet. The front end is the side the computer user, or client, sees. The back end is the “cloud” section of the system.

- **Front End:** The **Front End** of the cloud computing system comprises of the client's devices (or it may be a computer network) and some applications are needed for accessing the cloud computing system. All the cloud computing systems do not give the same interface to users. For example-Web services like electronic mail programs use some existing web browsers such as Firefox, Microsoft's internet explorer or Apple's Safari. Other types of systems have some unique applications which provide network access to its clients.
- **Back End:** Back End refers to some physical peripherals. In cloud computing, the back end is cloud itself which may encompass various computer machines, data storage systems and servers. Groups of these clouds make a whole cloud computing system. Theoretically, a cloud computing system can include practically any type of web application program such as video games to applications for data processing, software development and entertainment residing on its individual dedicated server for services. There are some set of rules, generally called as **Protocols** which are followed by this server and it uses a special type of software known termed as **Middleware** that allow computers that are connected on networks to communicate with each other. If any cloud computing service provider has many customers, then there's likely to be very high demand for huge storage space. Many companies that are service providers need hundreds of storage devices.

12. Some advantages of Cloud Computing are as follows:

- **Cost Efficient:** Cloud computing is probably the most cost efficient method to use, maintain and upgrade.
- **Almost Unlimited Storage:** Storing information in the cloud gives us almost unlimited storage capacity.
- **Backup and Recovery:** Since all the data is stored in the cloud, backing it up and restoring the same is relatively much easier than storing the same on a physical device. Furthermore, most cloud service providers are usually competent enough to handle recovery of information.
- **Automatic Software Integration:** In the cloud, software integration is usually something that occurs automatically. Not only that, cloud computing allows us to customize the options with great ease. Hence, we can handpick just those services and software applications that we think will best suit the particular enterprise.

- **Easy Access to Information:** Once we register ourselves in the cloud, we can access the information from anywhere, where there is an Internet connection.
- **Quick Deployment:** Once we opt for this method of functioning, the entire system can be fully functional in a matter of a few minutes. Of course, the amount of time taken here will depend on the exact kind of technology that we need for our business.

Disadvantages of Cloud Computing are as follows:

In spite of its many benefits, as mentioned above, cloud computing also has its disadvantages. Some of the major disadvantages are given as follows:

- **Technical Issues:** This technology is always prone to outages and other technical issues. Even the best cloud service providers run into this kind of trouble, in spite of keeping up high standards of maintenance. We will invariably be stuck in case of network and connectivity problems.
- **Security in the Cloud:** Surrendering all the company's sensitive information to a third-party cloud service provider could potentially put the company to great risk.
- **Prone to Attack:** Storing information in the cloud could make the company vulnerable to external hack attacks and threats. Nothing on the Internet is completely secure and hence, there is always the lurking possibility of stealth of sensitive data.

13. **Network Protocols:** Protocols are software that performs a variety of actions necessary for data transmission between computers. Stated more precisely, protocols are a set of rules for inter-computer communication that have been agreed upon and implemented by many vendors, users and standards bodies to ensure that the information being exchanged between the two parties is received and interpreted correctly. Ideally, a protocol standard allows heterogeneous computers to talk to each other.

At the most basic level, protocols define the physical aspects of communication, such as how the system components will be interfaced and at what voltage levels will be transmitted.

At higher levels, protocols define the way that data will be transferred, such as the establishment and termination of "sessions" between computers and the synchronization of those transmissions. At still higher levels, protocols can standardize the way data itself is encoded and compressed for transmission.

A protocol defines the following three aspects of digital communication.

- (a) **Syntax:** The format of data being exchanged, character set used, type of error correction used, type of encoding scheme (e.g., signal levels) being used.
- (b) **Semantics:** Type and order of messages used to ensure reliable and error free information transfer.
- (c) **Timing:** Defines data rate selection and correct timing for various events during data transfer.

At the sending computer, protocols –

- (i) Break data down into packets;
- (ii) Add destination address to the packet; and
- (iii) Prepares data for transmission through Network Interface Card (NIC)

At the receiving computer, protocols –

- (i) Take data packets off the cable;
- (ii) Bring packets into computer through Network Interface Card (NIC);
- (iii) Strip the packets off any transmitting information;
- (iv) Copy data from packet to a buffer for reassembly; and
- (v) Pass the reassembled data to the application.

- 14. Executive Information Systems (EIS):** An Executive Information System (EIS) is the nature of Information System used by executives to access and administer the data they entail to make informed business decisions. In the hierarchical structure of information systems, the EIS is at the pinnacle and is designed to renovate all significant data (from project to process to budget) into aggregated information that makes sense and brings value to the by and large business strategy. EIS is able to link data from various sources both internal and external to provide the amount and kind of information executives find useful. These systems are designed for top management; easy to use; present Information in condensed view; access organization's databases and data external to the organization.

The components of an EIS can typically be classified as below:

Component	Description
Hardware	Includes Input data-entry devices, CPU, Data Storage files and Output Devices.

Software	Includes Text base software, Database, and Graphic types such as time series charts, scatter diagrams, maps, motion graphics, sequence charts, and comparison-oriented graphs (i.e., bar charts) Model base.
User Interface	Includes hardware (physical) and software (logical) components by which people (users) interact with a machine. Several types of interfaces can be available to the EIS structure, such as scheduled reports, questions/answers, menu driven, command language, natural language, and input/output.
Telecommunication	Involves transmitting data from one place to another in a reliable networked system.

15. (a) Advantages of using Data Flow Diagram (DFD) are as follows:

- ◆ It aids in describing the boundaries of the system.
- ◆ It is beneficial for communicating existing system knowledge to the users.
- ◆ A straightforward graphical technique which is easy to recognize.
- ◆ DFDs can provide a detailed representation of system components.
- ◆ It is used as the part of system documentation file.
- ◆ DFDs are easier to understand by technical and nontechnical audiences
- ◆ It supports the logic behind the data flow within the system.

Limitations of using Data Flow Diagram are as follows:

- ◆ It makes the programmers little confusing concerning the system.
- ◆ The biggest drawback of the DFD is that it simply takes a long time to create, so long that the analyst may not receive support from management to complete it.
- ◆ Physical considerations are left out.

(b) **Decision Table:** A Decision Table is a table which may accompany a flowchart, defining the possible contingencies that may be considered within the program and the appropriate course of action for each contingency. A Decision Table is divided into four parts:

- (i) **Condition Stub** - which comprehensively lists the comparisons or conditions;
- (ii) **Action Stub**- which comprehensively lists the actions to be taken along the various program branches;

- (iii) **Condition Entries** - which list in its various columns the possible permutations of answer to the questions in the conditions stub; and
- (iv) **Action Entries** - which lists, in its columns corresponding to the condition entries the actions contingent upon the set of answers to questions of that column.

A Decision Table is divided into four quadrants:

Condition Stub	Condition Entries
Action stub	Action Entries

SECTION – B: STRATEGIC MANAGEMENT**Correct/Incorrect with reasoning**

1. State with reasons which of the following statements are correct/incorrect:
 - (a) Successful businesses have to recognize different elements of environment.
 - (b) Strategic actions are always in reaction to the changes in environment.
 - (c) An opportunity is an inherent capacity which an organization can use to gain strategic advantage over its competitors.
 - (d) Corporate-level managers can be viewed as the guardians of shareholders.
 - (e) SBU concepts facilitate multi business operations.
 - (f) Production strategy implements, supports and drives higher strategies.
 - (g) E-commerce technology opens up a host of opportunities for reconfiguring industry and company value chains.
 - (h) Good strategy and proper implementation ensures organisational success.
 - (i) A match between strategy and structure may create competitive advantage.
 - (j) Network structure brings flexibility and adaptability in an organization.

Differences between the two concepts

2. Distinguish between the following:
 - (a) Vertically integrated diversification and Horizontally integrated diversification.
 - (b) Top-down and bottom-up strategic planning.
 - (c) Strategy formulation and Strategy implementation.
 - (d) Synchro Marketing and Demarketing.

Short notes

3. Write short notes on the following:
 - (a) Implementation steps in BPR
 - (b) Experience Curve
 - (c) Product Life Cycle (PLC) and its significance in portfolio diagnosis
 - (d) 'Keiretsu', a cooperative network of business in Japan

Brief answers

4. Briefly answer the following questions:
 - (a) "A Manager working on a strategic decision has to balance socio-cultural

opportunities, influences and constraints". Discuss.

- (b) "A strategic vision is a road map of a company's future." Comment. Draft a strategic vision statement of any well known national level Educational Institution you are familiar with.
- (c) "Firms can use benchmarking process to achieve improvement in diverse range of management functions." Elucidate.

Descriptive answers

Chapter 1-Business Environment

- 5. 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.
- 6. What is Environment? Briefly explain macro environmental factors that affect an organization's strategy.

Chapter 2-Business Policy and Strategic Management

- 7. What do you understand by strategic management? Discuss its framework.
- 8. What is Corporate Strategy? How would you argue that 'corporate strategy' ensures the correct alignment of the firm with its environment'?

Chapter 3-Strategic Analysis

- 9. Strategists need to assess the industry outlook carefully to decide on attractiveness of business. Discuss the factors to base such assessment and decisions.
- 10. Explain how TOWS matrix can generate strategic options within external and internal environment.

Chapter 4-Strategic Planning

- 11. Discuss how mergers and acquisitions are used for business growth. What are the various types of mergers?
- 12. 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

- 13. What are strategic roles of a human resource manager in a large manufacturing and distribution company?
- 14. What are functional strategies? How important are they for the business?

Chapter 6-Strategic Implementation and Control

- 15. "Management of internal linkages in the value chain could create competitive advantage in a number of ways". Briefly explain.

16. Explain the various types of strategic control.

Chapter 7-Reaching Strategic Edge

17. Define each of the following and analyse its role in strategic implementation:

- (1) B.P.R.
- (2) ERP
- (3) Benchmarking

18. Define TQM? Explain the various principles that guide success of TQM.

SUGGESTED ANSWERS / HINTS

- 1 (a) **Correct:** Various elements of environment significantly impact businesses and need to be recognized for success. Businesses have to respect, adapt, manage and sometimes influence these elements. They must continuously monitor and adapt to the environment to survive and prosper.
- (b) **Incorrect:** Strategic actions are typically a blend of (1) proactive actions on the part of managers to improve the company's market position and financial performance and (2) as needed reactions to unanticipated developments and emerging market conditions and developments.
- (c) **Incorrect:** An opportunity is not an inherent capacity of any organization. It is a favourable condition in the organization's environment which enables it to consolidate and strengthen its position. An example of an opportunity is growing demand for the products or services that a company provides.
- (d) **Correct:** Corporate-level managers provide a link between the people who oversee the strategic development of a firm and those who own it (the shareholders). Corporate-level managers, and particularly the CEO, can be viewed as the guardians of shareholder welfare. It is their responsibility to ensure that the corporate and business strategies that the company pursues are consistent with maximizing shareholder wealth.
- (e) **Correct:** Organizing business along SBU lines and creating strategic business units has become a common practice for multi-product/service and global organizations. It is a convenient and intelligent grouping of activities along distinct businesses and has replaced the conventional groupings. SBU facilitates strategic planning, gaining product-related/market-related specialization, gaining cost-economies and more rational organizational structure.
- (f) **Correct:** For effective implementation of higher level strategies, strategists need to provide direction to functional managers, including production, regarding the plans and policies to be adopted. Production strategy provides a path for transmitting

corporate and business level strategy to the production systems and makes it operational. It may relate to production planning, operational system, control and research & development.

- (g) **Correct:** The impact of e-commerce technology on industry and company value chains is profound, paving the way for fundamental changes in the ways business is conducted both internally, and with suppliers and customers. Using the network to link the customers and the suppliers enables just-in-time delivery, reducing inventory costs and allowing production to match demand.
 - (h) **Incorrect:** 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.
 - (i) **Correct:** A competitive advantage is created when there is a proper match between strategy and structure. Ineffective strategy/structure matches may result in company rigidity and failure, given the complexity and need for rapid changes in today's competitive landscape. Thus, effective strategic leaders seek to develop an organizational structure and accompanying controls that are superior to those of their competitors.
 - (j) **Correct:** The network organization structure provides an organization with increased flexibility and adaptability to cope with rapid technological change and shifting patterns of international trade and competition. It allows a company to concentrate on its distinctive competencies, while gathering efficiencies from other firms who are concentrating their efforts in their areas of expertise.
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. The firms move sequentially forward or backward in the product process chain. They enter specific product/process steps with the intention of making them into new businesses for the firm.

On the other hand, horizontal integrated diversification involves entry into or 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) Top-Down and Bottom-Up Strategic Planning

Strategic planning determines where an organization is going over the next year or more and the ways for going there. The process is organization-wide, or focused on a major function such as a division. There are two approaches for strategic planning - top down or bottom up.

Top down strategic planning describes a centralized approach to strategy formulation

in which the corporate centre or head office determines mission, strategic intent, objectives and strategies for the organization as a whole and for all parts. Unit managers are seen as implementers of pre-specified corporate strategies.

Bottom up strategic planning is the characteristic of autonomous or semi-autonomous divisions or subsidiary companies in which the corporate centre does not conceptualize its strategic role as being directly responsible for determining the mission, objectives, or strategies of its operational activities. It may prefer to act as a catalyst and facilitator, keeping things reasonably simple and confining itself to perspective and broader strategic intent.

- (c) Strategy formulation and implementation can be distinguished in the following ways:

Strategy Formulation	Strategy Implementation
- It involves the design and choice of appropriate organisational strategies.	- It is the process of putting the various strategies into action.
- It is positioning forces before the action.	- It is managing forces during the action
- It focuses on effectiveness.	- It focuses on efficiency.
- It is primarily an intellectual process.	- It is primarily an operational process.
- It requires good intuitive and analytical skills.	- It requires special motivation and leadership skills.
- It requires coordination among a few individuals.	- It requires coordination among many individuals.

- (d) **Synchro-marketing:** When the demand for any product is irregular due to season, some parts of the day, or on hour basis, causing idle capacity or overworked capacities, synchro-marketing can be used to find ways to alter the same pattern of demand through flexible pricing, promotion, and other incentives. For example, products such as movie tickets can be sold at lower price over week days to generate demand.

Demarketing: Marketing strategies to reduce demand temporarily or permanently-the aim is not to destroy demand, but only to reduce or shift it. This happens when there is overfull demand. For example, buses are overloaded in the morning and evening, roads are busy for most of times, zoological parks are over-crowded on Saturdays, Sundays and holidays. Here demarketing can be applied to regulate demand.

3. (a) 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:

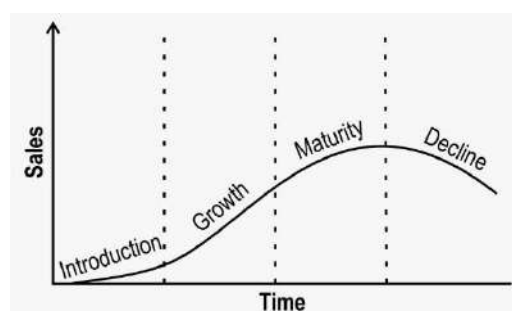
- (i) **Determining objectives and framework:** Objectives are the desired end results of the redesign process which the management and organization attempts to achieve. It helps in building a comprehensive foundation for the reengineering process.
 - (ii) **Identify customers and determine their needs:** 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.
- (b) Experience curve is similar to learning curve which explains the efficiency gained by workers through repetitive productive work. Experience curve is based on the commonly observed phenomenon that unit costs decline as a firm accumulates experience in terms of a cumulative volume of production.
- The implication is that larger firms in an industry would tend to have lower unit costs as compared to those of smaller organizations, thereby gaining a competitive cost advantage. Experience curve results from a variety of factors such as learning effects, economies of scale, product redesign and technological improvements in production.
- (c) Product Life Cycle is an important concept in strategic choice and S-shaped curve which exhibits the relationship of sales with respect of time for a product that passes through the four successive stages.

The first stage of PLC is the introduction stage in which competition is almost negligible, prices are relatively high and markets are limited. The growth in sales is also at a lower rate.

The second stage of PLC is the growth stage, in which the demand expands rapidly, prices fall, competition increases and market expands.

The third stage of PLC is the maturity stage, where in the competition gets tough and market gets stabilized. Profit comes down because of stiff competition.

The fourth stage is the declining stage of PLC, in which the sales and profits fall down sharply due to some new product replaces the existing product.



Product Life Cycle

PLC can be used to diagnose a portfolio of products (or businesses) in order to establish the stage at which each of them exists. Particular attention is to be paid on the businesses that are in the declining stage. Depending on the diagnosis, appropriate strategic choice can be made. For instance, expansion may be a feasible alternative for businesses in the introductory and growth stages. Mature businesses may be used as sources of cash for investment in other businesses which need resources. A combination of strategies like selective harvesting, retrenchment, etc. may be adopted for declining businesses. In this way, a balanced portfolio of businesses may be built up by exercising a strategic choice based on the PLC concept.

- (d) The benefits of cooperation are also seen in Japan, where large cooperative networks of businesses are known as *keiretsu*. These are formed in order to enhance the abilities of individual member businesses to compete in their respective industries. A *keiretsu* is a loosely-coupled group of companies, usually in related industries. *Keiretsu* members are peers and may own significant amounts of each other's stock and have many board members in common.

Keiretsus are different from conglomerates (common in western countries and also found in India) wherein all members are lineated through ownership pattern. A *keiretsu* also differs from a consortium or an association, as the primary purpose of a *keiretsu* is not to share information or agree industry standards, but to share purchasing, distribution or any other functions. In *keiretsu* members remain independent companies in their own right: the only strategy they have in common is to prefer to do business with other *keiretsu* members, both when buying and when selling.

4. (a) It is true that a manager working on a strategic decision has to balance opportunities, influences and constraints. The opportunities emanate from various sources including the socio-cultural elements of environment. Socio-cultural factors consist of factors such as traditions, values and beliefs, literacy and education, the ethical standards, stratification, conflict, cohesiveness and so forth. These factors are also evolving in the sense that there are changes in the preferences, value systems, education level

and so on. Managers must segregate the factors that have a bearing on the organisation and consider them while taking strategic decisions. Some of these factors can be managed to an extent, however, there will be several others that are beyond the control of a manager.

- (b) A Strategic vision is a roadmap of a company's future – providing specifics about technology and customer focus, the geographic and product markets to be pursued, the capabilities it plans to develop, and the kind of company that management is trying to create.

The vision of ICAI is - World's leading accounting body, a regulator and developer of trusted and independent professionals with world class competencies in accounting, assurance, taxation, finance and business advisory services.

- (c) Benchmarking is a process of finding the best practices within and outside the industry to which an organisation belongs. Knowledge of the best practices helps in setting standards 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 such as mentioned below:

1. maintenance operations,
2. assessment of total manufacturing costs,
3. product development,
4. product distribution,
5. customer services,
6. plant utilisation levels; and
7. human resource management.

5. The business organization and its many environments have innumerable 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.

At the same time, very dominating behaviour of some command organizations may generate powerful countervailing pressures and forces in the environment. Within certain limits, an organization can shape part of its relevant external environment on a reciprocal basis.

6. Environment is sum of several external and internal forces that affect the functioning of business. Businesses function as a part of broader environment. The inputs in the form of human, physical, financial and other related resources are drawn from the environment. The business converts these resources through various processes into outputs of products and/or services. 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 in an area, district, country or in world. 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. Some of the demographic factors have great impact on the business. Factors such as general age profile, sex ratio, education, growth rate affect the business with different magnitude.
- ◆ **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, conditions in resource markets which influence the supply of inputs to the enterprise, their costs, quality, availability and reliability of supplies.
- ◆ **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. The core beliefs of a particular society tend to be persistent. It is difficult for businesses to change these core values, which becomes a determinant of its functioning.
 - ◆ **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. This is leading to many new business opportunities as well as making obsolete many existing systems. 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 operation are changing the dynamics of business operation.
7. The term strategic management refers to the managerial process of forming a strategic vision, setting objectives, crafting a strategy, implementing and executing the strategy, and then initiating whatever corrective adjustments in the vision, objectives, strategy, and execution are deemed appropriate. The basic framework of strategic process can be described in a sequence of five stages as follows:
- Stage one** - Where are we now? (Beginning): This is the starting point of strategic planning and consists of doing a situational analysis of the firm in the environmental context.
- Stage two** - Where we want to be? (Ends): This is a process of goal setting for the organization after it has finalised its vision and mission.
- Stage three** - How might we get there? (Means): Here the organization deals with the various strategic alternatives it has.
- Stage four** - Which way is best? (Evaluation): Out of all the alternatives generated in the earlier stage the organization selects the best suitable alternative in line with its SWOT analysis.
- Stage five** - How can we ensure arrival? (Control): This is a implementation and control stage of a suitable strategy. Here again the organization continuously does situational analysis and repeats the stages again.

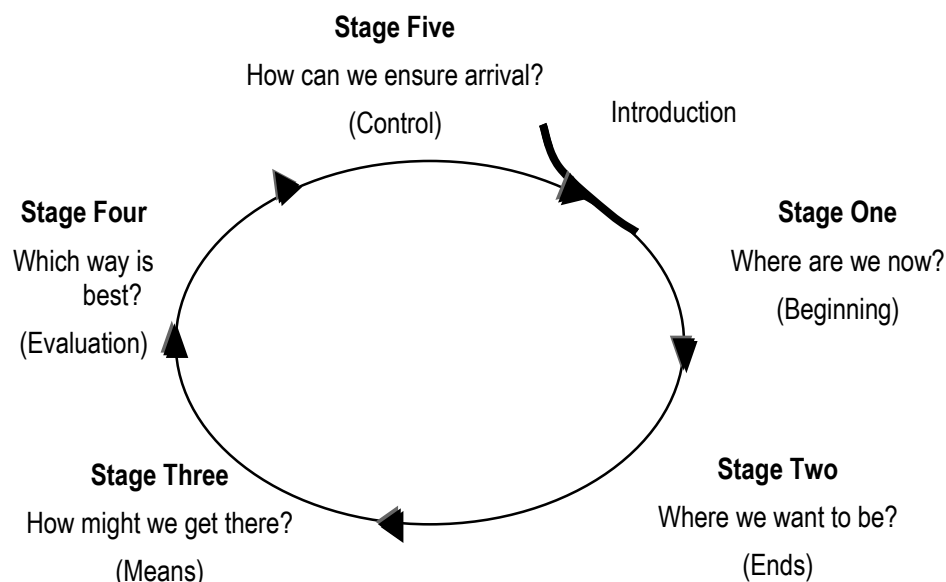


Figure - Framework of strategic management

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 their vision and mission.

9. 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.

10. Through SWOT analysis organisations identify their strengths, weaknesses, opportunities and threats. While conducting the SWOT Analysis managers are often not able to come to terms with the strategic choices that the outcomes demand. Heinz Weihrich developed a matrix called TOWS matrix by matching strengths and weaknesses of an organization with the external opportunities and threats. The incremental benefit of the TOWS matrix lies in systematically identifying relationships between these factors and selecting strategies on their basis. Thus TOWS matrix has a wider scope when compared to SWOT analysis. TOWS analysis is an action tool whereas SWOT analysis is a planning tool. The matrix is outlined below:

<div style="text-align: center;"> <i>Internal elements</i> <i>External Elements</i> </div>	<i>Organizational Strengths</i>	<i>Organizational Weaknesses</i>
	<i>Strategic Options</i>	
<i>Environmental opportunities (and risks)</i>	<i>SO : Maxi – Maxi</i>	<i>WO : Mini – Maxi</i>
<i>Environmental threats</i>	<i>ST : Maxi – Mini</i>	<i>WT : Mini – Mini</i>

Figure: The TOWS Matrix (Source: Weihrich, H)

The TOWS Matrix is a relatively simple tool for generating strategic options. Through TOWS matrix four distinct alternative kinds of strategic choices can be identified.

SO (Maxi-Maxi): SO is a position that any firm would like to achieve. The strengths can be used to capitalize or build upon existing or emerging opportunities. Such firms can take lead from their strengths and utilize the resources to take the competitive advantage.

ST(Maxi-Mini): ST is a position in which a firm strives to minimize existing or emerging threats through its strengths.

WO(Mini-Maxi): The strategies developed need to overcome organizational weaknesses if existing or emerging opportunities are to be exploited to maximum.

WT(Mini-Mini): WT is a position that any firm will try to avoid. An organization facing external threats and internal weaknesses may have to struggle for its survival. WT strategy is a strategy which is pursued to minimize or overcome weaknesses and as far as possible, cope with existing or emerging threats.

Used after detailed analysis of threats, opportunities, strength and weaknesses, TOWS helps one to consider how to use the external environment to strategic advantage, and so one can identify some of the strategic options that are available.

11. Many organizations in order to achieve quick growth, expand or diversify use mergers and acquisitions strategies. Merger and acquisition in simple words are defined as a process of combining two or more organizations together. There is a thin line of difference between the two terms but the impact of combination is completely different in both the cases.

Merger is considered to be a process when two or more organizations join together to expand their business operations. In such a case the deal gets finalized on friendly terms. Owners of pre-merged entities have right over the profits of new entity. In a merger two organizations combine to increase their strength and financial gains.

When one organization takes over the other organization and controls all its business operations, it is known as acquisition. In the process of acquisition, one financially strong organization overpowers the weaker one. Acquisitions often happen during economic recession or during declining profit margins. In this process, one that is financially stronger and bigger establishes its power. The combined operations then run under the name of the powerful entity. A deal in case of an acquisition is often done in an unfriendly manner, it is more or less a forced association.

Types of Mergers

1. **Horizontal merger:** Horizontal mergers are combinations of firms engaged in the same industry. It is a merger with a direct competitor. The principal objective behind this type of mergers is to achieve economies of scale in the production process by shedding duplication of installations and functions, widening the line of products, decrease in working capital and fixed assets investment, getting rid of competition and so on.
2. **Vertical merger:** It is a merger of two organizations that are operating in the same industry but at different stages of production or distribution system. This often leads to increased synergies with the merging firms. If an organization takes over its supplier/producers of raw material, then it leads to backward integration. On the other hand, forward integration happens when an organization decides to take over its buyer organizations or distribution channels. Vertical merger results in operating and financial

economies. Vertical mergers help to create an advantageous position by restricting the supply of inputs or by providing them at a higher cost to other players.

3. **Co-generic merger:** In co-generic merger two or more merging organizations are associated in some way or the other related to the production processes, business markets, or basic required technologies. Such merger include the extension of the product line or acquiring components that are required in the daily operations. It offers great opportunities to businesses to diversify around a common set of resources and strategic requirements. For example, an organization manufacturing refrigerators can diversify by merging with another organization having business in kitchen appliances.
 4. **Conglomerate merger:** Conglomerate mergers are the combination of organizations that are unrelated to each other. There are no linkages with respect to customer groups, customer functions and technologies being used. There are no important common factors between the organizations in production, marketing, research and development and technology. In practice, however, there is some degree of overlap in one or more of these factors.
12. 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 resources and 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.

13. The prominent areas where the human resource manager can play strategic role are:

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. **Workforce diversity:** 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 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.
14. Once higher level corporate and business strategies are developed, management need to formulate and implement strategies for each functional area. For effective implementation, strategists have to provide direction to functional managers regarding the plans and policies to be adopted. In fact, the effectiveness of strategic management depends critically on the manner in which strategies are implemented. Functional area strategy such as marketing, financial, production and Human Resource are based on the functional capabilities of an organisation. For each functional area, first the major sub areas are identified and then for each of these sub functional areas, contents of functional strategies, important factors, and their importance in the process of strategy implementation is identified.

In terms of the levels of strategy formulation, functional strategies operate below the SBU or business-level strategies. Within functional strategies there might be several sub-functional areas. Major strategies need to be translated to lower levels to give holistic strategic direction to an organisation. Functional strategies provide details to business strategy & govern as to how key activities of the business will be managed.

Functional strategies play two important roles. Firstly, they provide support to the overall business strategy. Secondly, they spell out as to how functional managers will work so as to ensure better performance in their respective functional areas. The reasons why functional strategies are really important and needed for business can be enumerated as follows:

1. The development of functional strategies is aimed at making the strategies-formulated at the top management level-practically feasible at the functional level.
 2. Functional strategies facilitate flow of strategic decisions to the different parts of an organisation.
 3. They act as basis for controlling activities in the different functional areas of business.
 4. The time spent by functional managers in decision-making is reduced as plans lay down clearly what is to be done and policies provide the discretionary framework within which decisions need to be taken.
 5. Functional strategies help in bringing harmony and coordination as they remain part of major strategies.
 6. Similar situations occurring in different functional areas are handled in a consistent manner by the functional managers.
15. 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.

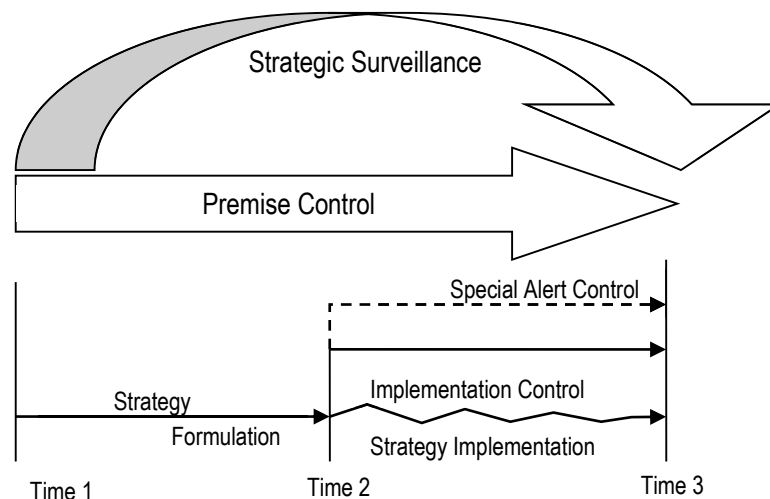
- ◆ It is easy to miss this issue of managing linkages between primary activities in an analysis if, for example, the organization's competences in marketing activities and operations are assessed separately. The operations may look good because they are geared to high-volume, low-variety, low-unit-cost of 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.

16. Types of Strategic Control: There are four types of strategic control as follows:

- ◆ **Premise control:** A strategy is formed on the basis of certain assumptions or premises about the 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:
 - (i) Environmental factors such as economic (inflation, liquidity, interest rates), technology, social and regulatory.
 - (ii) Industry factors such as competitors, suppliers, substitutes.
- ◆ **Strategic surveillance:** Contrary to the premise control, the strategic surveillance is unfocussed and loose form of strategic control which is also very helpful. It involves general monitoring of various sources of information to uncover unanticipated information having a bearing on the organizational strategy. It involves casual environmental browsing. Reading financial and other newspapers, business magazines, meetings, conferences, discussions at clubs and so on can help in strategic surveillance.
- ◆ **Special alert control:** At times unexpected events may force organizations to reconsider their strategy. Sudden changes in government, natural calamities, terrorist

attacks, unexpected merger/acquisition by competitors, industrial disasters and other such events may trigger an immediate and intense review of strategy. Organizations to cope up with these eventualities, form crisis management teams.

- ◆ **Implementation control:** Implementation control is directed towards assessing the need for changes in the overall strategy in light of unfolding events and results associated with incremental steps and actions. The two basis forms of implementation control are:
 - (i) *Monitoring strategic thrusts:* Monitoring strategic thrusts help managers to determine whether the overall strategy is progressing as desired or whether there is need for readjustments.
 - (ii) *Milestone Reviews.* All key activities necessary to implement strategy are segregated in terms of time, events or major resource allocation. It normally involves a complete reassessment of the strategy. It also assesses the need to continue or refocus the direction of an organization.



Source: "Strategic management-formulation, Implementation and control" by John A Pearce II, Richard B Robinson, Jr. and Amita Mital.

These four strategic controls steer the organisation and its different sub-systems to the right track. They help the organisation to negotiate through the turbulent and complex environment.

17. (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

18. TQM or Total Quality Management is a people-focused management system that aims at continual increase in customer satisfaction at continually lower real cost. There is a sustained management commitment to quality and everyone in the organisation and the supply chain is responsible for preventing rather than detecting defects.

TQM is a total system approach (not a separate area or program) and an integral part of high-level strategy. It works horizontally across functions and departments, involves all employees, top to bottom, and extends backward and forward to include the supply chain and the customer chain. TQM stresses learning and adaptation to continual change as keys to organizational success.

Principles guiding TQM

Implementing TQM requires organization wide support. There are several principles that guide success of TQM. Various principles that guide the total quality management philosophy are as follows:

- A sustained management commitment to quality

- Focusing on the customer
- Preventing rather than detecting defects
- Universal quality responsibility
- Quality measurement
- Continuous improvement and learning
- Root cause corrective action
- Employee involvement and empowerment
- The synergy of teams
- Thinking statistically
- Inventory reduction
- Value improvement
- Supplier teaming
- Training