



CA AKHIL MITTAL'S NOTES ON

INFORMATION TECHNOLOGY **A SELF STUDY GUIDE (IPCE)**





CHAPTER 1

BUSINESS PROCESS MANAGEMENT AND IT

1. Introduction:

It provides concept, methodology and techniques for implementing BPM. It provides details of how BPM implementation is done in a structured manner.

2. Overview of business processes:

In today's world, business process designers are directly involved in the system design. The closer working relationship between IT and business design would indeed reduce the gap between final system deployed and its design.

Process:

Definition → **Sequence of event that uses inputs to generate the output.**

Business Process:

It consists of set of activities that are performed in coordination in an organisational environment. However in order to manage the process:

- Process has to be defined first.** It involves defining the steps and mapping the task to the roles in the process.
- Second step**, after process is mapped and implemented, performance measure can be established.
- Last step**, describes the organisational setup that enables the standardisation of and adherence to the process throughout the organisation.

	Functional Organization	Process Organization
Work Unit	Department	Team
Key Figure	Functional Executive	Process Owner
Benefits	-- Easier to implement. -- Functional Excellence.	-- Improved communication. -- Responsive to requirements.
Weakness	-- Lack of end to end process. -- Barrier to communication.	-- Duplication of expertise. -- Inconsistency of functional Performance.
Strategic Value	Supports cost leadership strategy.	Supports differentiation strategy.

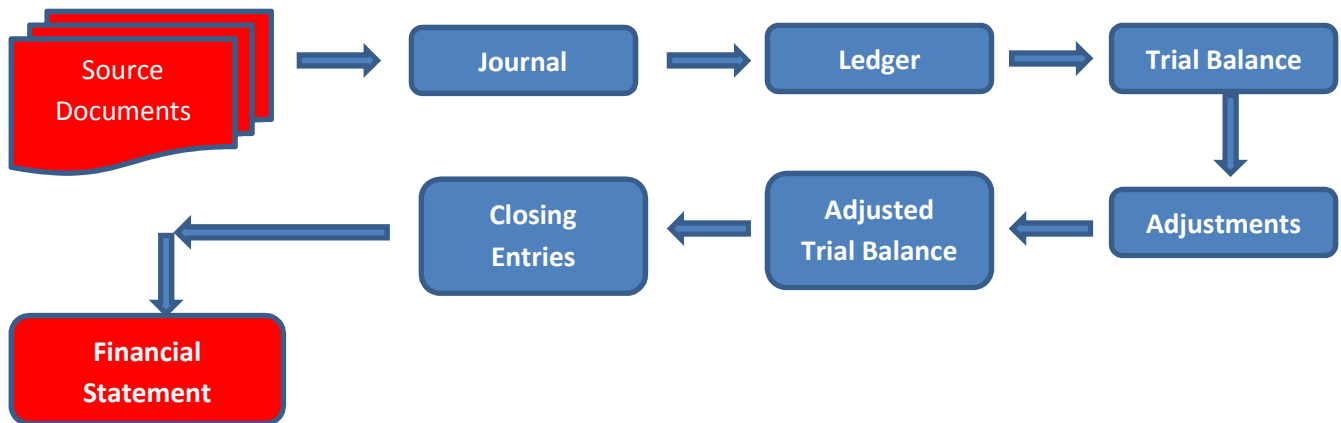
3. Business Process Flow:

Business process is a **prescribed sequence** of works to be performed in order to get desired results. So going forward, we are explaining the business processes pertaining to accounting, sales and purchase.



ACCOUNTING

It covers the business processes involved in recording and processing accounting events of the company.



- A. **Source Documents:** A document that captures data from transactions and event.
- B. **Journal:** Transactions are recorded in journal from source documents.
- C. **Ledger:** Entry from journal gets posted into ledger.
- D. **Trial Balance:** Total of heads showed in trial balance. (Unadjusted Trial balance).
- E. **Adjustments:** Adjustment entries are passed.
- F. **Adjusted Trial Balance:** This is trial balance post adjustments.
- G. **Closing Entries:** Appropriate entries are passed to transfer accounts.
- H. **Financial Statements:** Now accounts take the form of financial statements.

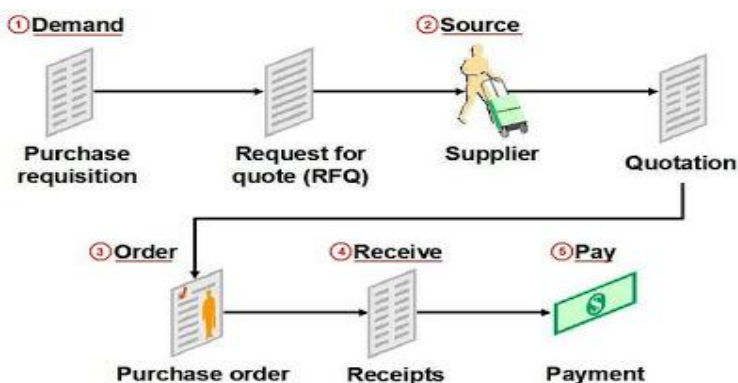


SALES



Sales cover transactions which fulfil the customer request for the product. This process includes flow of data from initial documentation of a customer order to final point of collecting cash.

- A. **Customer Order:** Purchase order received from customer for product at agreed price.
- B. **Recording:** Availability of stock is checked and customer order is booked.
- C. **Pick Release:** Items are removed from warehouse.
- D. **Shipping:** Items loaded onto carrier for transport to the customer.
- E. **Invoice:** Invoice of the transaction is generated and sent to customer.
- F. **Receipt:** Money received from the customer against the goods sold
- G. **Reconciliation:** Bank reconciliation is being performed.



Cover transactions relating to obtaining of raw material required for the production or providing the services. It involves flow of data from point of placing the order to vendor till the payment to the vendor

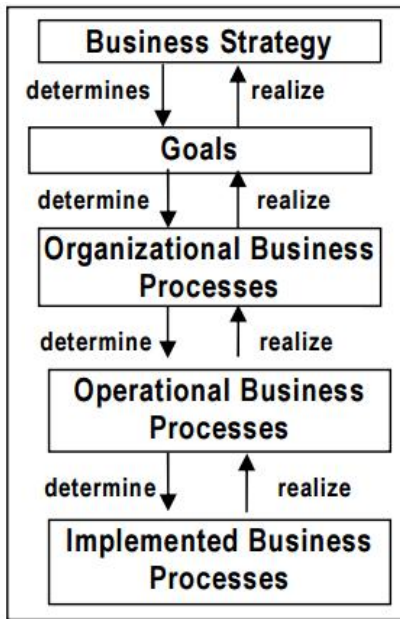
- A. **Purchase Requisition:** Document requesting purchase department to place an order.
- B. **Request for Quote:** Invitation sent to vendor to join bidding process for specific products
- C. **Pick Release:** Items are removed from warehouse.
- D. **Shipping:** Items loaded onto carrier for transport to the customer.
- E. **Invoice:** Invoice of the transaction is generated and sent to customer.
- F. **Receipt:** Money received from the customer against the goods sold
- G. **Reconciliation:** Bank reconciliation is being performed.

4. Classification of Business processes:

It represents all transactions that an organisation undertakes. Business process management helps in defining and managing the business processes in order to reach the desired goals. Following are the 2 categories of business processes:

- (a) **'Organisational' business processes.**
- (b) **'Operational' business processes.**

There exists different level of business process from high level till lower level of management hierarchy.



1. Business Strategy:

It includes the long term strategy, concepts to develop sustainable competitive advantage.

2. Goals:

Business goals are divided into operational organised goals.

3. Organisational Business processes:

These are high level processes that are specified in textual form by their inputs.

4. Operational Business Processes:

These are specified by business by business process models.

5. Implemented business processes:

Contain information on execution of process activities and technical & organisational environment in which they are executed.

5. Business Process Management:

BPM is all about management of business processes. In nut shell, it refers to methodology used by the entity to improve end-to-end business processes.

Now, moving on to the definition of the BPM, it says:

“The achievement of an organisation’s objectives through the improvement, management and control of essential business processes”.

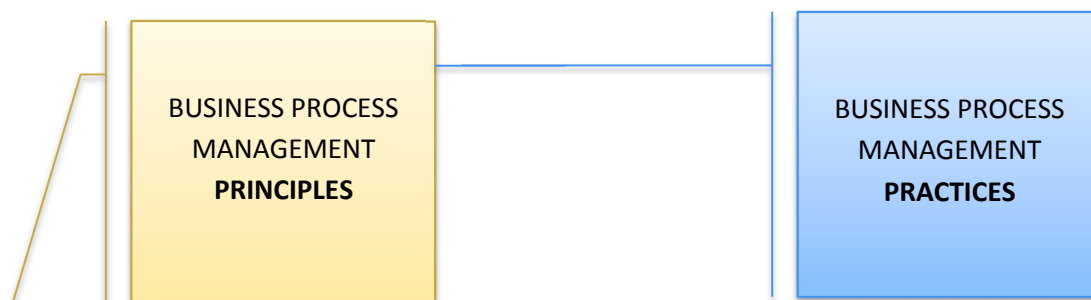
Following are the key points in respect of BPM process:

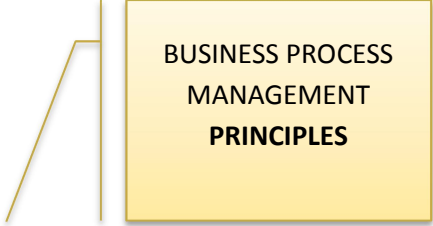
- (a) BPM evaluates the efficiency of the business processes for reducing the costs.
- (b) It includes the **concept, methods and technique to support the design and analysis of business processes.**
- (c) BPM is core of enterprise which aims to grow the revenues while controlling the costs.

Following are the benefits of BPM technology:

- (a) Gain for the enterprise by automated coordination of the activities.
- (b) Distribution of the tasks to process participants.
- (c) Creation of basic operational value proposition.

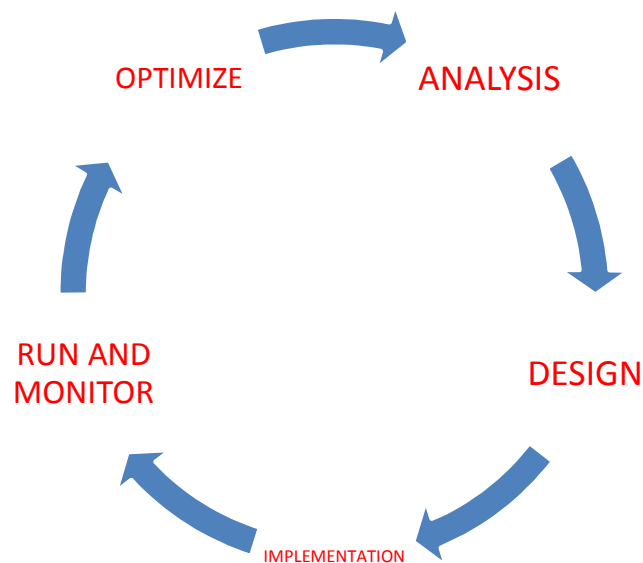
Now will move on the BPM management principles and practices. **Primary goal of BPM is to process** is to improve products and services through standardised and structured approach.



	1. Business processes are organizational assets. 2. By measuring, monitoring, controlling and analyzing the business processes, a company can deliver consistent value to the customers. 3. Business processes must be continuously improved. 4. Information technology is an essential enabler to the BPM.
	1. Go for process-oriented organisational structure. 2. Appoint Process Owner. 3. Train the workforce and continuously improve business processes. 4. Align employee bonus to business process performance. 5. Senior management to commit and drive BPM.

6. Business process Management Life Cycle:

An ERP (Enterprise Resource Planning) divides BPM in to following phases:



(1) Analysis: Involve analysis of current environment and processes, identification of needs and definition of the requirement.

(2) Design: Involve evaluation of solutions to meet the identified needs of the business.

(3) Implementation: Involve project preparation, blue printing, realization, final preparation and live.

(4) Run and Monitor: Involve business process execution and business process monitoring.

(5) Optimize: Iterate (पुनरावृत्ति) for continuous improvement.

7. Theories of process management:



(A) SIX SIGMA:

It is 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.

Phases: (DMAIC)

- (i) **Define:** Measurements that are critical to customer satisfaction
- (ii) **Measure:** Variances of output
- (iii) **Analyse:** Possible causes are analysed statistically to determine root cause of variation
- (iv) **Improve:** Solution alternatives are generated to fix the root cause.
- (v) **Control:** Process is standardized and documented

(B) TOTAL QUANTITY MANAGEMENT:

TQM is a management mechanism designed to improve the quality of the product or process by engaging every stakeholder as well as the customers. TQM processes are divided into four sequential categories:

- (i) **Plan:** Define the problem, collect data, and ascertain root cause;
- (ii) **Do:** Develop and implement a solution;
- (iii) **Check:** Confirm the results through before-and-after data comparison;
- (iv) **Act:** Document results, inform others about changes, and make recommendations

(C) BUSINESS PROCESS RE-ENGINEERING:

Meaning:

“BPR is the **fundamental rethinking** and **radical redesign** of processes, to achieve **dramatic** improvement, in critical measures of performance such as cost, quality, service and speed.”

Some of the key words used in the above meaning is explained below:

- (a) **Dramatic** achievement means to achieve 80% or 90% reduction and not just 5%, 10%. Possible only by making major improvements and breakthroughs.
- (b) **Radical redesign** means reinventing and not improving. “Clean slate approach”.
- (c) **Fundamental rethinking** means asking the question “why do you do what you do”, thereby eliminating business processes altogether if it does not add any value to the customer.

Business process reengineering just not impact the way a business function but also impact the every aspect of the business. So hereby we will study the BPR success factors:

CODE TO REMEMBER: I² - M - C.A.T.

(a) **I**mprovement:

Innovation and continuous improvement are key to the successful implementation of BPR.

(b) Adequate **I**T infrastructure:

Set of hardware, software, networks, facilities, etc.

(c) Effective change **M**anagement

BPR involves changes in people behavior and culture, processes and technologies. The success of BPR depends on how effectively management conveys the need for change to the people.

(d) **C**ommitment:

Top management has to convince every affected group about the potential benefits to the organization as a whole and secure their commitment.

(e) **A**nalysis:

Identify exactly the processes that need reengineering

(f) **T**eam Composition:

BPR team should include representatives from top management, business process owners, technical experts and users.

8. BPM Implementation:

BPR is a standard operating procedure aimed at increasing the efficiency of the organisation. For this it is rather important that IT and other business process must work in harmony and simultaneously.

(a) **Following are the key factors to be considered in implementing BPM:**

Factors	Key Consideration
Scope	Single process, a department, the entire company
Goals	Process understanding, improvement, automation, re-engineering, optimization
Methods to be used	Six Sigma, BPM Life Cycle Method, TQM, Informal methods
Skills Required	Consultants, Trained Employees, Basic Education
Tools to be used	White-Boards, Sticky Notes, Software For Mapping, BPMS
Investment	Training, Tools, Time, Capital

(b) Need for a BPM implementation:

1. IT System Launch
2. Architecture Modelling
3. Process documentation

S.A.P.

ACTIVE DESIGN

1. BPM Implementation
2. Business process Lifecycle
3. Process oriented IT management.

OPTIMAL ADD VALUE

1. IT service Management.
2. Source Management
3. Integration Management.

I.S.I

INTEGRATED NETWORKING

BPM will be a mechanism to:

- (a) Create long term future positioning of the business.
- (b) Create short term cost effectiveness.
- (c) Introduce knowledge of product and customer profitability.
- (d) Introduce leadership and role of managers.

(c) Automation of functional units:

It has been noticed that customers are confronted (सामना) with poor and broken services. As such there is urgent need to automate the process that ensures that customers demand is met on time.

In such scenario, it is rather imperative to streamline the whole business process and indeed called as **“BPA (Business Process automation) which means (व्यापार प्रक्रिया का Automation करना)**

The core objective of BPA is achieved through integrating various business processes. Following are the key benefits and risks associated with BPA:

BENEFITS	RISKS
1. Saving in time and cost.	1. Automation leads to threat on jobs.
2. Automation is required to be ahead others in the competition.	2. Automating poor processes will not gain Better business practices.
3. Automation helps the business to serve their customer faster and better.	

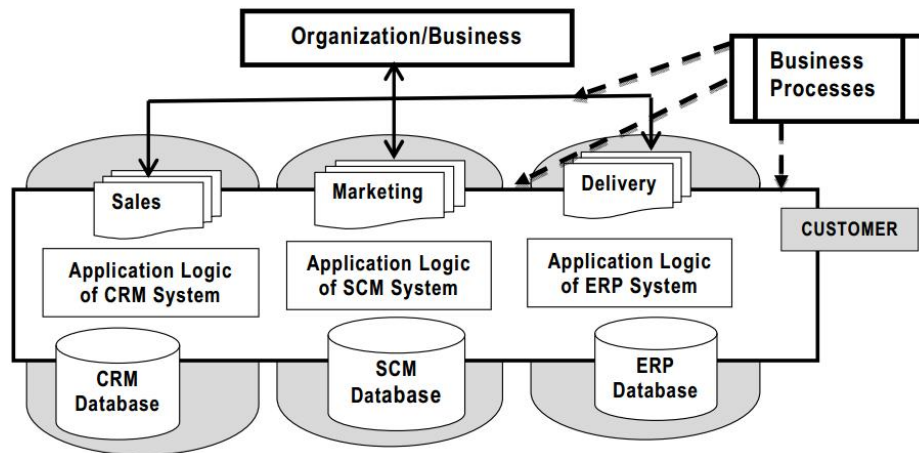
(d) Challenges in implementing BPA:

In such scenario where businesses are moving towards the automation of its processes, do they are at ease to implement it...Of-course not...so following challenges an enterprise can face:

- (1) Increase in user interface (Mail, fax, SMS etc.)
- (2) Prices of products, services have increased the business complexity.
- (3) Budgets are being cut.

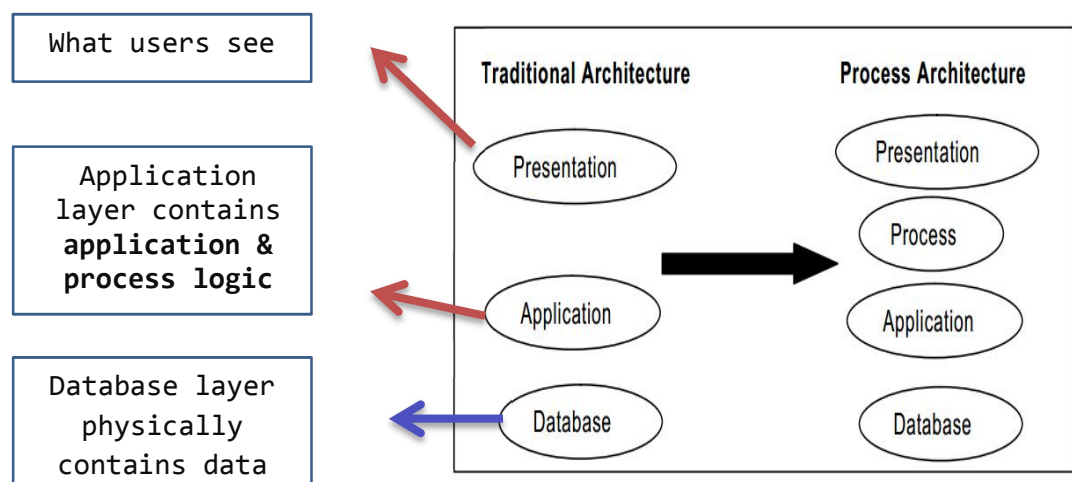


Organisation realised that all the activities of the business are inter linked to each other. Following is the enterprise business system:



(e) BPM Technology:

BPM technology provides business real time process improvement. To achieve this, business process layer is introduced in layers.



9. Value Chain Analysis:

It refers to “Separate activities necessary to strengthen the organisation’s strategy and are linked to each other both inside and outside the organisation. The idea behind the value chain analysis is to view the organisation as a system which is made up of sub systems. However while talking of an organisation, value chain comprises of primary and supportive activities.

Six business functions of the value chain:

- R&D • Design of products, services, or processes • Production • Marketing and sales • Distribution • Customer service

(R&D में product का designs ready then product का उत्पादन शुरू, then its makreting→ sales and sfter sales services.)

10. Accounting System Automation:

Accounting information system (AIS) is defined as a system of **collection, storage and processing of the financial and accounting data.**

Following are the functions of the AIS:

- (i) **Collect and store data:** Capturing transaction data from source documents
- (ii) **Record transaction:** Record transactions data into journals.
- (iii) **Safeguard organizational assets (data and systems):** Provide adequate controls to ensure that data are recorded and processed accurately.

(a) Processing cycles of an accounts BPM:

Processing cycle of an account BPM includes 5 cycles:

Type of Cycle	Description
Financing Cycle	Combines one or more types of transactions. It consists of set of transactions leading to recognition of major event on the financial statement.
Revenue Cycle	Involves recognition of revenue like sales, account receivables. Captures recording of customer orders, shipment of goods etc.
Expenditure Cycle	Involves transactions like purchase, cash expenditure. It records the purchase, cost of inventory, recording of accounts payable etc.
Human Resource Cycle	Involves activities of hiring and paying the employees.
Production Cycle	Involves recurring set of business activities and processing operations associated with manufacture of the products.

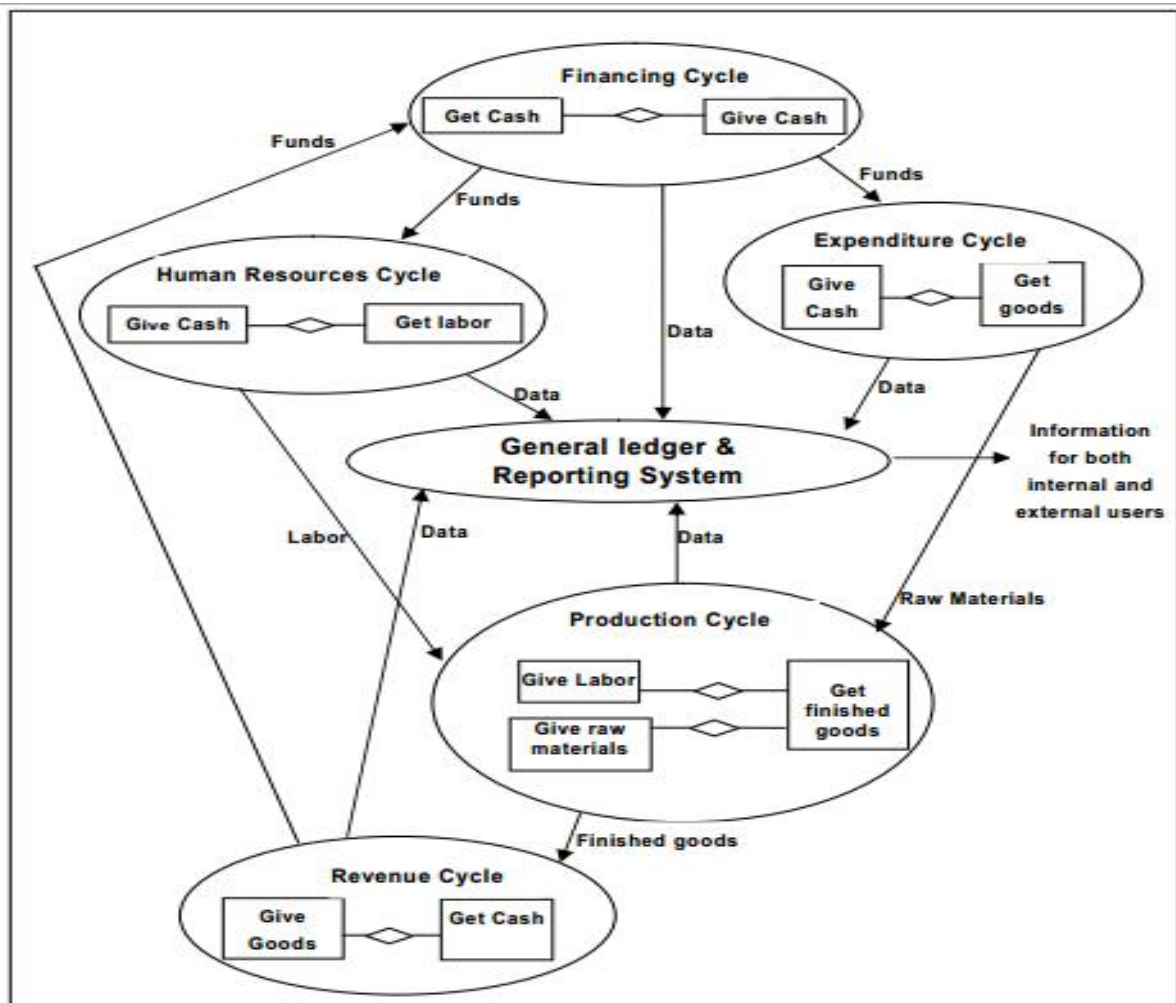
(b) General Ledger and Reporting System:

Involve updating the general ledger and preparing reports, summarising the results.

(c) Data Processing Cycle:

Above all processing cycles, **data processing cycle is most important.** It involves the updated and stored information about the resources affected by the event.

Now all cycles at one place:



11. Impact of IT on BPM and risks of failure of IT:

BPM system aims at integrating the people, system and data. It allows the business to devise process centric IT solutions.

Following are the benefits of BPMS:

C.A.R.S.

(a) **C**oupling with the organisation's existing application:

This enables to monitor, extract, format and distribute the information to system and people.

(b) **A**utomating the repetitive business processes:

Such automation helps in reducing the manual operation costs and indeed helps employees to concentrate on important activities and processes of the business.

(c) **R**eduction in compliance administration:

BPM is suited to support companies in their endeavour for process improvement and compliances. Such compliance includes that of ISO , financial audit law etc.

(d) **S**aving in operations:

Repetitive jobs of the business are optimised and leads to reduction in reduced expenses. By automating a task it is expected that half of the time is being saved.

12. Business Risk of failure of IT:

Following are the reasons for the failure of BPMS in tan organisation. To remember the points I have given HINTS:

HINT: U. - F.B.D. - R.T.I.

(You are in Faridabad RTI office to find out information of something – Finds reasons)

- (1) **U**navailability of resources when desired.
- (2) **F**ailure of software to meet business needs.
- (3) **B**reakdown in gap analysis.
- (4) **D**eficient Executive involvement.
- (5) **R**igid system to be customised to meet the precise workflow & business processes.
- (6) **T**echnological Obsolescence.
- (7) Failure to **I**dentify the future business needs.

13. Approaches to mapping system:

Accountants must be well aware of the documents that are needed in order to know how the processing takes place. Below are the reasons **explaining as to why documentation is important to information systems:**

HINT: C.U. - S.A.D².

(I See you SAD – So did documentation)

- (1) **C**ontrolling system development and Cost:
 - Good documentation helps the designers to develop Object oriented software,
 - That contains usable codes and facilitates changes when program is to be modified later.
- (2) **U**ser training:
 - Documents include user guides, manuals and similar operating instructions.
 - This help the user to operate hardware and software, solve operational problems.
- (3) **S**tandardizing communications with others:
 - Documents such as flowcharts, data flow diagram are standardised tools.
 - They help in describing an existing/proposed system in a common language.

(4) **A**uditing Information System:

- Documents help in providing the audit trail. **(A system that traces the detailed transactions relating to any item in an accounting record.**
- Document helps the auditor to identify the weaknesses and strengths of the entity.

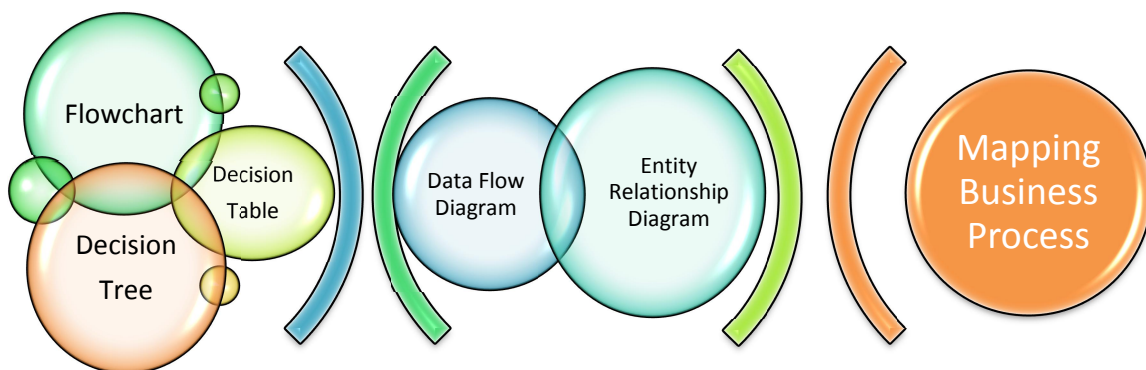
(5) **D**epicting how system works:

- Processing is not visible in the computerised system.
- As such documentation is needed in order to help the employee understand how a system works.

(6) **D**esigning New system:

- Documentation helps the developer to design a new system.
- Well written documents are just like blue print that helps the designer to develop a new system.

Following are the techniques which are used for mapping the business processes:



These are the pictorial techniques

Now explaining each and every technique in detail:

(1) Entity relationship Diagram:

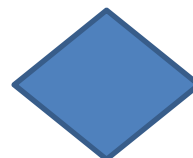
ER diagram creates a graphical representation of the entities and relationship between entities. This technique uses symbolise to show different type of information:



Depicts **ENTITY**. The entity is represented by a rectangle and labelled with singular noun.



Depict **attributes**



Depict **relationship**. It is an association of that exists between 2 entities.

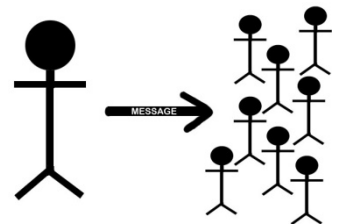
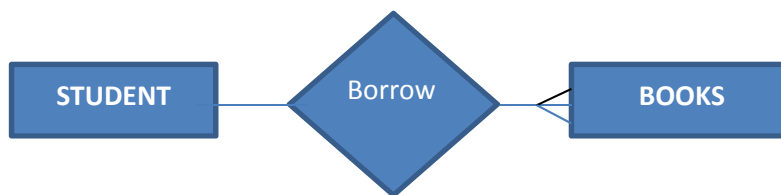
Now, we will move towards the types of relationship:

ONE TO ONE



One student has only 1 report card and one report is always of 1 student.

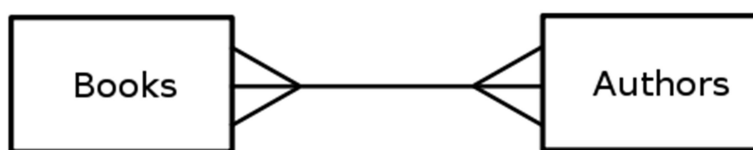
ONE TO MANY



MANY TO ONE



MANY TO MANY



Advantages of ER Diagram	Limitation of ER Diagram
1. Simple & easy to understand. 2. Can be customized as per users need. 3. Helps in data base design. 4. Gives high level of description of the system.	1. There exists some sort of inconsistency in implementing the ER diagram. 2. Misinterpretation while studying the ER diagrams.

(2) Data Flow Diagram:

It is the graphical representation of the flow of data through an information system. A DFD shows what kind of information will be input to and output from the system, where the data will come from and go to, and where the data will be stored.

4 components of the DFD are as follows:

- (a) **Entity:** The source or destination of data. (Rectangles)
- (b) **Process:** Process names usually describe the transformation (Submit payment). (Circles or a segmented rectangle with process name and process number)
- (c) **Data Store:** Where a process stores data between processes for later retrieval. Data store names = Simple but meaningful, E.g. "Customers" (Rectangle - Right hand side missing)
- (d) **Data Flow:** Movement of data between entity, process and data store. Interface between the components of the DFD. Named to reflect the nature of the data used (Arrow)

Meaning	Symbols
Process	 or 
Data Store	 or 
Entity	
Data Flow	

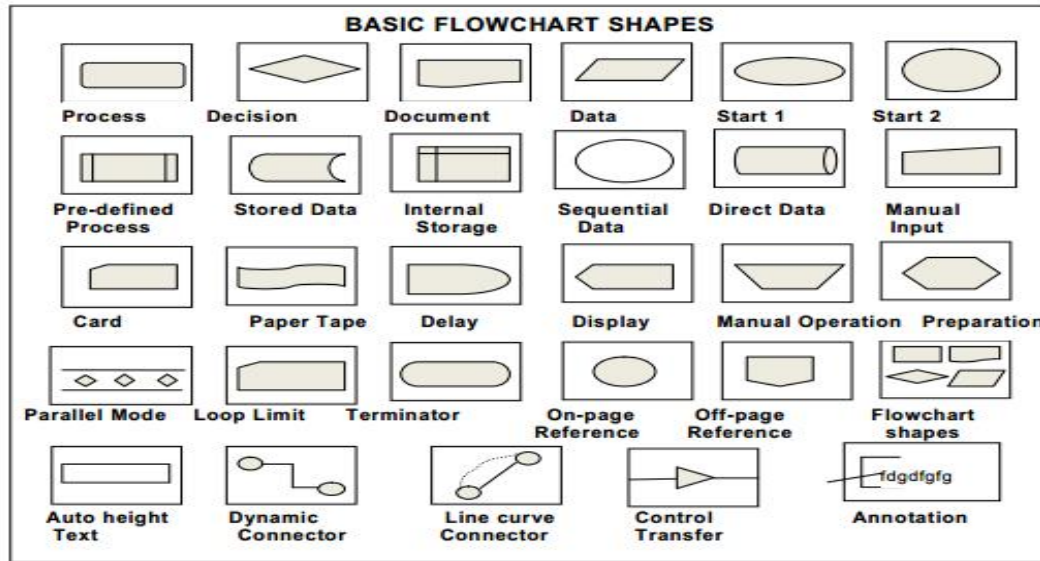
Advantages of DFD Diagram	Limitation of DFD Diagram
1. Helps in communicating system knowledge to the users. 2. Provide detailed representation of system components. 3. Part of system documentation files. 4. Gives high level of description of the system.	1. Makes the programmer confusing about the system. 2. Takes long time to create.

(3) Flowchart:

It is a system that represents workflow or process. It is used in analysing, designing, documenting and managing the process in various fields.

It is an essential tool for programming and it illustrates the thread of logics followed in the program.

Following are the standard Flowcharts symbols used:



Now we will study the advantage and disadvantage of the flowcharts:

Advantages of Flow charts	Limitation of Flow charts
P.E.A.C.E.	M - C.S.
1. It helps in detecting, locating and solving the Problems. 2. Flowchart helps in Efficient program maintenance. 3. Flowcharts help in efficient Analysis as system can be broken into detailed parts for study. 4. Flowcharts aid in Communicating the facts of a business. 5. Flowcharts are Easy to understand.	1. Modification requires recreating complete re-drawing. 2. Flowchart become Complex when the program logic is complex. 3. Flowcharts are not Standardized method of solving the every problem.

(4) Decision Tree:

- (a) It is a collection of conditions and actions.
- (b) It is tree-like representation + conditions & actions are shown as nodes + branches of the tree connect them.
- (c) Logical operators “AND” & “OR” are used to replicate the structure of the if-then rules.
- (d) Powerful form of multiple variable analyses.
- (e) Decision tree is one of the most accepted approcahes and commonly used for operational research.

Advantages of Decision Tree	Limitations of Decision Tree
1. Are simple to understand & interpret. 2. Possible scenarios can be added. 3. Worst, best and expected values can be determined.	1. Calculations can get very complex.

(5) Decision Table:

Decision Table is a table which may accompany a flowchart, defining the possible contingencies and the appropriate course of action for each contingency. Decision Table is divided into four parts:

- (a) **Condition Stub** - Comprehensively lists the conditions;
- (b) **Action Stub**- Comprehensively lists the actions;
- (c) **Condition Entries** - lists the possible permutations of answer to the questions in the conditions stub; and
- (d) **Action Entries** - lists, actions contingent upon the set of answers to questions of that column.

Advantages of Decision Table	Limitations of Decision Table
E.- S.C.A.M.	
1. These are Easy to understand. 2. Simple to follow a particular path rather drawing multiple flowcharts. 3. The decision table can be directly Coded in to program. 4. Decision Table ensures better Analysis. 5. Complex problem requires decision tables to be divided into Micro tables.	1. Flowcharts are more common rather than decision tables. 2. Flowcharts represent better logic as compared to decision tables.