PAPER – 7: INFORMATION TECHNOLOGY AND STRATEGIC MANAGEMENT

SECTION – A: INFORMATION TECHNOLOGY

QUESTIONS

1. Define the following terms briefly:
   (i) Cache Memory
   (ii) Six Sigma
   (iii) Virtual Memory
   (iv) Firewall
   (v) Multiplexer
   (vi) Operating System
   (vii) Business Information System
   (viii) Process (from a business perspective)
   (ix) Expert System
   (x) Identification Cards
2. Differentiate between the following:
   (i) Client-Server Network and Peer-to-Peer Network
   (ii) Ring Network and Star Network
   (iii) Asynchronous and Synchronous Data Transmission
   (iv) Data Store and Data Flow in Data Flow Diagrams
   (v) Manual Information Processing Cycle and Computerized Information Processing Cycle
   (vi) Tacit Knowledge and Explicit Knowledge
   (vii) Hardware Encryption and Software Encryption
   (viii) Information and Knowledge
   (ix) Complex Instruction Set Computer (CISC) and Reduced Instruction Set Computer (RISC)
   (x) Infrastructure as a Service (IaaS) and Software as a Service (SaaS)
3. Write short note on the following:
   (i) Bluetooth
   (ii) TCP/IP
   (iii) Decision Table

(iv) Mesh Topology

(v) Artificial Intelligence

(vi) Mobile Commerce

(vii) Grid Computing

(viii) Smart Phone

(ix) Micro Architecture

(x) Value Chain Automation

Accounts BPM

4. Discuss the different cycles of an Account Business Process Management.

Controls in BPA

5. Define Controls and discuss their objectives and importance in Business Process Automation.

Internetwork Processors

6. What do you understand by Internetwork Processors? Discuss some of them, in brief.

Information Systems

7. What do you understand by the term "Information System"? Discuss its components.

Business Intelligence

8. Discuss Business Intelligence and its tools.

Business Process Automation

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

Information System Life Cycle

10. Discuss Information System Life Cycle in detail.

Database Management System

11. What do you understand by the term Database Management System? Discuss its advantages and disadvantages.

Telecommunication Media

12. What is Transmission Media? Discuss its various types.

Network Threats

13. Define Threat. What are various threats to a computer network's security?

Cloud Computing

14. Define Cloud Computing. What are the different types of clouds in a Cloud Computing Environment?

Mapping Systems

15. (a) Draw an E-R Diagram based on the following facts:

A bank records information about its customers and their accounts. A specific account can have many owners (customers), and a specific customer can own an have only one account at most. Information about customers includes their social security number, phone number, name and address. Information about accounts includes account number, type, and balance. Further, every customer can

(b) Analyze the completeness of the following reduced decision table:

	Table X	R1	R2	R3	R4	R5
C1	Condition A	Y	N	N	N	N
C2	Condition B	Y	Y	N	N	N
C3	Condition C	-	N	-	Y	N
C4	Condition D	-	-	-	N	N
A1	Action 1	X		X	X	
A2	Action 2		X			X

(c) An electric supply company charges the following rates for its domestic consumers:

No. of units consumed	Charges/unit (Rs.)
For the first 200 units	1.60
For the next 300 units	2.10
Over 500 units	3.90

Surcharge @ 20% of the bill is to be added to the charges.

Draw a Flow chart for the above, which will read the consumer number and the number of units consumed and print out the total charges with the consumer number and the units consumed.

SUGGESTED ANSWERS/HINTS

1. (i) Cache Memory: Cache (pronounced as cash) is a smaller but faster memory, which stores copies of the data from the most frequently used main memory locations so that processors or registers can access it more rapidly than main memory. It is the property of locality of reference, which allows improving substantially the effective memory access time in a computer system.

   (ii) Six Sigma: Six Sigma is a set of strategies, techniques, and tools for process improvement. It seeks to improve the quality of process outputs by identifying and removing the causes of defects and minimizing variability in manufacturing and business processes.

   (iii) Virtual Memory: Virtual Memory is not a separate device but an imaginary memory area supported by some Operating Systems (for example, Windows) in conjunction with the hardware. If a computer lacks the Random Access Memory (RAM) needed to run a program or operation, Windows uses virtual memory to compensate. Virtual memory combines computer's RAM with temporary space on the hard disk. When RAM runs low, virtual memory moves data from RAM to a space called a paging file thus freeing up RAM to complete its work. Thus, Virtual memory is an allocation of hard disk space to help RAM.

   (iv) Firewall: Firewall is a device that forms a barrier between a secure and an open environment when the latter environment is usually considered hostile, for example, the Internet. It acts as a system or combination of systems that enforces a boundary between more than one networks. In firewalls, access controls are common form of controls encountered in the boundary subsystem by restricting the use of system resources to authorized users, limiting the actions authorized users can take with these resources and ensuring that the users obtain only authentic system resources.

   (v) Multiplexer: A multiplexer is a communications processor that allows a single communications channel to carry simultaneous data transmissions from many terminals. Typically, a multiplexer merges the transmissions of several terminals at one end of a communications channel, while a similar unit separates the individual transmissions at the receiving end.

   (vi) Operating System: An Operating System (OS) is a set of computer programs that manages computer hardware resources and acts as an interface with computer applications programs. The operating system is a vital component of the system software in a computer system. Application programs usually require an operating system to function that provides a convenient environment to users for executing their programs. Some prominent Operating systems used nowadays are Windows 7, Windows 8, Linux, UNIX, etc.

(vii) Business Information System: Business Information Systems (BIS) may be defined as systems integrating Information Technology, people and business. BIS brings business functions and information modules together for establishing effective communication channels which are useful for making timely and accurate decisions and in turn contribute to organizational productivity and competitiveness.

(viii) Process (from a business perspective): From a business perspective, a process is a coordinated and standardized flow of activities performed by people or machines, which can traverse functional or departmental boundaries to achieve a business objective and creates value for internal or external customers.

(ix) Expert System: An Expert System (ES) is a computerized information system that allows non-experts to make decisions comparable to those of an expert. Expert Systems are used for complex or ill-structured tasks that require experience and specialized knowledge in narrow, specific subject areas. The aim of the Expert System is to have a team of seasoned specialists holding industry-wide experience and has leveraged its strengths to plan and execute a miscellaneous variety of projects for Defence, Government, Finance, Telecom, and Engineering sectors.

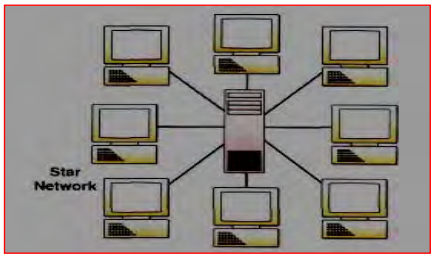
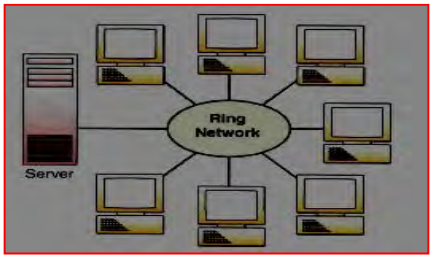
(x) Identification Cards: Identification cards are used to store information required in an authentication process. These cards that are used to identify a user need to go through procedural controls like application for a card, preparation of the card, issue of the card, use of the card and return of the card or card termination phases.

2. (i) Differences between Client Server Network and Peer-to-Peer Network are given below:

Client Server Network	Peer-to-Peer Network
A client computer typically communicates only with servers, not with other clients.	Every computer is equal and can communicate with any other computer on the network to which it has been granted access rights.
A central server handles all security and file transactions.	Each machine shares its own resources and handles its own security.
It is more expensive as it requires a central file server, server software and client licenses.	It is relatively less expensive as it does not require a dedicated machine, server software or special client licenses.
More secure.	Lesser secure as the network control is handed to the end-users.
Backup is centralized on the server; managed by network administrator. Backup by device and media only	Backup is decentralized; managed by users. Backup devices and media are required at each workstation.

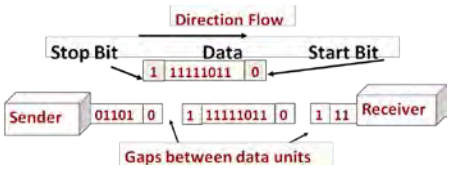
required at server.	
The performance is relatively high as the server is dedicated and does not handle other tasks.	The performance is relatively low.
In case of failure of server, the whole network fails.	No single point of failure in the network.
C/S model relies on the power and stability of a single computer ie. Server.	P2P gives each workstation equivalent capabilities and relies heavily on the power and bandwidth of each individual computer.
Example - Email, network printing, and the World Wide Web.	Example - Napster, Gnutella, Freenet, BitTorrent and Skype.

(ii) Differences between Star Network and Ring Network are given below:

Star Network	Ring Network
The central unit (server) in the network acts as the traffic controller among all the other computers tied to it under centralized approach.	Local computer processors are tied together sequentially in a ring with each device being connected to two other devices under a decentralized approach.
	
A node failure does not bring down the entire network. Failure of server affects the whole network.	Failure of one computer on the network can affect the whole network.
New nodes can be added easily without affecting rest of the network.	Moving, adding and changing the nodes can affect the network.
A star network is well suited to companies with one large data processing facility shared by a number of smaller departments.	Ring networks offer high performance for a small number of workstations or for larger networks where each station has a similar workload.
It is easier to diagnose network	It is difficult to troubleshoot a ring

problems through a central hub.	network.

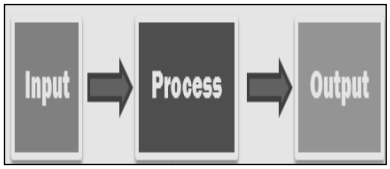
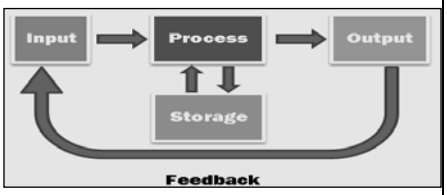
(iii) Differences between Asynchronous Data Transmission and Synchronous Data Transmission are as follows:

Asynchronous Transmission	Synchronous Transmission
The timing of signal is unimportant, Receiver accepts bytes with no regard to rhythm in which it is sent.	The bit stream combined into "frames" sent at a fixed rate using same clock signals at both sides.
Each data word is accompanied by Start-Stop bits.	Allows characters to be sent down the line without Start-Stop bits.
To alert the receiver to the arrival of new group of bytes, an extra bit 0, called Start bit is added in the beginning of the byte and a Stop bit 1, appended at the end of the byte to let receiver know that the byte is finished.	Each byte is transmitted without a gap, thus timing is very important at receiver's end to accurately count the number of bits arriving.
	
Extra Start-Stop bits slow down the transmission process relatively.	Transmission is faster as in absence of Start-Stop bits, many data words can be transmitted per second.
It is relatively cheaper.	The synchronous device is more expensive to build as it must be smart enough to differentiate between the actual data and the special synchronous characters.
More reliable as the Start-Stop bits ensure that the sender and the receiver remain in step with one another.	Chances of data loss are relatively higher.
It is less efficient.	It is more efficient.

(iv) Data Store: 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. In Data Flow Diagrams, 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: 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.

(v) Differences between Manual Information Processing cycle and Computerized Information Processing Cycle are as follows:

Manual Information Processing Cycle	Computerized Information Processing Cycle
These are the systems where the level of manual intervention is very high.	These are systems where computers are used at every stage of transaction processing.
The components of a manual information processing cycle include: Input, Processing and Output.	The components of a computerized information processing cycle include: Input, Processing, Storage and Output.
	
As the level of human intervention is very high, the quality of information generated from these systems is prone to flaws such as delayed information, inaccurate information, incomplete information and low levels of detail.	As the processing is computerized the quality of information generated from these systems is timely, accurate, fast and reliable.
Eg. valuation of exam papers, teaching, operations in operation theatres, ticket checking by railway staff in trains, buying of grocery, billing done by small medical shops, people maintaining books manually, etc.	Eg. Billing in shopping malls, Air Ticket reservation etc.

(vi) Differences between Explicit Knowledge and Tacit Knowledge are as follows:

Explicit Knowledge	Tacit Knowledge
Explicit knowledge is that knowledge	Tacit knowledge, on the other hand,

which can be formalized easily and as a consequence is easily available across the organization.	resides in a few often-in just one person and hasn't been captured by the organization or made available to others.
Explicit knowledge is articulated, and represented as spoken words, written material and compiled data.	Tacit knowledge is unarticulated and represented as intuition, perspective, beliefs, and values that individuals form based on their experiences.
This type of knowledge is codified, easy to document, transfer and reproduce.	It is personal, experimental and context-specific. It is difficult to document and communicate the tacit knowledge.
For example - Online tutorials, Policy and procedural manuals.	For example - hand-on skills, special know-how, employee's experiences.

(vii) Hardware Encryption: Hardware Encryption devices are available at a reasonable cost, and can support high speed traffic. If the Internet is being used to exchange information among branch offices or development collaborators, for instance, use of such devices can ensure that all traffic between these offices is secure.

Software Encryption: Software Encryption is typically employed in conjunction with specific applications. Certain electronic mail packages, for example, provide encryption and decryption for message security.

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

Information	Knowledge
Information is piecemeal, fragmented and particular.	Knowledge is structured, coherent, and often universal.
Information is timely, transitory, and may even be 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) Differences between CISC and RISC are given as follows:

CISC	RISC
CISC stands for Complex	RISC stands for Reduced Instruction Set

Instruction Set Computer.	Computer.
CISC chips do all of the processing themselves.	RISC chips distribute some of their processing to other chips.
Emphasis on hardware.	Emphasis on software.
Includes multi-clock, complex instructions.	Includes single-clock, reduced instruction only.
CISC chips are more common in computers that have a wider range of instructions to execute.	RISC chips are finding their way into components that need faster processing of a limited number of instructions, such as printers and games machines.
The CISC approach attempts to minimize the number of instructions per program, sacrificing the number of cycles per instruction.	RISC does the opposite, reducing the cycles per instruction at the cost of the number of instructions per program.
Small code sizes, high cycles per second.	Low cycles per second, large code sizes.
Memory-to-Memory: "LOAD" and "STORE" incorporated in instructions.	Register-to-Register: "LOAD" and "STORE" are independent instructions.
Relatively lesser RAM is required.	Because there are more lines of code, more RAM is needed to store the assembly level instructions. The compiler must also perform more work to convert a high-level language statement into code of this form.
CISC chips have an increasing number of components and an ever increasing instruction set and so are always slower and less powerful at executing “common” instructions.	RISC chips have fewer components and a smaller instruction set, allowing faster accessing of “common” instructions.
After a CISC-style "MULT" command is executed, the processor automatically erases the registers. If one of the operands needs to be used for another computation, the processor must re-load the data from the memory bank into a register.	In RISC, the operand will remain in the register until another value is loaded in its place.
CISC chips are relatively slow per instruction, but use fewer instructions. Optimized for the	RISC chips are fewer, and relatively simpler and faster than the large, complex and slower CISC instructions. However, more

programmer.	instructions are needed to accomplish a task. It's easier to write powerful optimized compilers, since fewer instructions exist.

(x) Infrastructure as a Service (IaaS): It is the foundation of cloud services. It provides clients with access to server hardware, storage, bandwidth and other fundamental computing resources. The service is typically paid for on a usage basis. The service may also include dynamic scaling so that if the customer needs more resources than expected, s/he can get them on the fly (probably to a given limit). It provides access to shared resources on need basis, without revealing details like location and hardware to clients.

Software as a Service (SaaS): It includes a complete software offering on the cloud. Users can access a software application hosted by the cloud vendor on pay-per-use basis. This is a well-established sector. SaaS is a model of software deployment where an application is hosted as a service provided to customers across the Internet. By removing the need to install and run an application on a user's own computer. It is seen as a way for businesses to get the same benefits as commercial software with smaller cost outlay. SaaS can alleviate the burden of software maintenance and support but users relinquish control over software versions and requirements.

3. (i) Bluetooth: Bluetooth is a wireless technology (low-power, short-range radio signal) standard for exchanging data over short distances up to 50 meters (164 feet) from fixed and mobile devices, creating Personal Area Networks (PANs) with high levels of security. It is a feature which is used every day through a number of compatible devices like USB, handheld PDA, phone headset and most popularly the mobile phone. Few devices that utilize Bluetooth technology are Keyboards and mice, Printers, Cell phones and headsets, PDAs (Personal Digital Assistants), Desktop and laptop computers, Digital cameras, and Remotes: replacing IR (infrared).Through the use of a mobile phone; we can send pictures, videos, exchange business cards and also transfer files to our PC. Both data and voice transmissions can be sent and received through the use of short range networks.

(ii) TCP/IP: The Internet uses a system of telecommunications protocol suite called as Transmission Control Protocol/Internet Protocol (TCP/IP). TCP/IP consists of five levels of protocols that can be related to the seven layers of the OSI architecture. TCP/IP is used by the Internet and by all Intranets and extranets. Many companies and other organizations are also converting their client/server networks to TCP/IP. Five layers of TCP/IP are as follows:

- Application or Process layer: This layer provides communications services for end user applications and appropriate data transmission formats and codes and supports the accomplishment of telecommunications sessions.

- Host-to-Host Transport layer: This layer supports the organization and transfer of data between nodes in the network.
- Internet Protocol (IP): This layer provides appropriate routing by establishing connections among network links.
- Network Interface: This layer supports error-free organization and transmission of data in the network.
- Physical layer: This layer provides physical transmission of data on the telecommunications media in the network.

(iii) 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 quadrants:

Condition Stub	Condition Entries
Action stub	Action Entries

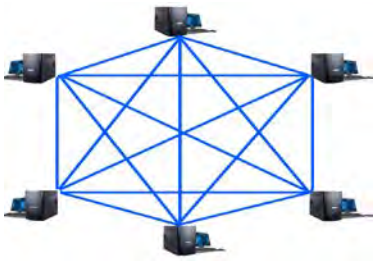
(a) Condition Stub - which comprehensively lists the comparisons or conditions;

(b) Action Stub - which comprehensively lists the actions to be taken along the various program branches;

(c) Condition Entries - which list in its various columns the possible permutations of answer to the questions in the conditions stub; and

(d) 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.

(iv) Mesh Topology: In this topology, there is random connection of nodes using communication links. A mesh network may be fully connected as shown in Figure or connected with only partial links. In fully interconnected topology, each node is connected by a dedicated point to point link to every node. The reliability is very high as there are always alternate paths available if direct link between two nodes is down or dysfunctional. Fully connected networks are not very common because of the high cost. Only military installations, which need high degree of redundancy, may have such networks, that too with a small number of nodes.



Advantages of mesh network are as under:

- Yields the greatest amount of redundancy in the event that if one of the nodes fails, the network traffic can be redirected to another node.
- Network problems are easier to diagnose.

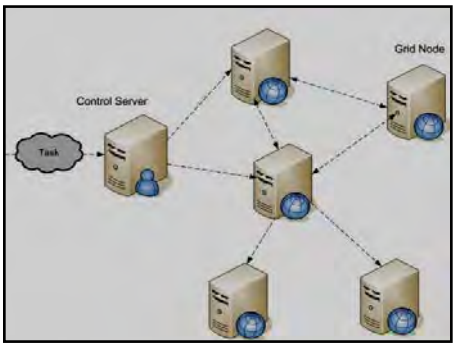
Disadvantage of mesh network is its high cost of installation and maintenance (more cable is required than any other configuration).

(v) Artificial Intelligence: Artificial Intelligence (AI) is the vicinity of computer science focusing on creating machines that can fit into place on behaviours that humans regard as intelligent. It is a research field that studies how to comprehend the intelligent human behaviours on a computer. The decisive objective of AI is to make a computer that can discover, sketch, and crack problems in parallel. A significant driver for any application of artificial intelligence is fresh and innovative code.

The subject of Artificial Intelligence spans a wide horizon dealing with various kinds of knowledge representation schemes, different techniques of intelligent search, various methods for resolving uncertainty of data and knowledge, different schemes for automated machine learning and many others. Expert Systems, Pattern Recognition, Natural language processing are some of the various purposes on which AI may be applied.

(vi) Mobile Commerce: Mobile Commerce (m-Commerce) is about the explosion of applications and services that are becoming accessible from Internet-enabled mobile devices. It involves new technologies, services and business models. M-commerce is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and Personal Digital Assistants (PDAs). m-Commerce enables users to access the Internet without needing to find a place to plug in. Some of the industries that are affected by m-commerce include Financial Services, Telecommunications, Service/Retail and Information Services.

(vii) Grid Computing: Grid Computing is a computer network in which each computer's resources are shared with every other computer in the system. A Grid Computing System can be as simple as a collection of similar computers running on the same operating system or as complex as inter-networked systems comprised of every computer platform we can think of. Processing power, memory and data storage are all community resources that authorized users can tap into and leverage for specific tasks through a typical grid model as shown in the figure.



In the ideal grid computing system, every resource is shared, turning a computer network into a powerful supercomputer. Every authorized computer would have access to enormous processing power and storage capacity.

(viii) Smart Phone: A Smart Phone 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. This handheld device integrates mobile phone capabilities with the more common features of a handheld computer or PDA. Smartphone allows users to store information, e-mail and install programs, along with using a mobile phone in one device. Modern smart phones 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.

(ix) Micro Architecture: Also known as Computer organization, it is a lower level detailed description of the system that is sufficient for completely describing the resources and methods used to achieve architecture specification of the computing system, and how they are inter-connected and inter-operated in order to implement the ISA. The term typically includes the way in which these resources are organized as well as the design techniques used in the processor to reach the target cost and performance goals. The Micro architecture can be seen as how the Instruction Set Architecture does and what it does. It's how everything is ultimately organized on the chip or processor.

(x) Value Chain Automation: Value Chain refers to separate activities which are necessary to strengthen an organization's strategies and are linked together both inside and outside the organization. It is defined as a chain of activities that a firm operating in a specific industry performs in order to deliver a valuable product or service for the market. The idea of the Value Chain is based on the process view of organizations, the idea of seeing a manufacturing (or service) organization as a system, made up of subsystems each with inputs, transformation processes and outputs. For example - Value chain of a manufacturing organization comprises of primary activities that include inbound logistics, operations, outbound logistics, marketing and sales, and services; and the supportive activities that relate to procurement, human resource management, technology development and infrastructure. Some of the business functions of the value chain are - Research and development; Design of products, services, or processes; Production; Marketing and sales; Distribution and Customer service.

4. The processing cycles of an Accounts Business Process Management are namely Financing Cycle, Revenue Cycle, Expenditure Cycle, Human Resource and the General Ledger & Reporting Systems and the flow of data between them. These systems are discussed as follows:

(i) Financing Cycle: A transaction processing cycle combines one or more types of transactions having related features or similar objectives. The cycle consists of a set of transactions leading to the recognition of a major economic event on the financial statements. It is through the study of transaction cycles that we gain a clear view of a firm's processing framework.

(ii) Revenue Cycle: It includes transactions surrounding the recognition of revenue involving accounts like Sales, Accounts Receivable, Inventory and General Ledger. It involves capturing and recording of customer orders; shipment of the goods; recording of the cost of goods sold; the billing process and the recording of sales and accounts receivable; and capturing and recording of cash receipts. Common Source Documents & functions of Revenue Cycle are as follows:

Source Document	Function
Sales Order	Record Customer Order
Delivery Ticket	Record Delivery to Customer
Remittance Advice	Receive Cash
Deposit Slip	Record Amounts Deposited
Credit Memo	Support Adjustments to Customer Accounts

(iii) Expenditure Cycle: It includes transactions surrounding the recognition of expenditures involving accounts like Purchases, Accounts Payable, Cash Disbursements, Inventory and General Ledger. It includes preparation and recording of purchase orders; receipt of goods and the recording of the cost of inventory; receipt of vendor invoices; recording of accounts payable and preparation and recording of cash disbursements. The cycle also includes the preparation of employee pay-checks and the recording of payroll activities. Common Source Documents & functions of Revenue Cycle are as follows:

Source Document	Function
Purchase Requisition	Request that purchasing department order goods.
Purchase Order	Request goods from vendors.
Receiving Report	Record receipt of merchandise.
Check	Pay for items.

(iv) Human Resource Cycle: Common Source Documents & Functions are as follows:

Source Document	Function
W4 forms	Collect employee withholding data.
Time cards	Record time worked by employees.
Job time tickets	Record time spent on specific jobs.

(v) General Ledger & Reporting System: Common Source Document and its function is as follows:

General Ledger and Reporting System	
Journal Voucher	Record entry posted to general ledger.

(vi) Data Processing Cycle: In the Data Processing Cycle, the processes of business activities about which data must be collected and processed are identified. Further, the emphasize could be on the activities, resources affected by that event, the agents who participate in that event; where the event could be the Input, Output, Processing, Storage, Alerts, Controls and Feedback. All the above cycles of processing involves data processing activities which has been updated and stored. The stored information has details about the resources affected by the event and agents who participated in the activity.

5. Controls: Controls are defined as policies, procedures, practices and organization structure that are designed to provide reasonable assurance that business objectives are achieved and undesired events are prevented or detected and corrected.

Controls' Objectives

Major controls' objectives are given as follows:

- Authorization – This ensures that all transactions are approved by responsible personnel in accordance with their specific or general authority before the transactions are recorded.
- Completeness – This ensures that no valid transactions have been omitted from the accounting records.
- Accuracy - This ensures that all valid transactions are accurate, consistent with the originating transaction data, and information is recorded in a timely manner.
- Validity - This ensures that all recorded transactions fairly represent the economic events that actually occurred, are lawful in nature, and have been executed in accordance with management's general authorization.
- Physical Safeguards and Security - This ensures that access to physical assets and information systems are controlled and properly restricted to authorized personnel.
- Error Handling - This ensures that errors detected at any stage of processing receive prompts corrective action and are reported to the appropriate level of management.
- Segregation of Duties - This ensures that duties are assigned to individuals in a manner that ensures that no one individual can control both the recording function and the procedures relative to processing a transaction.

Importance of Controls in BPA

In today's computerized information systems, most of the business processes are being automated. Enterprises are increasingly relying on IT for business information and transaction processing. The innovations in IT components such as hardware, software, networking technology, communication technology and ever-increasing bandwidth are leading to evolution completely new business models.

All these new business models and new methods presume that the information required by business managers is available all the time and is accurate. However, there is a need to ensure that all information that is generated from system is accurate, complete and reliable for decision making, hence the requirement for proper controls.

6. Internetwork Processors: Telecommunications networks are interconnected by special-purpose communications processors called Internetwork Processors such as Switches, Routers, Hubs, Bridges, Repeaters and Gateways.
   - Switch - Switch is a communications processor that makes connections between telecommunications circuits in a network so that a telecommunications message can reach its intended destination.
   - Router – Router is a communications processor that interconnects networks based on different rules or protocols, so that a telecommunications message can be routed to its destination.
   - Hub – Hub is a port-switching communications processor. This allows for the sharing of the network resources such as servers, LAN workstations, printers, etc.
   - Bridge – Bridge is a communications processor than connects numerous Local Area Networks (LAN) that have the same set of communication rules or protocols. They can only be used to connect networks of the same type. It magnifies the data transmission signal while passing data from one LAN to another.
   - Repeater – Repeater is a communications processor that boosts or amplifies the signal before passing it to the next section of cable in a network.
   - Gateway – Gateway is a communications processor that connects networks that use different communication architectures.
7. Information System: Information System (IS) is a combination of people, hardware, software, communication devices, network and data resources that processes (can be storing, retrieving, transforming information) data and information for a specific purpose. The system needs inputs from user (key in instructions and commands, typing, scanning) which will then be processed (calculating, reporting) using technology devices such as computers, and produce output (printing reports, displaying results) that will be sent to another user or other system via a network and a feedback method that controls the operation. In general, any specific Information System aims to support operations, management and decision-making.

Components of Information System

The main aim and purpose of each Information System is to convert the data into information which is useful and meaningful. This process consists of four basic concepts:

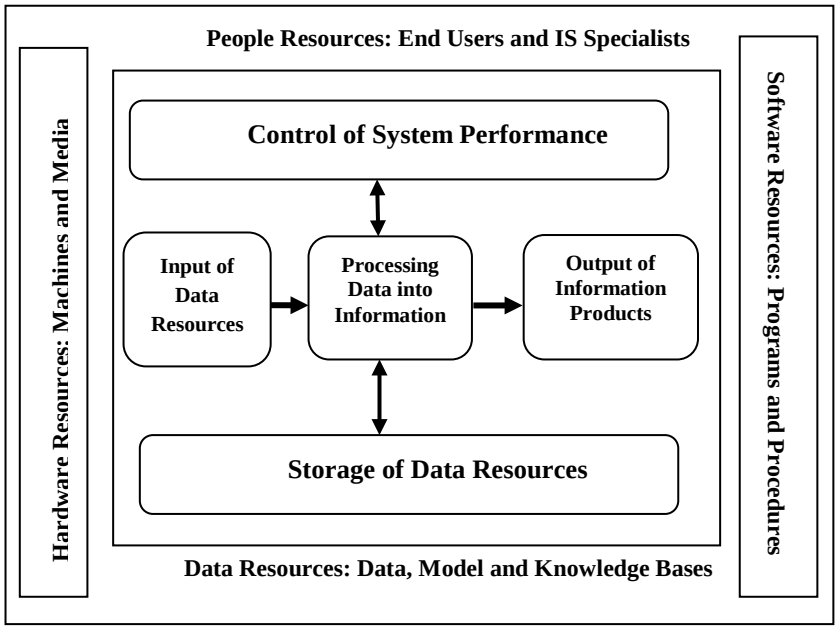
(i) People, Hardware, Software, and Data are four basic resources of information systems;

(ii) Human Resources consist of end users and IT specialists; Hardware involves machines and media; Software Resources consist of programs and procedures; and Data Resources include data, model, and knowledge base;

(iii) A Process is used to convert data into information for end users;

(iv) Information Processes consist of input, processing, output, storage, and control processes.

All components of information systems are mutually connected and cannot exist individually. The relationship between separated components is defined for best process efficiency. The output could be in terms of Printing, Reports, Graphics; Input can be data, information and instructions; Processing may involve calculations, programming and storing; Controls could be related to decision-making and the feedback.



Components of Information System

8. 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 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.

9. 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 tore-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.

10. Information System Life Cycle: This is commonly referred as Software/System Development Life Cycle (SDLC) which is a methodology used to describe the process of building information systems. It is the logical starting point in the entire life cycle of a computerized system. SDLC framework provides a sequence of activities for system designers and developers to follow. It consists of a set of steps or phases in which each phase of the SDLC uses the results of the previous one. This serves as a guideline to the designer, who seeks to use it as template while working on a project development.

An SDLC adheres to important phases that are essential for developers, such as Investigation, Analysis, Design, Implementation and Maintenance and Review; and are given as follows:

Phase 1: System Investigation

This phase examines that 'What is the problem and is it worth solving'? We would be doing a feasibility study 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?

Phase 2: System Analysis

This phase examines that 'What must the Information System do to solve the problem'? System analyst would be gathering details about the current system and will involve:

- Interviewing staff: at different levels from end-users to senior management;
- Examine current business: systems documents and output including current order documents, computer system procedures and reports used by operations and senior management;
- Sending out questionnaires: that have to be carefully constructed to elicit unambiguous answers; and
- Observation of current procedures: by spending time in various departments. A time and motion study can show where procedures could be more efficient or to detect bottlenecks.

The Systems Analyst will examine data and information flows in the enterprise using data flow diagrams; establish what the proposed system will actually do (not how it will do it); analyze costs and benefits; outline system implementation options. (e.g. in-house or using consultants); consider possible hardware configurations; and make recommendations.

Phase 3: System Designing

This phase examines that 'How will the Information System do what it must do to obtain the solution to the problem'? This phase specifies the technical aspects of a proposed system in terms of:

- Hardware platform: Computer, network capabilities, input, storage and output devices;

- Software: Programming language, package and database;
- Outputs: Report layouts and screen designs;
- Inputs: Documents, screen layouts and validation procedures;
- User interface: How users will interact with the computer system;
- Modular design: Of each program in the application;
- Test plan: Develop test data;
- Conversion plan: How the new system is to be implemented; and
- Documentation: Including systems and operations documentation. Later, a user manual will be produced.

Phase 4: System Implementation

This phase examines that 'How will the Solution be put into effect'? This phase involves the following steps:

- Coding and testing of the system;
- Acquisition of hardware and software; and
- Either installation of the new system or conversion of the old system to the new one.

In Installation, there are following major activities:

- Installing the new hardware, which may involve extensive re-cabling and changes in office layouts;
- Training the users on the new system; and
- Conversion of master files to the new system or creation of new master files.

In Conversion, there are following major activities:

- Direct Changeover: The user stops using the old system one particular day and starts using the new system from thereon, usually over a weekend or during a slack period.
- Parallel Conversion: The old system continues alongside the new system for a few weeks or months.
- Phased Conversion: Used with larger systems that can be broken down into individual modules which can be implemented separately at different times.
- Pilot Conversion: New system will first be used by only a portion of the enterprise, for example at one branch or factory.

Phase 5: System Maintenance and Review

This phase evaluates results of solution and modifies the system to meet the changing needs. Post implementation review would be done to address programming

amendments, adjustment of clerical procedures, modification of Reports, and request for new programs.

System maintenance could be with following different objectives:

- Perfective Maintenance: This implies that while the system runs satisfactorily, there is still room for improvement.
- Adaptive Maintenance: All systems will need to adapt to changing needs within a company.
- Corrective Maintenance: Problems frequently surface after a system has been in use for a short time, however thoroughly it was tested. Any errors must be corrected.

This is often the longest of the stages since it is an on-going process having some sort of long term continuum.

11. Database Management System: Database Management System are software that aid in organizing, controlling and using the data needed by the application programme. They provide the facility to create and maintain a well-organized database. Applications access the DBMS, which then accesses the data.

    In other words, DBMS may be defined as a computerized record keeping. Database is just an electronic filing cabinet i.e., a collection of computerized data files that helps us to do various operations on the files, such as adding new files to database, deleting existing files from database, inserting data in existing files, modifying data in existing files, deleting data in existing files, and retrieving or querying data from existing files. Oracle, My SQL, SQL Servers and DB2 are some of the commercially available Data Base Management Systems.

    Advantages of a DBMS

    Major advantages of DBMS are given as follows:

    - Permitting data sharing: One of the principle advantages of a DBMS is that the same information can be made available to different users.
    - Minimizing Data Redundancy: In DBMS, duplication of information or redundancy, if not eliminated, is carefully controlled or reduced i.e. there is no need to repeat the same data over and over again. Minimizing redundancy can therefore significantly reduce the cost of storing information on hard drives and other storage devices
    - Integrity can be maintained: Data integrity is maintained by having accurate, consistent, and up-to-date data. Updates and changes to the data only have to be made in one place in DBMS ensuring Integrity. The chances of making a mistake increase if the same data needs to be changed at several different places than making the change in one place.

- Program and file consistency: Using a DBMS, file formats and programs are standardized. This makes the data files easier to maintain because the same rules and guidelines apply across all types of data. The level of consistency across files and programs also makes it easier to manage data when multiple programmers are involved.
- User-friendly: DBMS makes the data access and manipulation easier for the user. DBMS also reduce the reliance of users on computer experts to meet their data needs.
- Improved security: DBMSs allow multiple users to access the same data resources which could lead to risk to an enterprise if not controlled. Security constraints can be defined i.e. Rules can be built to give access to sensitive data. Some sources of information should be protected or secured and only viewed by select individuals. Through the use of passwords, database management systems can be used to restrict data access to only those who should see it.
- Achieving program/data independence*:* In a DBMS data does not reside in applications but data bases program & data are independent of each other.
- Faster application development: In the case of deployment of DBMS, application development becomes fast. The data is already therein databases, application developer has to think of only the logic required to retrieve the data in the way a user needs.

Disadvantages of a DBMS

There are basically two major downsides to using DBMSs. One of these is cost (both system and user training), and the other is the threat to data security. These are given as under:

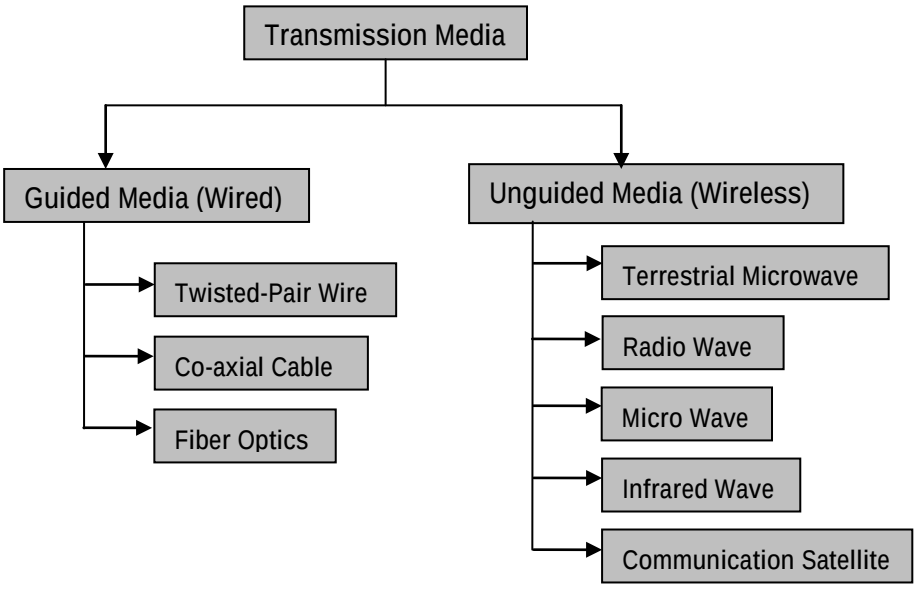
- Cost: Implementing a DBMS system can be expensive and time-consuming, especially in large enterprises. Training requirements alone can be quite costly.
- Security: Even with safeguards in place, it may be possible for some unauthorized users to access the database. If one gets access to database then it could be an all or nothing proposition.

12. Transmission Media connects the message source with the message receiver by means of Guided or Unguided Media.

Guided Media/Bound Media: Guided Transmission Media uses a "cabling" system that guides the data signals along a specific path. Some of the common examples of guided media are Twisted Pair, Coaxial cable and Fibre optics.

- Twisted-Pair Wire: Twisted-pair is ordinary telephone wire, consisting of copper wire twisted into pairs. It is the most widely used media for telecommunications and is used for both voice and data transmissions. It is used extensively in home and office telephone systems and many LANs and WANs.

- Coaxial Cable: This telecommunication media consists of copper or aluminium wire wrapped with spacers to insulate and protect it. 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. It is used extensively in office buildings and other work sites for local area networks.
- Fibre Optics: This media consists of one or more hair-thin filaments of glass fibre wrapped in a protective jacket. Signals are converted to light form and fired by laser in bursts. Optical fibres can carry digital as well as analog signals and provides increased speed and greater carrying capacity than coaxial cable and twisted-pair lines.



Unguided Media/Unbound Media: Unguided Transmission Media consists of a means for the data signals to travel but nothing to guide them along a specific path. The data signals are not bound to a cabling media. Some of the common examples of unguided media are Terrestrial Microwave, Radio Waves, Micro Waves, Infrared Waves and Communication Satellites.

- Terrestrial Microwave: Terrestrial microwave media uses the atmosphere as the medium through which to transmit signals and is used extensively for high-volume as well as long-distance communication of both data and voice in the form of electromagnetic waves.
- Radio Waves: Radio waves are an invisible form of electromagnetic radiation that varies in wavelength from around a millimeter to 100,000 km, making it one of the

widest ranges in the electromagnetic spectrum. Radio waves are most commonly used transmission media in the wireless Local Area Networks.

- Micro Waves: Microwaves are radio waves with wavelengths ranging from as long as one meter to as short as one millimeter, or equivalently, with frequencies between 300 MHz (0.3 GHz) and 300 GHz. These are used for communication, radar systems, radio astronomy, navigation and spectroscopy.
- Infrared Waves: Infrared light is used in industrial, scientific, and medical applications. Night-vision devices using infrared illumination allow people or animals to be observed without the observer being detected.
- Communication Satellites: Communication satellites use the atmosphere (microwave radio waves) as the medium through which to transmit signals. A satellite is some solar-powered electronic device that receives, amplifies, and retransmits signals; the satellite acts as a relay station between satellite transmissions stations on the ground (earth stations). They are used extensively for high-volume as well as long-distance communication of both data and voice.

13. Threat: A Threat is anything 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 - These originate mostly from inexperienced individuals using easily available hacking tools from the Internet. Many tools available to anyone on the Internet can be used to discover weaknesses in a company's network. These include port-scanning tools, address-sweeping tools, and many others. Most of these kinds of probes are done more out of curiosity than with a malicious intent in mind.

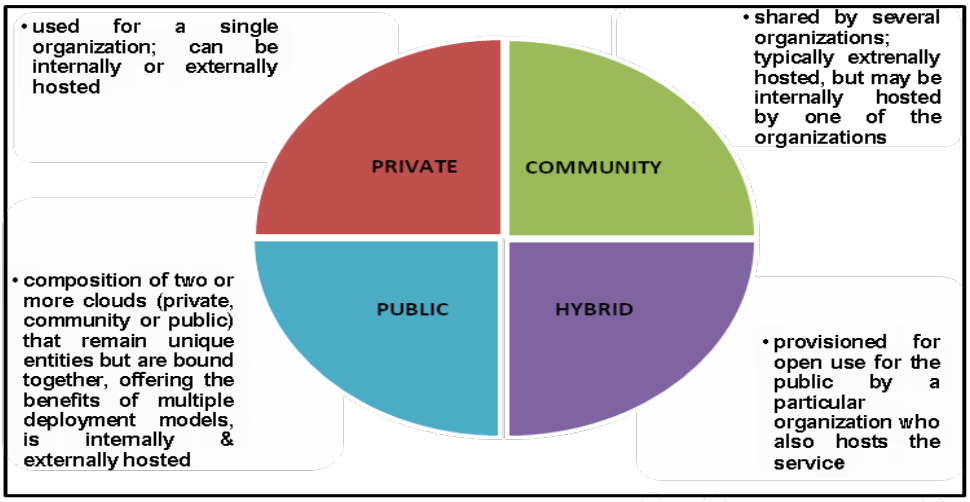
      For example, if a company's external web site is hacked; the company's integrity is damaged. Even if the external web site is separate from the internal information that sits behind a protective firewall, the public does not know that. All they know is that if the company's web site is hacked, then it is an unsafe place to conduct business.
    - Structured Threats - These originate from individuals who are highly motivated and technically competent and usually understand network systems design and the vulnerabilities of those systems. They can understand as well as create hacking scripts to penetrate those network systems. An individual who presents a structured threat typically targets a specific destination or group. Usually, these hackers are hired by industry competitors, or state-sponsored intelligence organizations.
    - External Threats - These originate from individuals or organizations working outside an organization, which does not have authorized access to organization's computer systems or network. They usually work their way into a network from the Internet or dialup access servers.

- ♦ Internal Threats - Typically, these threats originate from individuals who have authorized access to the network. These users either have an account on a server or physical access to the network. An internal threat may come from a discontented former or current employee or contractor. Majority of security incidents originate from internal threats.

14. Cloud Computing: Cloud computing is the use of various services, such as software development platforms, servers, storage, and software, over the Internet, often referred to as the "Cloud."

Cloud Computing Environment

The Cloud Computing environment can consist of multiple types of clouds based on their deployment and usage as shown in the Figure and explained as follows:



- Public Cloud: The public cloud is made available to the general public or a large industry group. They are administrated by third parties or vendors over the Internet, and services are offered on pay-per-use basis. The key benefits are as follows:

  (a) It is widely used in the development, deployment and management of enterprise applications, at affordable costs;

  (b) It allows organizations to deliver highly scalable and reliable applications rapidly and at more affordable costs.

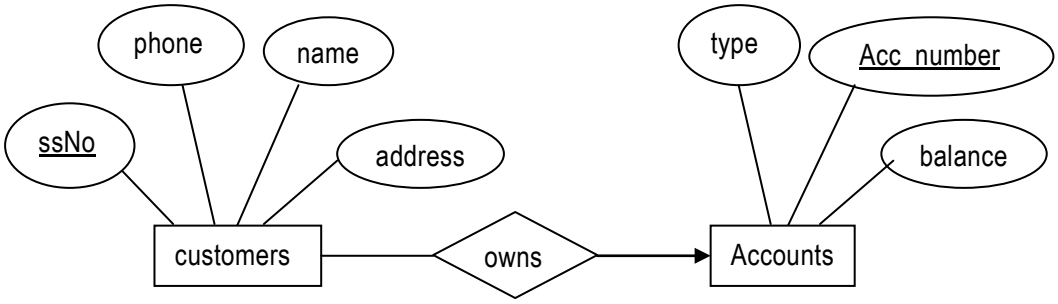
- Private Cloud: Also referred as Internal Cloud, this cloud computing environment resides within the boundaries of an organization and is used exclusively for the organization's benefits. They are built primarily by IT departments within enterprises who seek to optimize utilization of infrastructure 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 Cloud: 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.
- Hybrid Cloud: It is maintained by both internal and external providers. It is a composition of two or more clouds (Private, Community or Public). They have to maintain their unique identity, but are bound together by standardized data and application portability. With a hybrid cloud, organizations might run non-core applications in a public cloud, while maintaining core applications and sensitive data in-house in a private cloud.

15. (a) The E-R Diagram is as follows:

The underlined attributes represent the Primary Key which are unique and are used for identification of a record.



(b) To check for the completeness of the decision table, do the following:

- Count the number of dashes in the condition entries for each rule. The number of rules represented by each rule is 2^m, where m is the number of dashes. Where there are no dashes, the number represented is $2^0 = 1$. A single dash means $2^1 = 2$ and so on.
- Sum the number of dashes represented by the different rules as computed above.
- Compare the number of rules (no of dashes) represented by the reduced table with 2^n (where n is the number of conditions). If they are equal (and all other features are correct), the table is complete.

Now, Sum of the number of dashes in rows R1, R2, R3, R4 and R5 are

= $2^2 + 2^1 + 2^2 + 2^0 + 2^0$

= 4 + 2 + 4 + 1 + 1

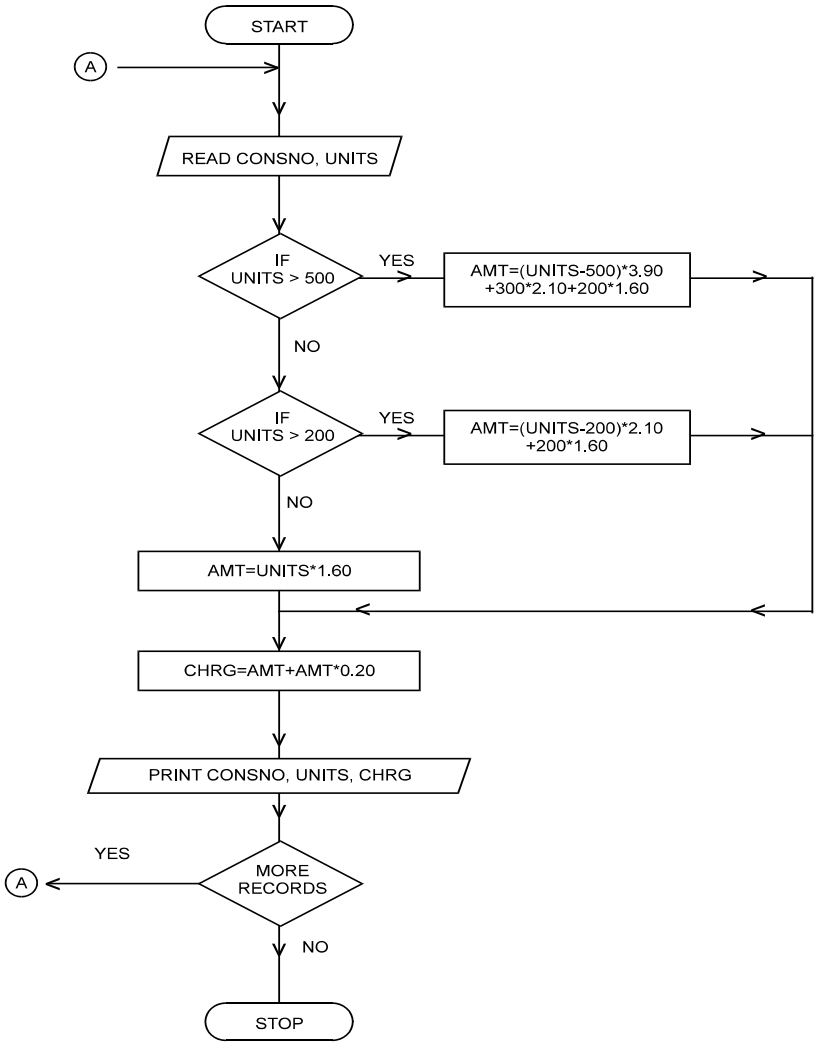
= 12 ----------(i)

Also, $2^{\text{number of conditions}} = 2^n = 2^4$ (where conditions are C1, C2, C3, C4)

= 16 ----------(ii)

Since (i) and (i) are not equal, thus the table is not complete.

(c) The required flow chart is given below:



CONSNO - Consumer Number UNITS - Number of Units consumed

CHRG - Total charges AMT - Total amount

SECTION – B: STRATEGIC MANAGEMENT

QUESTIONS

Correct/Incorrect with reasoning

1. State with reasons which of the following statements are correct/incorrect:
   (a) Diversity in environment makes it difficult to understand.
   (b) An organization with intense competition is unlucky.
   (c) The technology and business are highly interrelated and interdependent.
   (d) A sound strategy does not leave any scope for miscalculations.
   (e) The strategic management process ends with implementation.
   (f) Strategy formulation heavily relies on intuition and hunch.
   (g) One or two key success factors may outrank others.
   (h) Strategic planning always flows from top to bottom.
   (i) Stability strategies are do-nothing approach to manage.
   (j) Cost-plus pricing ensures profits in competition.
   (k) Network structure creates virtual organisations.
   (l) Unfreezing facilitates change.

Differences between the two concepts

2. Distinguish between the following:
   (a) Micro environment and Macro environment.
   (b) Forward integration and backward integration
   (c) Inbound logistics and outbound logistics
   (d) Concentric diversification and conglomerate diversification.

Short notes

3. Write short notes on the following:
   (a) Globalisation
   (b) strategic vision
   (c) Transformational leadership
   (d) Kieretsus
   (e) Hourglass Structure

Brief answers

4. Briefly answer the following questions:
   (a) What is a mission statement?
   (b) How production strategy implements, supports and drives higher strategies?
   (c) What do you understand by the term star in the context of BCG matrix?
   (d) What are the major dimensions of strategic decisions?
   (e) Benchmarking process helps to achieve improvement in diverse range of management functions. Discuss.

Descriptive Answers

Chapter 1-Business Environment

5. What is Environment? Briefly explain various macro environmental factors in Indian context.
6. What do you understand by the term business? Are business done for profit alone. Explain various objectives of business.

Chapter 2-Business Policy and Strategic Management

7. What do you understand by the term corporate strategy? Explain the concept with its characteristics. How would you argue that 'corporate strategy 'ensures the correct alignment of the firm with its environment'?
8. What do you understand by 'Strategy'? Explain the four generic strategies as discussed by Glueck and Jauch.

Chapter 3-Strategic Analysis

9. What is TOWS Matrix. How is it improvement over the SWOT Analysis? Describe the construction of TOWS Matrix.
10. Explain GE model. How is it useful in making strategic choices?

Chapter 4-Strategic Planning

11. Discuss how mergers and acquisitions are used for business growth. What are the various types of mergers?
12. What is diversification? Distinguish between vertically integrated diversification and horizontally integrated diversification.

Chapter 5-Formulation of Functional Strategy

13. What are functional strategies? How important are they for the business?
14. Explain the requirements for the successful implementation of supply chain management system?

Chapter 6-Strategic Implementation and Control

15. What is strategic change? How do you initiate strategic change in an organisation? Explain the change process proposed by Kurt Lewin.

16. What are the leadership roles played by a strategic leader? Distinguish between a transformational leader and a traditional leader.

Chapter 7-Reaching Strategic Edge

17 How internet is affecting the business? Explain the strategy-shaping characteristics of the E-commerce environment.

18. How six sigma can be implemented for *existing and new products.*

SUGGESTED ANSWERS / HINTS

1. (a) Correct: The environment encapsulates many different influences; the difficulty is in making sense of this diversity in a way which can contribute to strategic decision-making. Listing all conceivable environmental influences may be possible, but it may not be of much use because no overall picture emerges of really important influences on the organization.

   (b) Incorrect: Although competition makes organizational working difficult, intense competition is neither a coincidence nor bad luck. All organizations have competition. Multinationals and large organizations clash directly on every level of product and service. Mid-sized and small businesses also chase same customers and find that prices and product quality are bounded by the moves of their competitors. The benefits of competition are also enjoyed by the society and the markets in which organisations operate.

   (c) Correct: The fruits of technological research and development are available to society through business only and this also improves the quality of life of the society. Hence, technology is patronized by business. Technology also drives business and makes a total change on how it is carried out.

   (d) Incorrect: In a sound strategy, allowances are made for possible miscalculations and unanticipated events. Strategy is no substitute for sound, alert and responsible management. Strategy can never be perfect, flawless and optimal. It is in the very nature of strategy that it is flexible and pragmatic; it is art of the possible; it does not preclude second-best choices, trade-offs, sudden emergencies, pervasive pressures, failures and frustrations.

   (e) Incorrect: Strategy formulation, implementation, and evaluation activities are performed on a continual basis, not just at the end of the year or semi-annually. The strategic management process is dynamic and continuous. It never really ends. Any significant extraneous factor can trigger a change in the process.

(f) Incorrect: Strategy formulation is not a task that managers can get by with intuition, opinions, good instincts, and creative thinking. Judgments about what strategies to pursue flow directly from analysis of an organisational external environment and internal situation. It is a pragmatic approach in which strategies are carefully chosen from various alternatives after thorough analysis of micro and macro environment, competition, capabilities, resources, internal strengths, weaknesses and market position.

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

(h) Incorrect: Although strategic planning is a top level management function, the flow of planning can be from corporate to divisional level or vice-versa. 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 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. It may prefer to act as a catalyst and facilitator.

(i) Incorrect: Stability strategies are implemented by approaches wherein few functional changes are made in the products or markets. However, it is not a 'do nothing' strategy. It involves keeping track of new developments to ensure that the strategy continues to make sense. This strategy is typical for mature business organizations. Some small organizations will also frequently use stability as a strategic focus to maintain comfortable market or profit position.

(j) Incorrect: Theoretically, organizations may adopt cost plus pricing wherein a margin is added to the cost of the product to determine its price. However, in the competitive environment such an approach may not be feasible. More and more companies of today have to accept the market price with minor deviations and work towards their costs. They reduce their cost in order to maintain their profitability.

(k) Correct: In a network structure many activities are outsourced. A corporation organized in this manner is often called a virtual organization because it is composed of a series of project groups or collaborations linked by constantly changing non-hierarchical, cobweb-like networks. The network structure becomes most useful when the environment of a firm is unstable and is expected to remain

so. Under such conditions, there is usually a strong need for innovation and quick response. Instead of having salaried employees, it may contract with people for a specific project or length of time.

(I) Correct: Unfreezing makes the individuals or organizations aware of the necessity for change and prepares them for such a change. According to Kurt Lewin changes should not come as a surprise to the members of the organization. Sudden and unannounced change would be socially destructive and morale lowering. The management must pave the way for the change by first "unfreezing the situation", so that members would be willing and ready to accept the change. Unfreezing is the process of breaking down the old attitudes and behaviours, customs and traditions so that they start with a clean slate.

2. (a) The business environment consists of both the macro environment and the micro environment. Following are the differences between the two:

1. The micro environment refers to the forces that are very close to the company and affect its ability to do routine functions. Macro environment refers to all forces that are part of the larger periphery and distantly affect organization and micro environment.

2. Micro environment includes the company itself, its suppliers, marketing intermediaries, customer markets and competitors. Whereas macro environment includes demography, economy, natural forces, technology, politics, legal and socio-cultural.

3. The elements of micro environment are specific to the said business and affects it's working on short term basis. The elements of macro environment are general environment and affect the working of all the firms in an industry.

(b) Forward and backward integration forms part of vertically integrated diversification. In vertically integrated diversification, firms opt to engage in businesses that are vertically related to the existing business of the firm. While diversifying firms opt to engage in businesses that are linked forward or backward in the chain and enters specific product/process steps with the intention of making them into new businesses for the firm.

Backward integration is a step towards, creation of effective supply by entering business of input providers. Strategy employed to expand profits and gain greater control over production of a product whereby a company will purchase or build a business that will increase its own supply capability or lessen its cost of production. On the other hand forward integration is moving forward in the value chain and entering business lines that use existing products. Forward integration will also take place where organisations enter into businesses of distribution channels.

(c) Inbound logistics are the activities concerned with receiving, storing and distributing the inputs to the product/service. It includes all activities such as materials handling, stock control, transport etc.

Outbound logistics relate to collection, storage and distribution of the product to customers. It includes all activities such as storage/warehousing of finished goods, order processing, scheduling deliveries, operation of delivery vehicles, etc.

(d) Concentric diversification occurs when a firm adds related products or markets. On the other hand conglomerate diversification occurs when a firm diversifies into areas that are unrelated to its current line of business.

In concentric diversification, the new business is linked to the existing businesses through process, technology or marketing. In conglomerate diversification, no such linkages exist; the new business/product is disjointed from the existing businesses/products.

The most common reasons for pursuing a concentric diversification are that opportunities in a firm's existing line of business are available. However, common reasons for pursuing a conglomerate growth strategy is that opportunities in a firm's current line of business are limited or opportunities outside are highly lucrative.

3. (a) In simple economic terms, globalization refers to the process of integration of the world into one huge market. At the company level, globalization means two things: (a) the company commits itself heavily with several manufacturing locations around the world and offers products in several diversified industries, and (b) it also means ability to compete in domestic markets with foreign competitors.

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

(c) Transformational leadership style use charisma and enthusiasm to inspire people to exert them for the good of the organization. Transformational leadership style may be appropriate in turbulent environments, in industries at the very start or end of their life-cycles, in poorly performing organizations when there is a need to inspire a company to embrace major changes. Transformational leaders offer excitement, vision, intellectual stimulation and personal satisfaction. They inspire involvement in a mission, giving followers a 'dream' or 'vision' of a higher calling so as to elicit more dramatic changes in organizational performance. Such a leadership motivates followers to do more than originally affected to do by stretching their abilities and increasing their self-confidence, and also promote innovation throughout the

organization.

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

(e) In the recent years information technology and communications have significantly altered the functioning of organizations. The role played by middle management is diminishing as the tasks performed by them are increasingly being replaced by the technological tools. Hourglass organization structure consists of three layers with constricted middle layer. The structure has a short and narrow middle-management level. Information technology links the top and bottom levels in the organization taking away many tasks that are performed by the middle level managers. A shrunken middle layer coordinates diverse lower level activities. Contrary to traditional middle level managers who are often specialist, the managers in the hourglass structure are generalists and perform wide variety of tasks. They would be handling cross-functional issues emanating such as those from marketing, finance or production.

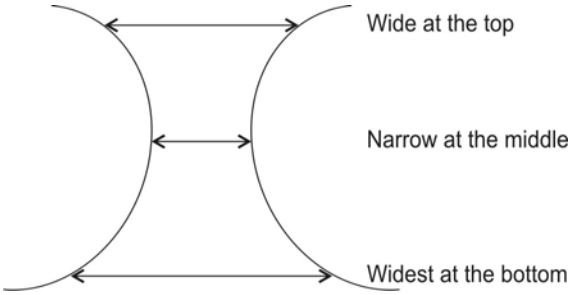


Figure: Hourglass Organisation Structure

Hourglass structure has obvious benefit of reduced costs. It also helps in enhancing responsiveness by simplifying decision making. Decision making authority is shifted close to the source of information so that it is faster. However, with the reduced size of middle management the promotion opportunities for the lower levels diminish significantly. Continuity at same level may bring monotony and lack of interest and it becomes difficult to keep the motivation levels high. Organisations try to overcome these problems by assigning challenging tasks, transferring laterally and having a system of proper rewards for performance.

4. (a) Mission statement is an answer to the question “Who we are and what we do” and hence has to focus on the organisation’s present capabilities, focus activities and business makeup. An organisation’s mission states what customers it serves, what need it satisfies, and what type of product it offers. It is an expression of the growth ambition of the organisation.

(b) 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.

(c) Star in BCG Matrix: BCG growth-share matrix is a simple way to portray an organisation's portfolio of investments. Growth share matrix also known for its cow and dog metaphors is popularly used for resource allocation in a diversified company. The matrix is based on combinations of relative market share of the products or SBUs and their market growth rate.

Stars, a position in the matrix, are characterised by high market share and high growth rate. They are products or SBUs that are growing rapidly. They also need heavy investment to maintain their position and finance their rapid growth potential. Business organisations that enjoy star positions have best opportunities for expansion and growth.

(d) The major dimensions of strategic decisions are given below:

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

(e) 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. 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. The latter are exchanged with the external client groups, say customers. The extent to which the business thrives depends on the manner in which it interacts with its environment. 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:

   1. Demographic environment.
   2. Economic environment.
   3. Political-Legal Environment.
   4. Socio-Cultural environment.
   5. Technological environment.
   6. Global environment.

   Students may briefly explain the above giving Indian examples. In demographic they may highlight that India constitutes about 16% of world population. Indian population is fairly young. There is great diversity. Labour is cheap and so on. The economic problems being faced presently and about 5% growth may be covered in economic environment. In political-legal students may touch upon new Companies Act, new Government, etc. The diversity in socio-cultural including dialects, differing traditions etc. can be mentioned in socio-cultural environment. India's promptness in accepting new technology, flow of business across the border including flow of knowledge and business processes may be covered in technological environment. The global environment may include

encouragement to foreign investors and exports. It may also cover our dependence on crude and how its prices are affecting India. A lot of changes are occurring within India and across the globe affecting the business. Students should list out different elements of macro environment and discuss the contemporary developments in each of the area. They may develop their own answers to cover different elements of environment.

6. The term business is wide and amenable to different usages. A business for our purposes can be any activity consisting of purchase, sale, manufacture, processing, and/or marketing of products and/or services. It is said that a business exists for profits. Profit, as a surplus of business, accrues to the owners. It is their share, just as wages are the share of workers. People invest in business for getting return. For business enterprises, profit is often regarded as the overall measure of performance. Business efficiency is often expressed in terms of percentage of profit to sales volume, to capital employed, to market value of corporate shares and so on. Outside investors also equate profit with the degree of business efficiency and managerial competence and commit their funds in light of such equation and other related assessments.

   Peter F Drucker has drawn two important conclusions about what is a business that are useful for an understanding of the term business. The first thing about a business is that it is created and managed by people. There will be a group of people who will take decisions that will determine whether an organization is going to prosper or decline, whether it will survive or will eventually perish. This is true of every business. The second conclusion drawn is that the business cannot be explained in terms of profit.

   The economic criterion of maximising profits for a firm has little relevance in the present times. Profit maximization, in simple terms is selling at a higher price than the cost. Profit maximization has been qualified with the long-term perspective and has been modified to include development of wealth, to include several non-financial factors such as goodwill, societal factors, relations and so on.

   A business has some purpose. A valid purpose of business is to create customers. It is for the businesses to create a customer or market. It is the customer who determines what a business is. The customer is the foundation of business and keeps it in existence. Organisations seek to balance the objectives in an appropriate manner. Some of the objectives of business are:

   1. Survival
   2. Stability
   3. Growth
   4. Efficiency
   5. Profitability

7. The term strategy is associated with unified design and action for achieving major goals, gaining command over the situation with a long-range perspective and securing a

critically advantageous position. Strategies are formulated at the corporate, divisional and functional level. Corporate strategies are formulated by the top managers. They include the determination of the business lines, expansion and growth, vertical and horizontal integration, diversification, takeovers and mergers, new investment and divestment areas, R & D projects, and so on. These corporate wide strategies need to be operationalized by divisional and functional strategies regarding product lines, production volumes, quality ranges, prices, product promotion, market penetration, purchasing sources, personnel development and like.

In general, a corporate strategy has the following characteristics:

- It is generally long-range in nature, though it is valid for short-range situations also and has short-range implications.
- It is action oriented and is more specific than objectives.
- It is multi-pronged and integrated.
- It is flexible and dynamic.
- It is formulated at the top management level, though middle and lower level managers are associated in their formulation and in designing sub-strategies.
- It is generally meant to cope with a competitive and complex setting.
- It flows out of the goals and objectives of the enterprise and is meant to translate them into realities.
- It is concerned with perceiving opportunities and threats and seizing initiatives to cope with them. It is also concerned with deployment of limited organizational resources in the best possible manner.
- It gives importance to combination, sequence, timing, direction and depth of various moves and action initiatives taken by managers to handle environmental uncertainties and complexities.
- It provides unified criteria for managers in function of decision making.

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

8. Strategies provide an integral framework for management and negotiate their way through a complex and turbulent external environment. Strategy seeks to relate the goals of the organisation to the means of achieving them.

   Strategy may be defined as a long range blueprint of an organisation's desired image, direction and destination what it wants to be, what it wants to do and where it wants to go. Strategy is meant to fill in the need of organisations for a sense of dynamic direction, focus and cohesiveness.

   The Generic Strategies

   According to Glueck and Jauch there are four generic ways in which strategic alternatives can be considered. These are stability, expansion, retrenchment and combinations.

   (i) Stability strategies: One of the important goals of a business enterprise is stability to safeguard its existing interests and strengths, to pursue well established and tested objectives, to continue in the chosen business path, to maintain operational efficiency on a sustained basis, to consolidate the commanding position already reached, and to optimise returns on the resources committed in the business.

   (ii) Expansion Strategy: Expansion strategy is implemented by redefining the business by adding the scope of business substantially increasing the efforts of the current business. Expansion is a promising and popular strategy that tends to be equated with dynamism, vigor, promise and success. Expansion includes diversifying, acquiring and merging businesses.

   (iii) Retrenchment Strategy: A business organisation can redefine its business by divesting a major product line or market. Retrenchment or retreat becomes necessary for coping with particularly hostile and adverse situations in the environment and when any other strategy is likely to be suicidal. In business parlance also, retreat is not always a bad proposition to save the enterprise's vital interests, or even to regroup and recoup the resources before a fresh assault and ascent on the growth ladder is launched.

   (iv) Combination Strategies: Stability, expansion or retrenchment strategies are not mutually exclusive. It is possible to adopt a mix to suit particular situations. An enterprise may seek stability in some areas of activity, expansion in some and retrenchment in the others. Retrenchment of ailing products followed by stability and capped by expansion in some situations may be thought of. For some organisations, a strategy by diversification and/or acquisition may call for a retrenchment in some obsolete product lines, production facilities and plant locations.

9. Heinz Weihrich has developed a matrix called TOWS matrix by comparing strengths and weaknesses of organization with that of market opportunities and threats, a variant of SWOT. It has been criticized that after conducting the SWOT Analysis managers frequently fail to come to terms with the strategic choices that the outcomes demand. In

order to overcome this, 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. The incremental benefit of the TOWS matrix lies in systematically identifying relationships between these factors and selecting strategies on their basis. The matrix is outlined below:

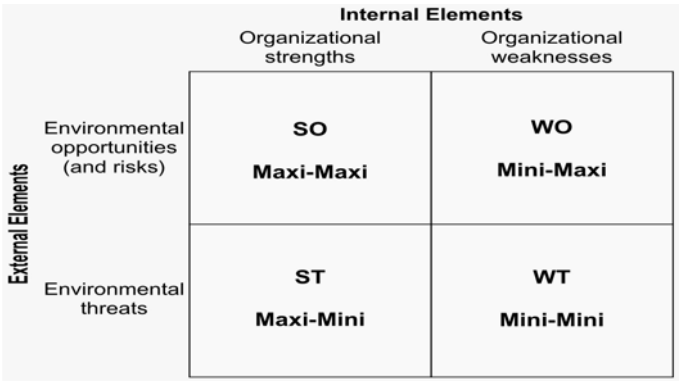


Figure : The TOWS Matrix (Source: Weihrich, H)

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.

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 not like to be. An organization facing external threats and internal weaknesses may have to struggle for its survival.

10. The model has been used by General Electric Company (developed by GE with the assistance of the consulting firm McKinsey & Company) known as “Stop-Light” Strategy Model. This model is also known as Business Planning Matrix, GE Nine-Cell Matrix and GE Model. The strategic planning approach in this model has been inspired from traffic control lights. The lights that are used at crossings to manage traffic are: green for go, amber or yellow for caution, and red for stop. This model uses two factors while taking strategic decisions: Business Strength and Market Attractiveness. The vertical axis indicates market attractiveness and the horizontal axis shows the business strength in the industry. The market attractiveness is measured by a number of factors like:

    1. Size of the market.

2. Market growth rate.
3. Industry profitability.
4. Competitive intensity.
5. Availability of Technology.
6. Pricing trends.
7. Overall risk of returns in the industry.
8. Opportunity for differentiation of products and services.
9. Demand variability.
10. Segmentation.
11. Distribution structure (e.g. retail, direct, wholesale) etc.

Business strength is measured by considering the typical drivers like:

1. Market share.
2. Market share growth rate.
3. Profit margin.
4. Distribution efficiency.
5. Brand image.
6. Ability to compete on price and quality.
7. Customer loyalty.
8. Production capacity.
9. Technological capability.
10. Relative cost position.
11. Management caliber, etc.

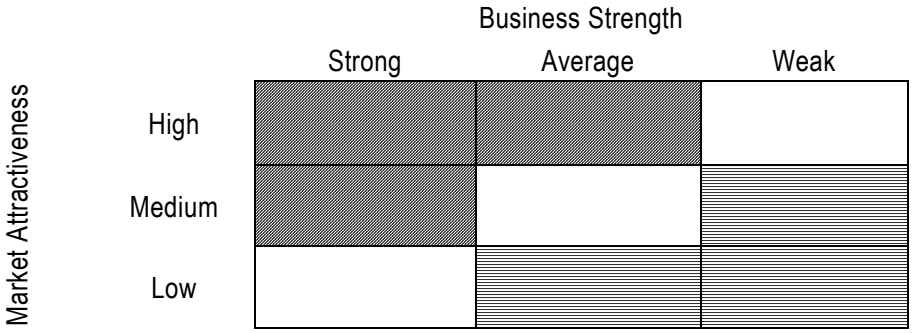
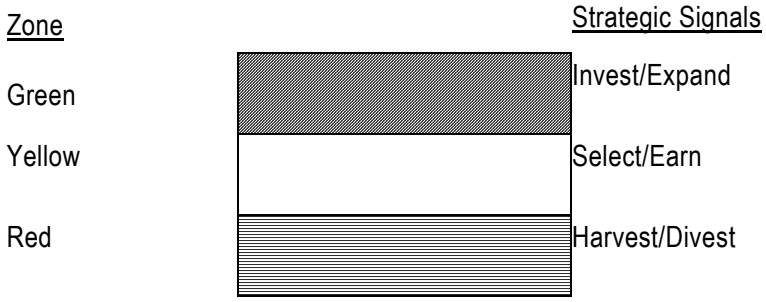


Figure : The GE Portfolio Matrix



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

11. Many organizations in order to achieve quick growth, expand or diversify use strategies such as mergers and acquisitions. This also helps in deploying surplus funds.

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.

Some organizations prefer to grow through mergers. 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 recession in economy or during declining profit margins. In this process, one that is financially stronger and bigger establishes it 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 where the powerful organization takes over a weaker entity.

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. For example, formation of Brook Bond Lipton India Ltd. through the merger of Lipton India and Brook Bond.

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. Diversification refers to a growth strategy where a business markets new products in new markets. It is a strategy by starting up or acquiring businesses outside the company's current products and markets. This strategy is risky because it does not rely on either the company's successful product or its position in established markets. Typically the business is moving into markets in which it has little or no experience. As market conditions change overtime, a company may shift product-market growth strategies.

    For example, when its present market is fully saturated a company may have no choice other than to pursue new market.

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

On the other hand, horizontal Integrated diversification is the 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.

13. 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. Strategy of one functional area can not be looked at in isolation, because it is the extent to which all the functional tasks are interwoven that determines the effectiveness of the major strategy.

    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. Functional strategies are made within the higher level strategies and guidelines therein that are set at higher levels of an organisation. Functional managers need guidance from the business strategy in order to make decisions. Operational plans tell the functional managers what has to be done while policies state how the plans are to be implemented.

    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:

    The development of functional strategies is aimed at making the strategies-formulated at the top management level-practically feasible at the functional level.

    1. Functional strategies facilitate flow of strategic decisions to the different parts of an organisation.
    2. They act as basis for controlling activities in the different functional areas of business.
    3. 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.

4. Functional strategies help in bringing harmony and coordination as they remain part of major strategies.
5. Similar situations occurring in different functional areas are handled in a consistent manner by the functional managers.

14. Successful implementation of supply management systems require a change from managing individual functions to integrating activities into key supply chain processes. It involves collaborative work between buyers and suppliers, joint product development, common systems and shared information. A key requirement for successfully implementing supply chain will be network of information sharing and management. The partners need to link together to share information through electronic data interchange and take decisions in timely manner.

    Implementing and successfully running supply chain management system will involve:

    1. *Product development:* Customers and suppliers must work together in the product development process. Right from the start the partners will have knowledge of all. Involving all partners will help in shortening the life cycles. Products are developed and launched in shorter time and help organizations to remain competitive.
    2. *Procurement:* Procurement requires careful resource planning, quality issues, identifying sources, negotiation, order placement, inbound transportation and storage. Organizations have to coordinate with suppliers in scheduling without interruptions. Suppliers are involved in planning the manufacturing process.
    3. *Manufacturing:* Flexible manufacturing processes must be in place to respond to market changes. They should be adaptive to accommodate customization and changes in the taste and preferences. Manufacturing should be done on the basis of just-in-time (JIT) and minimum lot sizes. Changes in the manufacturing process be made to reduce manufacturing cycle.
    4. *Physical distribution:* Delivery of final products to customers is the last position in a marketing channel. Availability of the products at the right place at right time is important for each channel participant. Through physical distribution processes serving the customer become an integral part of marketing. Thus supply chain management links a marketing channel with customers.
    5. *Outsourcing:* Outsourcing is not limited to the procurement of materials and components, but also include outsourcing of services that traditionally have been provided within an organization. The company will be able to focus on those activities where it has competency and everything else will be outsourced.
    6. *Customer services:* Organizations through interfaces with the company's production and distribution operations develop customer relationships so as to satisfy them. They work with customer to determine mutually satisfying goals, establish and maintain relationships. This in turn help in producing positive feelings in the organization and the customers.

7. *Performance measurement:* There is a strong relationship between the supplier, customer and organisation. Supplier capabilities and customer relationships can be correlated with a firm performance. Performance is measured in different parameters such as costs, customer service, productivity and quality.

15. The changes in the environmental forces often require businesses to make modifications in their existing strategies and bring out new strategies. Strategic change is a complex process and it involves a corporate strategy focused on new markets, products, services and new ways of doing business. For initiating strategic change, three steps can be identified as under:

(i) Recognize the need for change: The first step is to diagnose which facets of the present corporate culture are strategy supportive and which are not. This basically means going for environmental scanning involving appraisal of both internal and external capabilities may it be through SWOT analysis and then determine where the lacuna lies and scope for change exists.

(ii) Create a shared vision to manage change: Objectives and vision of both individuals and organization should coincide. There should be no conflict between them. Senior managers need to constantly and consistently communicate the vision not only to inform but also to overcome resistance through proper communication. Strategy implementers have to convince all those concerned. The actions taken have to be credible, highly visible and unmistakably indicative of management's seriousness to new strategic initiatives and associated changes.

(iii) Institutionalise the change: This is basically an action stage which requires implementation of changed strategy. Creating and sustaining a different attitude towards change is essential to ensure that the firm does not slip back into old ways of thinking or doing things. Capacity for self-renewal should be a fundamental anchor of the new culture of the firm. Besides, change process must be regularly monitored and reviewed to analyse the after-effects of change. Any discrepancy or deviation should be brought to the notice of persons concerned so that the necessary corrective actions are taken. It takes time for the changed culture to prevail.

To make the change lasting, Kurt Lewin proposed three phases of the change process for moving the organization from the present to the future. These stages are unfreezing, changing and refreezing.

(a) Unfreezing the situation: The process of unfreezing simply makes the individuals or organizations aware of the necessity for change and prepares them for such a change. Lewin proposes that the changes should not come as a surprise to the members of the organization. Sudden and unannounced change would be socially destructive and morale lowering. The management must pave the way for the change by first "unfreezing the situation", so that members would be willing and ready to accept the change.

Unfreezing is the process of breaking down the old attitudes and behaviours, customs and traditions so that they start with a clean slate. This can be achieved by making announcements, holding meetings and promoting the ideas throughout the organization.

(b) Changing to new situation: Once the unfreezing process has been completed and the members of the organization recognise the need for change and have been fully prepared to accept such change, their behaviour patterns need to be redefined. H.C. Kellman has proposed three methods for reassigning new patterns of behaviour. These are compliance, identification and internalisation.

Compliance: It is achieved by strictly enforcing the reward and punishment strategy for good or bad behaviour. Fear of punishment, actual punishment or actual reward seems to change behaviour for the better.

Identification: Identification occurs when members are psychologically impressed upon to identify themselves with some given role models whose behaviour they would like to adopt and try to become like them.

Internalization: Internalization involves some internal changing of the individual's thought processes in order to adjust to a new environment. They have given freedom to learn and adopt new behaviour in order to succeed in the new set of circumstances.

(c) Refreezing: Refreezing occurs when the new behaviour becomes a normal way of life. The new behaviour must replace the former behaviour completely for successful and permanent change to take place. In order for the new behaviour to become permanent, it must be continuously reinforced so that this new acquired behaviour does not diminish or extinguish.

Change process is not a one time application but a continuous process due to dynamism and ever changing environment. The process of unfreezing, changing and refreezing is a cyclical one and remains continuously in action.

16. A strategy manager has many different leadership roles to play: visionary, chief entrepreneur and strategist, chief administrator, culture builder, resource acquirer and allocator, capabilities builder, process integrator, crisis solver, spokesperson, negotiator, motivator, arbitrator, policy maker, policy enforcer, and head cheerleader. Sometimes it is useful to be authoritarian; sometimes it is best to be a perceptive listener and a compromising decision maker; sometimes a strongly participative, collegial approach works best; and sometimes being a coach and adviser is the proper role. Many occasions call for a highly visible role and extensive time commitments, while others entail a brief ceremonial performance with the details delegated to subordinates.

For the most part, major change efforts have to be top-down and vision-driven. Leading change has to start with diagnosing the situation and then deciding which of several ways

to handle it. Managers have five leadership roles to play in pushing for good strategy execution:

1. Staying on top of what is happening, closely monitoring progress, ferreting out issues, and learning what obstacles lie in the path of good execution.
2. Promoting a culture and esprit de corps that mobilizes and energizes organizational members to execute strategy in a competent fashion and perform at a high level.
3. Keeping the organization responsive to changing conditions, alert for new opportunities, bubbling with innovative ideas, and ahead of rivals in developing competitively valuable competencies and capabilities.
4. Exercising ethics leadership and insisting that the company conduct its affairs like a model corporate citizen.
5. Pushing corrective actions to improve strategy execution and overall strategic performance.

Strategic leadership is the ability of influencing others to voluntarily make decisions that enhance prospects for the organisation's long-term success while maintaining short-term financial stability. Two basic approaches to leadership can be transformational leadership style and transactional leadership style. The difference between transformational and traditional leadership style can be given as follows:

1. Traditional leadership borrowed its concept from formal Top-down type of leadership such as in the military. The style is based on the belief that power is bestowed on the leader, in keeping with the traditions of the past. This type of leadership places managers at the top and workers at the bottom of rung of power.

   In transformational leadership, leader motivates and empowers employees to achieve company's objectives by appealing to higher ideas and values. They use charisma and enthusiasm to inspire people to exert them for the good of the organization.
2. Traditional leadership emphasizes characteristics or behaviours of only one leader within a particular group whereas transformational leadership provides a space to have more than one leader in the same group at the same time. According to the transformational leadership style, a leader at one instance can also be a follower in another instance. Thus there is element of flexibility in the relationships.
3. Traditional leadership is more focused in getting the work done in routine environment. Traditional leaders are effective in achieving the set objectives and goals whereas transformational leaders have behavioural capacity to recognize and react to paradoxes, contradictions and complexities in the environment. Transformational leadership style is more focus on the special skills or talents that the leaders must have to practice to face challenging situations. Transformational leaders work to change the organisational culture by implementing new ideas.

4. In traditional leadership, followers are loyal to the position and what it represents rather than who happens to be holding that position whereas in transformational leadership followers dedicate and admire the quality of the leader not of its position.

17. The impact of the Internet and the rapidly emerging e-commerce environment is profound. The advent of the Internet and online networks changes everything. There can be no doubt that the Internet is a driving force of historical and revolutionary proportions. The coming of ecommerce has changed the character of the market, created new driving forces and key success factors and bred the formation of new strategic groups. The creativeness with which a company incorporates e-commerce practices holds enormous potential for reconfiguring its value chain and affecting its company's competitiveness. Also the Internet economy presents opportunities and threats that demand strategic response and that require managers to craft bold new strategies.

    We need to understand how growing use of the Internet by businesses and consumers reshapes the economic landscape and alters traditional industry boundaries. The following characteristics of the strategy-shaping E-Commerce environment are:

    1. The Internet makes it feasible for companies everywhere to compete in global markets.
    2. Competition in an industry is greatly intensified by the new e-commerce strategic initiatives of existing rivals and by the entry of new, enterprising e-commerce rivals.
    3. Entry barriers into the e-commerce world are relatively low.
    4. Online buyers gain bargaining power because they confront far fewer obstacles to comparing the products, prices, and shipping times of rival vendors.
    5. The Internet makes it feasible for companies to reach beyond their borders to find the best suppliers and, further, to collaborate closely with them to achieve efficiency gains and cost savings.
    6. Internet and PC technologies are advancing rapidly, often in uncertain and unexpected directions.
    7. The internet results in much faster diffusion of new technology and new idea across the world.
    8. The e-commerce environment demands that companies move swiftly.
    9. E-commerce technology opens up a host of opportunities for reconfiguring industry and company value chains.
    10. The Internet can be an economical means of delivering customer service.
    11. The capital for funding potentially profitable e-commerce businesses is readily available.
    12. The needed e-commerce resource in short supply is human talent-in the form of both technological expertise and managerial know-how.

18. For implementing six sigma, there are two separate key methodologies. They are known as DMAIC and DMADV.

DMAIC is an acronym for five different steps used in six sigma - Define, Measure, Analyze Improve, and control. DMAIC methodology is directed towards improvement of existing product, process or service.

1. *Define:* To begin with six sigma experts define the process improvement goals that are consistent with the strategy of the organization and customer demands. They discuss different issues with the senior managers so as to define what needs to done.
2. *Measure:* The existing processes are measured to facilitate future comparison. Six sigma experts collect process data by mapping and measuring relevant processes.
3. *Analyze:* Verify cause-and-effect relationship between the factors in the processes. Experts need to identify the relationship between the factors. They have to make a comprehensive analysis to identify hidden or not so obvious factor.
4. *Improve:* On the basis of the analysis experts make a detailed plan to improve.
5. *Control:* Initial trial or pilots are run to establish process capability and transition to production. Afterwards continuously measure the process to ensure that variances are identified and corrected before they result in defects.

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

1. *Define:* As in case of DMAIC six sigma experts have to formally define goals of the design activity that are consistent with strategy of the organization and the demands of the customer.
2. *Measure:* Next identify the factors that are critical to quality (CTQs). Measure factors such as product capabilities and production process capability. Also assess the risks involved.
3. *Analyze:* Develop and design alternatives. Create high-level design and evaluate to select the best design.
4. *Design:* Develop details of design and optimise it. Verify designs may require using techniques such as simulations.
5. *Verify:* Verify designs through simulations or pilot runs. Verified and implemented processes are handed over to the process owners.

However, in spite of different orientation in two methodologies, conceptually there is overlapping between the DMAIC and DMADV as both are essentially having similar objectives.