FINANCIAL AND ACCOUNTING SYSTEMS

LEARNING OUTCOMES

After reading this chapter, you will be able to -

Understand about working of Financial and Accounting System.

❑ Grasp the knowledge about Integrated and Non-Integrated Systems.

❑ Comprehend about business process modules.

❑ Acknowledge about Reporting Systems, Data Analytics, Business Intelligence and Fundamentals of XBRL.

❑ Comprehend about regulatory and compliance requirements and their correlation with financial and accounting systems.

CHAPTER OVERVIEW 👉

Integrated & Non Integrated System

Business Process Modules and Their Integration with Financial & Accounting Systems

Reporting Systems and Management Information Systems

Data Analytics and Business Intelligence

Business Reporting and Fundamentals of XBRL

Applicable Regulatory & Compliance Requirements

2.1 INTRODUCTION

This chapter is meant for providing an insight to Financial and Accounting Systems, its working, audit and its use for business management and development. Financial and Accounting Systems forms an integral part of any business and acts as a backbone for it. Financial and Accounting systems may include other aspects of business management like human resource, inventory, Customer Relationship Management (CRM), etc. After going through this chapter, a student is expected to understand about–

♦ What is a system?

♦ What is ERP System?

♦ What is a Financial and Accounting system?

♦ How to use it for different purposes like accounting, auditing, business management, etc.?

♦ How to assess risks and controls of any Financial and Accounting System?

In the process of learning about Financial and Accounting systems, there can be different angles to view the same thing and to understand it in a better way, we shall be viewing Financial and Accounting Systems from many different angles. At time of understanding the system from one angle, another angle must be kept in mind and cannot be ignored. Chartered Accountants are supposed to be experts in financial as well as accounting systems. Financial and Accounting Systems does not necessarily mean Software or Computerized Systems only. It may include many other aspects also.

Fig. 2.1.1 depicts different perspectives of the same view through different Professionals.
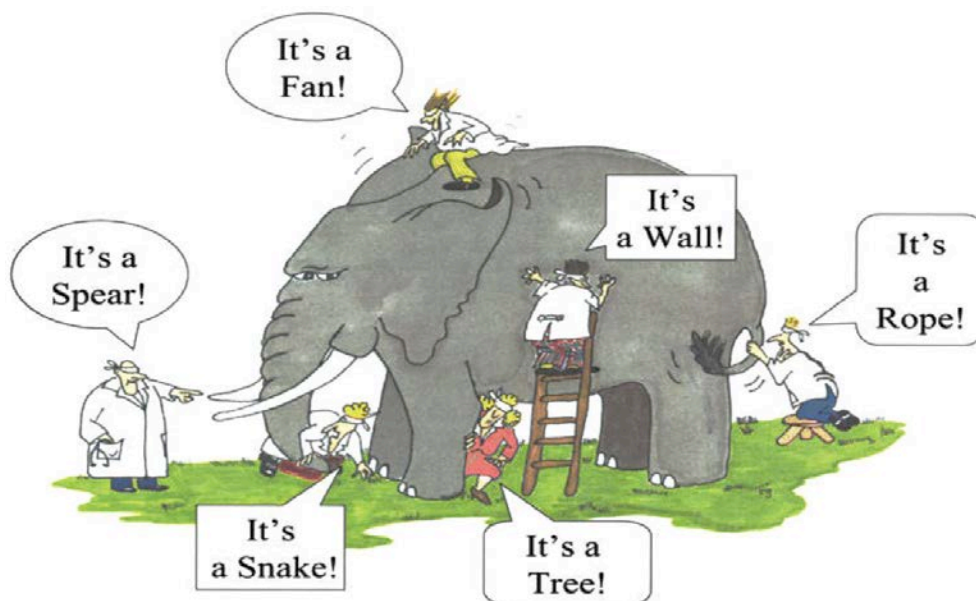
Fig. 2.1.1: Different perspectives from different Professionals

Different Requirements from Different Persons

♦ **Accountants View** – Balance Sheet and Profit & Loss Account must be prepared easily without putting much time / efforts.

♦ **Auditors View** – Balance Sheet and Profit & Loss Account must be correct at any point of time.

♦ **Business Manager / Owner's View** – I need right information at right point of time for right decision making.

It is the job of any Financial and Accounting System to cater to needs of all the users simultaneously. Hence, we shall discuss Financial and Accounting Systems from all the possible angles.

2.2 ERP AND NON-INTEGRATED SYSTEMS

2.2.1 What is a System?

What is a system and how this word relates to Financial and Accounting aspect? This is important for us to understand. Many a times this word is mistakenly understood as something relating to computer / software / information technology etc. Here it is suggested to make this point very clear that a system may or may not be related with computer / software / information technology etc. Software / Computer / Hardware may or may not form part of overall system.

Dictionary meaning of the word **System** is -

"A set of principles or procedures per which something is done; an organized scheme or method"

<div align="center">or</div>

"A set of things working together as parts of a mechanism or an interconnecting network; a complex whole"

The word "**System**" can be explained in a simple way as, "a set of detailed methods, procedures and routines created to carry out a specific activity, perform a duty, or solve a problem". It is an organized, purposeful structure that consists of interrelated and interdependent elements (components, entities, factors, members, parts etc.).These elements continually influence one another (directly or indirectly) to maintain their activity and the existence of the system, to achieve the goal of the system. All systems generally have -

(a)   Inputs, outputs and feedback mechanisms;

(b)   Maintain an internal steady-state despite a changing external environment; and

(c)   Have boundaries that are usually defined by the system observer.

Systems may consist of sub-system also which area part of a larger system. Systems stop functioning when an element is removed or changed significantly. Together, they allow understanding and interpretation.

Human body is natural and a complete system. We know about the word "Eco System". Every human body is a part of Ecosystem. An ecosystem includes all the living things (plants, animals and organisms) in each area, interacting with each other, and with their non-living environments (weather, earth, sun, soil, climate, and atmosphere). In an ecosystem, each organism has its' own niche or role to play. In another example, a business is said to be system as it contains input such as people,

machine, money, materials etc. which undergo different processes such as production, marketing, finance etc. and produces output like goods and services depending on the nature of business.

In this chapter, we are discussing system for business finance and accounting.

A system includes defined methods and process to perform an activity. So basically, processes are important components in any system.

2.2.2 What is a Process?

In the systems engineering arena, a **Process** is defined as a sequence of events that uses inputs to produce outputs. This is a broad definition and can include sequences as mechanical as reading a file and transforming the file to a desired output format; to taking a customer order, filling that order, and issuing the customer invoice.

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.

2.2.3 Concepts in Computerized Accounting Systems

As we are discussing about Financial & Accounting Systems, it is necessary to discuss some concepts to understand Financial and Accounting systems in a better way.

I.   Types of Data

Every accounting systems stores data in two ways: **Master Data** and **Non-Master Data** (or Transaction Data) as shown in the Fig. 2.2.1.
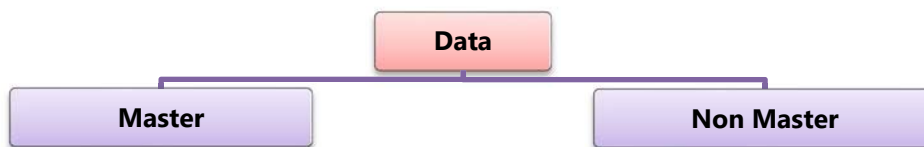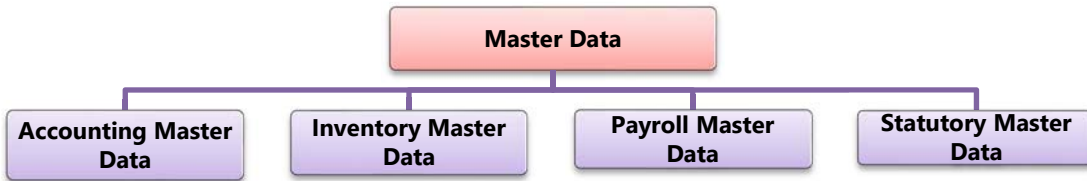

Fig. 2.2.1: Types of Data

♦   **Master Data:** Relatively permanent data not expected to change frequently.

♦   **Non-Master Data:** Non-permanent data and expected to change frequently.

A.   Master Data: As defined above, master data is relatively permanent data that is not expected to change again and again. It may change, but not again and again. In accounting systems, there may be following type of master data as shown in the Fig. 2.2.2.

```
                          ┌─────────────────┐
                          │   Master Data   │
                          └─────────────────┘
        ┌───────────────┬──────────┴──────────┬───────────────┐
┌───────────────┐ ┌───────────────┐ ┌───────────────┐ ┌───────────────┐
│ Accounting    │ │ Inventory     │ │ Payroll       │ │ Statutory     │
│ Master Data   │ │ Master Data   │ │ Master Data   │ │ Master Data   │
└───────────────┘ └───────────────┘ └───────────────┘ └───────────────┘
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Fig. 2.2.2: Types of Master Data in Financial and Accounting Systems

a. **Accounting Master Data –** This includes names of ledgers, groups, cost centres, accounting voucher types, etc. E.g. Capital Ledger is created once and not expected to change frequently. Similarly, all other ledgers like sales, purchase, expenses and income ledgers are created once and not expected to change again and again. Opening balance carried forward from previous year to next year is also a part of master data and not expected to change.

b. **Inventory Master Data –** This includes stock items, stock groups, godowns, inventory voucher types etc. Stock item is something which bought and sold for business purpose, trading goods. E.g. If a person is into the business of dealing in white goods, stock items shall be Television, Fridge, Air Conditioner, etc. For a person running a medicine shop, all types of medicines shall be stock items for him/her.

c. **Payroll Master Data –** Payroll is another area connecting with Accounting Systems. Payroll is a system for calculation of salary and recording of transactions relating to employees. Master data in case of payroll can be names of employees, group of employees, salary structure, pay heads, etc. These data are not expected to change frequently. E.g. Employee created in the system will remain as it is for a longer period of time, his/her salary structure may change but not frequently, pay heads associated with his/her salary structure will be relatively permanent.

d. **Statutory Master Data –** This is a master data relating to statute/law. It may be different for different type of taxes. E.g. Goods and Service Tax (GST), Nature of Payments for Tax Deducted at Source (TDS), Tax Collected at Source (TCS) etc. This data also shall be relatively permanent. We don't have any control on this data as statutory changes are made by Government and not by us. In case of change in tax rates, forms, categories, we need to update/change our master data.

All business process modules must use common master data.

B.   Non-Master Data: It is a data which is expected to change frequently, again and again and not a permanent data. E.g. Amounts recorded in each transaction shall be different every time and expected to change again and again. Date recorded in each transaction is expected to change again and again and will not be constant in all the transactions.

Example 2.1: To understand the concept of master data and non-master data in a simple way, let us co-relate this with ourselves using following example.

Our Personal Master Data – Our Name, Name of Parents, Address, Blood Group, Gender, Date of Birth, etc. is a personal master data and not expected to change. Our address may change, but not frequently.

Our Personal Non-Master Data – Contrary to this, there may be some information about us which may fall in the category of non- master data, i.e. not a permanent data. E.g. Date of Birth is master data but age is a non- master data, weight is a non-master data, our likes, dislikes again is a non-master data.

C.   Why Master and Non-Master Data?

Basic objective of accounting system is to record input in the form of transactions and generate output in the form of reports as shown in the Fig. 2.2.3.

Fig. 2.2.3: Objective of Accounting System

Let us consider a simple transaction of capital introduction in business in cash ₹ 1,00,000. This transaction is recorded as under in Table 2.2.1.

Table 2.2.1: Data Sample Transaction

Receipt No.1	Date: 01st Apr. 2017	
Cash		Dr. 1,00,000
To Capital	Cr. 1,00,000	
Narration:	(Being capital introduced in business)	

Above information is stored in Accounting Information Systems in two ways, in the form of **Master Data** and **Transaction Data**. Let us understand what is stored in the system through Table 2.2.2.

Table 2.2.2: Data Stored in Forms

Master Data	Non-Master Data
Voucher Type (i.e. Receipt Voucher in this case).	Voucher Number (i.e. 1 in this case).
Debit Ledger Name (i.e. Cash in this case).	Debit Ledger Amount (i.e. ₹1,00,000 in this case).
Credit Ledger Name (i.e. Capital in this case).	Credit Ledger Amount (i.e. ₹1,00,000 in this case).
	Date (i.e. 01st Apr. 2017 in this case).
	Narration.

Please note:

♦   Master data is generally not typed by the user; it is selected from the available list. E.g. Debit Ledger name is selected from the available list of ledgers. If ledger is not created, user needs to create it first to complete the voucher entry.

♦   Master data entry is usually done less frequently say once a year or when there is a need to update. For example - prices are contracted with Vendors after deliberations and the agreed prices are updated in the Vendor master when new prices are negotiated. Generally, these are not done as frequently as the transactions with the Vendor itself. Effective controls over master data entry would be a 'four eye' check, where, there is another person who independently checks whether the master data entry is accurately done in the financial system of the company.

♦   Non-master data is typed by the user and not selected from available list as it is a non-permanent and it keeps on changing again and again.

♦   Sometimes transactional data could also be selected from a drop down list of inputs available to the user. For example, when a GRN (Goods Receipt Note) is created by the Stores/Warehouse personnel, they might only select the open purchase orders available in the system and input actual quantities received. In this case, many fields required to complete the transaction is pre-filled by the system and the user is not allowed to edit those fields.

♦   Master data is selected from the available list of masters (e.g. Ledgers) to maintain standardization as we need to collect all the transactions relating to one master data at one place for reporting. E.g. all cash transactions are collected in Cash Ledger for reporting purpose all transactions relating to capital are collected in Capital Ledger for reporting purpose.

♦ While inputting the information, user is forced to select master data from the available list just to avoid confusion while preparing reports. For example - same ledger name may be written differently.

II. Voucher Types

In accounting language, a **Voucher** is a documentary evidence of a transaction. There may be different documentary evidences for different types of transactions. E.g. Receipt given to a customer after making payment by him/her is documentary evidence of amount received. A sales invoice, a purchase invoice, is also a documentary evidence of transaction. Journal voucher is a documentary evidence of a non-cash/bank transaction. In accounting, every transaction, before it is recorded in the accounting system, must be supported by a documentary proof. In computer language, the word voucher has got a little different meaning. Voucher is a place where transactions are recorded. It is a data input form for inputting transaction data. In accounting, there may be different types of transactions; hence we use different voucher types for recording of different transactions. Generally following types of vouchers are used in accounting systems as shown in Table 2.2.3.

Table 2.2.3: Voucher Types

Module – Accounting		
S. No.	Voucher Type	Use
1	Contra	For recording of four types of transactions as under. a.　Cash deposit in bank. b.　Cash withdrawal from bank. c.　Cash transfer from one location to another. d.　Fund transfer from our one bank account to our own another bank account.
2	Payment	For recording of all types of payments. Whenever the money is going out of business by any mode (cash/bank). E.g. Payment of salary and rent.
3	Receipt	For recording of all types of receipts. Whenever the money is being received into business from outside by any mode (cash/bank). E.g. Interest received from bank.
4	Journal	For recording of all non-cash/bank transactions. E.g. Depreciation, Provision, Write-off, Write-back, Discount given/received, Purchase/Sale of fixed assets on credit, etc.

5	Sales	For recording all types of trading sales by any mode (cash/bank/credit).
6	Purchase	For recording all types of trading purchase by any mode (cash/bank/credit).
7	Credit Note	For making changes/corrections in already recorded sales/purchase transactions.
8	Debit Note	For making changes/corrections in already recorded sales/purchase transactions.
9	Memorandum	For recording of transaction which will be in the system but will not affect the trial balance. In other words, memorandum vouchers are used to record suspense payments, receipt, sales, purchase etc. conveyance expenses.
Module –Inventory		
10	Purchase Order	For recording of a purchase order raised by a vendor.
11	Sales Order	For recording of a sales order received from a customer.
12	Stock Journal	For recording of physical movement of stock from one location to another. E.g. Inter-Godown Transfer.
13	Physical Stock	For making corrections in stock after physical counting.
14	Delivery Note	For recording of physical delivery of goods sold to a customer.
15	Receipt Note	For recording of physical receipt of goods purchased from a vendor.
Module – Payroll		
16	Attendance	For recording of attendance of employees.
17	Payroll	A payroll voucher is used to record all employee–related transactions. It includes all the computation for respective pay-heads for salary calculation of employees.

In some financial systems, instead of the word "Voucher", the word "Document" is used. Above Table 2.2.3 shows an illustrative list of some of the voucher types. Different system may have some more voucher types. Also, user may create any number of new voucher types as per requirement. E.g. In Table 2.2.3, only "Payment" voucher type is mentioned. But user may create two different voucher

types for making payment through two different modes, i.e. Cash Payment and Bank Payment.

III. Voucher Number

A **Voucher Number** or a **Document Number** is a unique identity of any voucher/document. A voucher may be identified or searched using its unique voucher number. Let us understand some peculiarities about voucher numbering.

- Voucher number must be unique.

- Every voucher type shall have a separate numbering series.

- A voucher number may have prefix or suffix or both, e.g. ICPL/2034/17-18. In this case "ICPL" is the prefix, "17-18" is the suffix and "2034" is the actual number of the voucher.

- All vouchers must be numbered serially, i.e. 1,2,3,4,5,6 and so on.

- All vouchers are recorded in chronological order and hence voucher recorded earlier must have an earlier number, i.e. if voucher number for a payment voucher having date as 15th April, 2017 is 112, voucher number for all the vouchers recorded after this date shall be more than 112 only.

IV. Accounting Flow

In introduction part, we have discussed accounting flow from the angle of an accountant. Now we are going to discuss accounting flow from the angle of software.
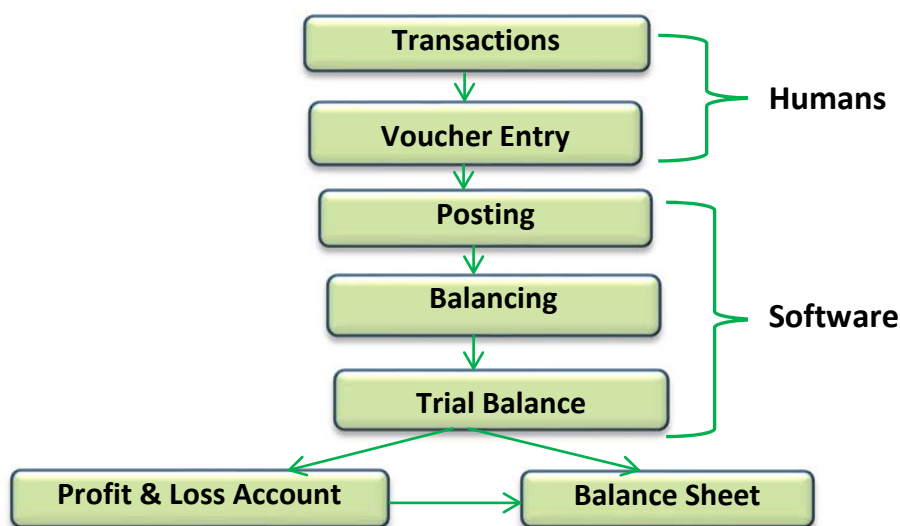

Fig. 2.2.4: Flow of Accounting

As shown in the Fig. 2.2.4 regarding the flow of accounting, in all there are seven steps in accounting flow, out of which only first two steps require human intervention. Remaining five steps are mechanical steps and can be performed by software with high speed and accuracy. Also, these five steps, i.e. Posting, Balancing, Trial Balance preparation, Profit and Loss Account preparation and Balance Sheet preparation are time consuming jobs and require huge efforts.

In very few cases, voucher entry may be automated and performed by software automatically. E.g. Interest calculation and application on monthly basis by a bank can be done by software automatically at the end of the month. But largely, voucher entry has to be done by a human being only.

V. Types of Ledgers

In accounting, we have studied that there are three types of ledger accounts, i.e. **Personal**, **Real** and **Nominal**. But as far as Financial and Accounting Systems are concerned, ledgers may be classified in two types only **Ledger having Debit Balance** and **Ledger having Credit Balance**. Why this is so? Let us understand with the help of the Fig. 2.2.5.
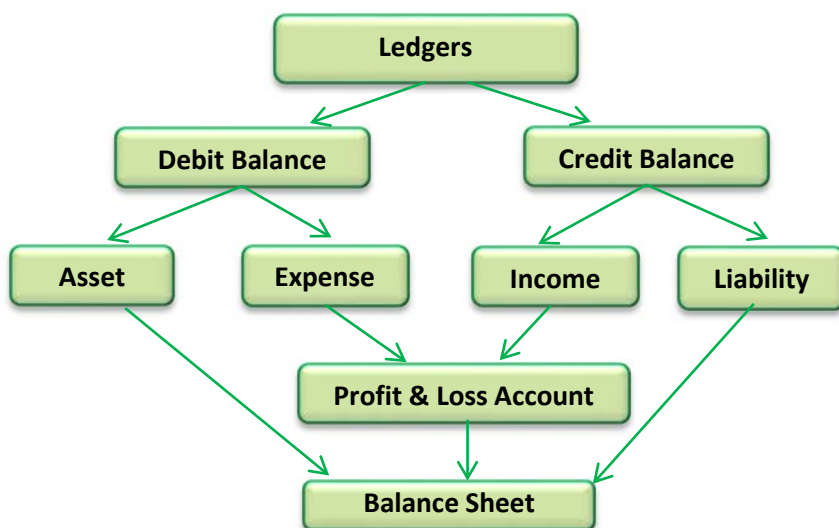

Fig. 2.2.5: Types of Ledgers

Please note –

♦   Basic objective of accounting software is to generate two primary accounting reports, i.e. **Profit & Loss Account** and **Balance Sheet**. Ledger grouping is used for preparation of reports, i.e. Balance Sheet and Profit & Loss Account.

♦   Hence every ledger is classified in one of the four categories, i.e. **Assets, Expense, Income** or **Liability**. It cannot be categorized in more than one category. The examples of Ledger account are as follows:

   (a) **Assets** includes Cash, property plant and equipment, accounts receivable etc.

   (b) **Expense** includes salary, insurance, utilities etc.

   (c) **Income** includes sales, interest income, rent income and other operating income etc.

   (d) **Liabilities** includes Debt/loans, accounts payable, outstanding expenses etc.

♦   Difference between Total Income and Total Expenses, i.e. Profit & Loss, as the case may be, is taken to Balance Sheet. So, everything in accounting software boils down to Balance Sheet. Balance Sheet is the last point in accounting process.

♦   **Income** and **Expense** ledgers are considered in **Profit & Loss Account** and **Asset** and **Liability** ledgers are considered in **Balance Sheet**.

♦   Accounting software does not recognize any ledger as Personal, Real or Nominal, instead it recognizes it as an Asset, Liability, Income or Expense Ledger.

VI.   Grouping of Ledgers

At the time of creation of any new ledger, it must be placed under a particular group. There are four basic groups in Accounting, i.e. **Income**, **Expense**, **Asset**, **Liability**. There may be any number of sub groups under these four basic groups. Grouping is important as this is way to tell software about the nature of the ledger and where it is to be shown at the time of reporting.

E.g. Cash ledger is an asset ledger and should be shown under current assets in Balance Sheet. If we group cash ledger under indirect expenses, it shall be displayed in profit and loss account as expenditure. Software cannot prevent incorrect grouping of ledger.

2.2.4 Technical Concepts

As now-a-days, almost all the Financial and Accounting Systems are computerized, it is necessary to understand how does it work? We are going to understand technical concepts from the perspective of a non-technical person or a layman who does not understand technicalities and does not want to go into technical details.

A.   Working of any software (Refer Fig. 2.2.6)
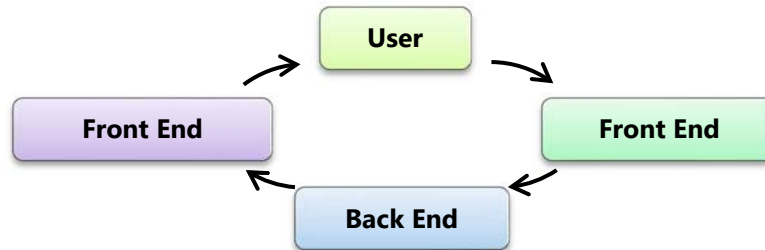
**Fig. 2.2.6: Types of software**

(i)   Front End & Back End

These two words are used by software people again and again. Let us understand these two words in a simple language.

♦   **Front End** – It is part of the overall software which actually interacts with the user who is using the software.

♦   **Back End** – It is a part of the overall software which does not directly interact with the user but interact with Front End only.

If a user wants to have some information from the system, i.e. Balance Sheet-

♦   User will interact with Front End part of the software and request front end to generate the report.

♦   Front End will receive the instruction from user and pass it on to the back end.

♦   Back End will process the data, generate the report and send it to the front end. Front end will now display the information to user.

♦   This is how the process gets completed each and every time.

To understand this concept in a better way, let us try to co-relate this with a situation in a restaurant as shown in the Fig. 2.2.7.
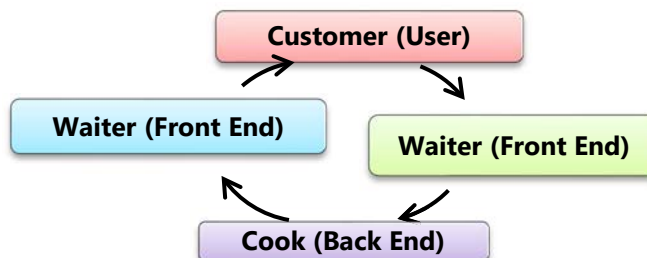
Fig. 2.2.7: An Illustrative Situation (For a customer in a Restaurant)

♦ A customer will place an order with waiter (Front End) and not with a cook (Back End) directly.

♦ Waiter will receive the order and pass it, to the cook in the kitchen.

♦ Cook will process the food as per requirement and had it over to the waiter.

♦ Waiter will serve the food to the customer.

(ii) Why separate Front End and Back End Software? Why not only one?

Reasons behind this can be summarized as under in the Table 2.2.4.

Table 2.2.4: Front End and Back End for Situation (cited in Fig. 2.2.7)

Reason	Restaurant	Software
Domain Expertise	A waiter is expert in handling customers; a cook is expert in cooking. These two jobs are separate and should not be mixed with each other. Both the jobs must be performed with topmost quality.	Front end software is meant for handling requests from users. Back end software is meant for storing and handling the data.
Presentation	Waiter can present himself as well as the food in a better way. Everybody likes good presentation. One cannot expect a good presentable cook as he/she works in kitchen.	Front end software interacting with a user is meant for presenting information in proper format, different colours, bold, italic letters, tables, charts, etc. Back end software is not meant for it and it can't be expected also.
User Experience	Waiter handles processed food and not raw material. Whole process of getting desired food from ordering to billing should be smooth and user experience should be very good. This is supposed to be done by well-	Front end software should guide a user to the desired report or feature. Front end software handles processed data and not raw data like back end. User interface of the front-end software needs to be intuitive, i.e. minimum

	trained waiter. This cannot be expected from a cook.	use of help should be sought by user.
Speed	After placing an order, customer expects a quick delivery of food, nobody likes waiting period. This is possible only with segregation of duties. Waiter will handle the customers only. Cook will keep on cooking only. Repeating the same activity again and again increases expertise and efficiency.	Using single software for both the aspects would unnecessarily increase the load and slow down the speed. Separate back end software is used for handling data only. This reduces the load and increases speed of operations.
Language	A waiter needs to be polished and polite. He/she needs to understand language of the customer and speak to the customer in the language in which the customer is comfortable. Cook must do nothing with this aspect as he is not interacting with customers. His job is to prepare best quality food only.	Front end speaks in the language understood by the user and understands language spoken by the Backend. Back end speaks in technical language not understood by a layman. Front end can speak in the languages, user's language and technical language.

(iii)   Application Software

As already discussed in the previous chapter, application software performs many functions such as receiving the inputs from the user, interprets the instructions and performs logical functions so a desired output is achieved. Examples of application software would include SAP, Oracle Financials, MFG Pro etc.

In most software, there are three layers which together form the application namely; an **Application Layer**, an **Operating System Layer** and a **Database Layer**. This is called **Three Tier architecture**.

o   The **Application Layer** receives the inputs from the users and performs certain validations like, if the user is authorized to request the transaction.

o   The **Operating System Layer** carries these instructions and processes them using the data stored in the database and returns the results to the application layer.

o   The **Database Layer** stores the data in a certain form. For a transaction to be completed, all the three layers need to be invoked. Most application software is built on this model these days.

B.   Installed Applications v/s Cloud-based Applications

There are the two ways (as shown in the Table 2.2.5) of using a software including Financial & Accounting Software.

o   **Installed Applications:** These are programs that are installed on the hard disc of the user's computer.

o   **Cloud Applications:** Web Applications are not installed on the hard disc of the user's computer and are installed on a web server and accessed using a browser and internet connection. As technology and internet connectivity improved virtually, all web-based applications have moved to cloud-based applications. These days many organizations do not want to install Financial Applications on their own IT infrastructure. For many organizations, the thought process is that it is not their primary function to operate complex IT systems and to have a dedicated IT team and hardware which requires hiring highly skilled IT resources and to maintain the hardware and software to run daily operations. The costs may become prohibitive. Thus, organizations increasingly are hosting their applications on Internet and outsource the IT functions. There are many methods through which this can be achieved. Most common among them being SaaS – Software as a Service or IaaS – Infrastructure as a Service of Cloud Computing.

(The details of Cloud computing Service models are discussed in the Chapter 4 of the study material.)

Table 2.2.5: Installed and Cloud Based Applications

Particulars	Installed Application	Cloud Based Application
Installation and Maintenance	As software is installed on hard disc of the computer used by user, it needs to be installed on every computer one by one. This may take lot of time. Also, maintenance and updating of software	Installation on user computer is not required. Update and maintenance are defined responsibility of service provider.

	may take lot of time and efforts.	
Accessibility	As software is installed on the hard disc of the user's computer, user needs to go to the computer only, i.e. the computer where software is installed, to use the software. It cannot be used from any computer.	As software is available through online access, to use the software a browser and an internet connection is needed. It can be used from any computer in the world. Access to the software becomes very easy. Also, it can be used 24 x 7.
Mobile Application	Using the software through mobile application is difficult in this case.	Mobile application becomes very easy as data is available 24x7. As technology evolves mobile technology is becoming an industry norm that makes cloud based application future oriented.
Data Storage	Data is physically stored in the premises of the user, i.e. on the hard disc of the user's server computer. Hence user will have full control over the data.	Data is not stored in the user's server computer. It is stored on a web server. Ownership of data is defined in Service Level Agreement (SLA). SLA defines the rights, responsibilities and authority of both service provider and service user.
Data Security	As the data is in physical control of the user, user shall have the full physical control over the data and he/she can ensure that it is not accessed without proper access.	Data security is a challenge in case of cloud based application as the data is not in control of the user or owner of data. As time evolves; SLAs provides for details of back-up, disaster recovery alternatives being used by service provider.

Performance	A well written installed application shall always be faster than web application, reason being data is picked from local server without internet.	Access is dependent on speed of internet. Slow internet slows access to information and may slow operations.
Flexibility	It shall have more flexibility and controls as compared to web application. It is very easy to write desktop applications that take advantage of the user's hardware (such as: scanners, cameras, Wi-Fi, serial ports, network ports, etc.). Installed applications have this dis-advantage of higher capital expenditure (CAPEX) in comparison to cloud based application.	The success of cloud based applications is that they allow flexibility against both Capital Expenditure (CAPEX) and Operating Expense (OPEX) to the user. User can scale up operations as per need.

2.2.5 Non-Integrated System

A **Non-Integrated System** is a system of maintaining data in a decentralized way. Each department shall maintain its own data separately and not in an integrated way. This is the major problem with non-integrated systems.

Human Resource   Accounting   Marketing

Production   Purchase   Logistics   Quality Control
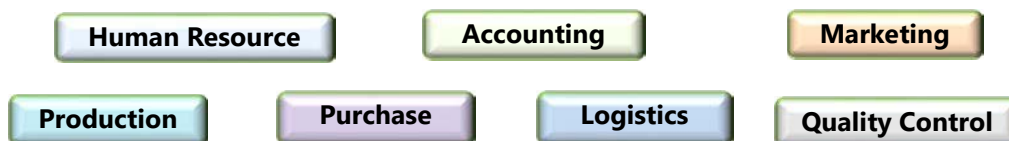
Fig. 2.2.8: Non-Integrated Systems

The Fig. 2.2.8 shows a typical non-integrated environment where all the departments are working independently and using their own set of data. They need to communicate with each but still they use their own data. This results in two major problems - Communication Gaps and Mismatched Data. Communication between different business units is a major aspect for success of any organization.

Example 2.2: Let us consider an example of mismatched master data. A customer record created by different departments for one customer named Ms. Jayshree

Jadhao is shown in following Table 2.2.6 showing same customer name written differently.

Table 2.2.6: Example 2.2 with same customer name written differently

Sr. No.	Name	Sr. No.	Name
1	JayashriJadhav	10	JayshriJadhaw
2	JayashreeJadhav	11	JayshreeJadhaw
3	JayshriJadhav	12	JayashriJadhao
4	JayshreeJadhav	13	JayashreeJadhao
5	JayashriJadhaw	14	JayshriJadhao
6	JayashreeJadhaw	15	JayshreeJadhao
7	JaishriJadhav	16	JaishreeJadhav
8	JaishriJadhao	17	JaishreeJadhao
9	JaishriJadhaw	18	JaishreeJadhaw

In the above case, we have considered first name and last name only. Had we used middle name also, few more permutations would have been possible. This may lead to total confusion in the organization at the time of inter-department communication.

2.2.6 Enterprise Resource Planning (ERP) Systems

It is an overall business management system that caters need of all the people connected with the organization. Every organization uses variety of resources in achieving its organization goals. ERP is an enterprise-wide information system designed to coordinate all the resources, information, and activities needed to complete business processes such as order fulfilment or billing.

Accounting and Finance function is considered as backbone for any business. Hence Financial & Accounting Systems are an important and integral part of ERP systems. ERP system includes so many other functions also. An ERP system supports most of the business system that maintains in a single database the data needed for a variety of business functions such as Manufacturing, Supply Chain Management, Financials, Projects, Human Resources and Customer Relationship Management.

An ERP system is based on a common database and a modular software design. The common database can allow every department of a business to store and retrieve information in real-time. The information should be reliable, accessible, and easily shared. The modular software design should mean a business can select the modules

they need, mix and match modules from different vendors, and add new modules of their own to improve business performance.

Ideally, the data for the various business functions are integrated. In practice the ERP system may comprise a set of discrete applications, each maintaining a discrete data store within one physical database.

The term ERP originally referred to how a large organization planned to use organizational wide resources. In the past, ERP systems were used in larger more industrial types of companies. However, the use of ERP has changed and is extremely comprehensive, today the term can refer to any type of company, no matter what industry it falls in. In fact, ERP systems are used in almost any type of organization – large or small.

For a software system to be considered ERP, it must provide an organization with functionality for two or more systems. While some ERP packages exist that only cover two functions for an organization (QuickBooks: Payroll & Accounting), most ERP systems cover several functions.

Today's ERP systems can cover a wide range of functions and integrate them into one unified database. For instance - functions such as Human Resources, Supply Chain Management, Customer Relationship Management, Financials, Manufacturing functions and Warehouse Management were all once stand-alone software applications, usually housed with their own database and network, today, they can all fit under one umbrella – the ERP system. Some of the well-known ERPs in the market today include SAP, Oracle, MFG Pro, and MS Axapta etc.

An ERP System is that system which caters all types of needs of an organization and provides right data at right point of time to right users for their purpose. Hence, definition of ideal ERP system may change for each organization. But generally, an ideal ERP system is that system where a single database is utilized and contains all data for various software modules. Fig. 2.2.9 showing different departments connecting with each other through central database.
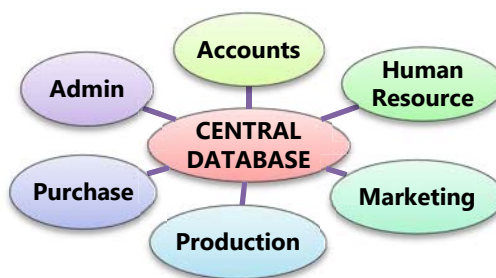
Fig. 2.2.9: Different Departments connected through Central Database

Data Warehouse is a module that can be accessed by an organization's customers, suppliers and employees. It is a repository of an organization's electronically stored centralized data. Data warehouses are designed to facilitate reporting and analysis. This classic definition of the data warehouse focuses on data storage.

The process of transforming data into information and making it available to the user in a timely enough manner to make a difference is known as **Data Warehousing**. The means to retrieve and analyze data, to extract, transform and load data, and to manage the data dictionary are also considered essential components of a data warehousing system. An expanded definition of data warehousing includes business intelligence tools, tools to extract, transform, and load data into the repository, and tools to manage and retrieve metadata. In contrast, the data warehouses are operational systems which perform day-to-day transaction processing.

2.2.7 Benefits of an ERP System

♦ **Information integration:** The reason ERP systems are called integrated is because they possess the ability to automatically update data between related business functions and components. For example - one needs to only update the status of an order at one place in the order-processing system; and all the other components will automatically get updated.

♦ **Reduction of Lead-time:** The elapsed time between placing an order and receiving it is known as the Lead-time. The ERP Systems by virtue of their integrated nature with many modules like Finance, Manufacturing, Material Management Module etc.; the use of the latest technologies like EFT (Electronic Fund Transfer), EDI (Electronic Data Interchange) reduce the lead times and make it possible for the organizations to have the items at the time they are required.

♦ **On-time Shipment:** Since the different functions involved in the timely delivery of the finished goods to the customers- purchasing, material management production, production planning, plant maintenance, sales and distribution – are integrated and the procedures automated; the chances of errors are minimal and the production efficiency is high. Thus, by integrating the various business functions and automating the procedures and tasks the ERP system ensures on-time delivery of goods to the customers.

♦ **Reduction in Cycle Time:** Cycle time is the time between placement of the order and delivery of the product. In an ERP System; all the data, updated to the minute, is available in the centralized database and all the procedures are automated, almost all these activities are done without human intervention. This efficiency of the ERP systems helps in reducing the cycle time.

♦ **Improved Resource utilization:** The efficient functioning of the different modules in the ERP system like manufacturing, material management, plant maintenance, sales and distribution ensures that the inventory is kept to a minimum level, the machine down time is minimum and the goods are produced only as per the demand and the finished goods are delivered to the customer in the most efficient way. Thus, the ERP systems help the organization in drastically improving the capacity and resource utilization.

♦ **Better Customer Satisfaction:** Customer satisfaction means meeting or exceeding customers' requirement for a product or service. With the help of web-enabled ERP systems, customers can place the order, track the status of the order and make the payment sitting at home. Since all the details of the product and the customer are available to the person at the technical support department also, the company will be able to better support the customer.

♦ **Improved Supplier Performance:** ERP systems provide vendor management and procurement support tools designed to coordinate all aspect of the procurement process. They support the organization in its efforts to effectively negotiate, monitor and control procurement costs and schedules while assuring superior product quality. The supplier management and control processes are comprised of features that will help the organization in managing supplier relations, monitoring vendor activities and managing supplier quality.

♦ **Increased Flexibility:** ERP Systems help the companies to remain flexible by making the company information available across the departmental barriers and automating most of the processes and procedures, thus enabling the company to react quickly to the changing market conditions.

♦ **Reduced Quality Costs:** Quality is defined in many different ways- excellence, conformance to specifications, fitness for use, value for the price and so on. The ERP System's central database eliminates redundant specifications and ensures that a single change to standard procedures takes effect immediately throughout the organization. The ERP systems also provide tools for implementing total quality management programs within an organization.

♦ **Better Analysis and Planning Capabilities:** Another advantage provided by ERP Systems is the boost to the planning functions. By enabling the comprehensive and unified management of related business functions such as production, finance, inventory management etc. and their data; it becomes possible to utilize fully many types of Decision Support Systems (DSS) and simulation functions, what-if analysis and so on; thus, enabling the decision-makers to make better and informed decisions.

♦ **Improved information accuracy and decision-making capability:** The three fundamental characteristics of information are accuracy, relevancy and timeliness. The information needs to be accurate, relevant for the decision-maker and available to the decision-makers when he requires it. The strength of ERP Systems- integration and automation help in improving the information accuracy and help in better decision-making.

♦ **Use of Latest Technology:** ERP packages are adapted to utilize the latest developments in Information Technology such as open systems, client/server technology, Cloud Computing, Mobile computing etc. It is this adaptation of ERP packages to the latest changes in IT that makes the flexible adaptation to changes in future development environments possible.

Example 2.3: Table 2.2.7 provides some examples of Free and Open Source ERP Software.

Table 2.2.7: Free and Open Source ERP software

S. No.	ERP Software	S. No.	ERP Software
1	Adempiere, a Java based ERP-System which started as a fork of Compiere	11	OpenBlueLab
2	Compiere, a Java based ERP-System	12	Openbravo, a Java based ERP-System
3	Dolibarr, a PHP based ERP system	13	OpenERP (formerly Tiny ERP)
4	ERP5, a Python based ERP system	14	Opentaps (Java based)
5	GNU Enterprise	15	OrangeHRM
6	GRR (software), a PHP/MySQL - based, web-accessed free ERP system	16	Postbooks from XTuple
7	JFire, a Java based ERP-System from NightLabs	17	SQL-Ledger
8	Kuali Foundation	18	Stoq
9	LedgerSMB	19	WebERP
10	OFBiz		

2.3 RISKS AND CONTROLS IN AN ERP ENVIRONMENT

(The general discussion on "Risk, its Management and related controls for various business processes" has been provided in Chapter – 1 of the study material.)

The risks being discussed here are specific to ERP systems used.

2.3.1 Introduction

Major feature of an ERP System is **Central Database**. As the complete data is stored centrally at one place, ensuring safety of data and minimising risk of loss of data is a big challenge. In Non-Integrated System, data is stored by each department separately; hence this risk is low in such an environment. In an ERP environment, two major risks are faced by any organization:

♦ Due to central database, all the persons in an organization access the same set of data on a day to basis. This again poses the risk of leakage of information or access of information to non-related people. E.g. A person from sales department checking salary of a person in production.

♦ Again, as there is central database, all users shall use the same data for recording of transactions. Hence, there is one more risk of putting incorrect data in the system by unrelated users. E.g. a person in Human Resource Department recording a purchase order. This is a risk due to central database only and controls are needed to minimise such type of risks.

2.3.2 ERP Implementation, its Risks and related Controls

ERP system implementation is a huge task and requires lot of time, money and above all patience. The success or failure of any ERP or saying it in terms of payback or ROI of an ERP, is dependent on its successful implementation and once implemented proper usage.

Tables 2.3.1(A,B,C,D,E) provide extensive discussion on the issues – **People**, **Process**, **Technological**, **other implementation** and **post implementation issues** that arise during implementation and related controls respectively.

1.   People Issues: Employees, Management, implementation team, consultants and vendors are the most crucial factor that decides the success or failure of an ERP System.

Table 2.3.1(A): Risks and corresponding Controls related to People Issues

Aspect	Risk Associated	Control Required
Change Management	Change will occur in the employee's job profile in terms of some jobs becoming irrelevant and some new jobs created.	Proper training of the users with well documented manuals. Practical hands on training of the ERP System should be provided so that the transition from old system to ERP system is smooth and hassle free.
	The way in which organization functions will change, the planning, forecasting and decision-making capabilities will improve, information integration happening etc.	It requires ensuring that a project charter or mission statement exists. The project requirements are to be properly documented and signed by the users and senior management.
	Changing the scope of the project is another problem.	This requires clear defining of change control procedures and holds everyone to them.
Training	Since the greater part of the raining takes place towards the end of the ERP implementation cycle, management may curtail the training due to increase in the overall cost budget.	Training is a project-managed activity and shall be imparted to the users in an organization by the skilled consultants and representatives of the hardware and package vendors.
Staff Turnover	As the overall system is integrated and connected with each other department, it becomes complicated and difficult to understand. Employee turnover – qualified and skilled personnel leaving the company - during the implementation and transition phases can affect	This can be controlled and minimized by allocation of employees to tasks matching their skill-set; fixing of compensation package and other benefits accordingly- thus keeping the employees happy and content and minimizing the staff turnover.

	the schedules and result in delayed implementation and cost overrun.	
Top Management Support	ERP implementation will fail if the top management does not provide the support and grant permission for the availability of the huge resources that are required during the transition.	The ERP implementation shall be started only after the top management is fully convinced and assure of providing the full support.
Consultants	These are experts in the implementation of the ERP package and might not be familiar with the internal workings and organizational culture.	The consultants should be assigned a liaison officer - a senior manager – who can familiarize them with the company and its working.

2. **Process Risks:** One of the main reasons for ERP implementation is to improve, streamline and make the business process more efficient, productive and effective.

Table 2.3.1(B): Risks and corresponding Controls related to Process Risks

Aspect	Risk Associated	Control Required
Program Management	There could be a possibility of an information gap between day-to-day program management activities and ERP-enabled functions like materials and procurement planning, logistics and manufacturing.	This requires bridging the information gap between traditional ERP-based functions and high value operational management functions, such applications can provide reliable real-time information linkages to enable high-quality decision making.
Business Process Reengineering (BPR)	BPR means not just change – but dramatic change and dramatic improvements.	This requires overhauling of organizational structures, management systems, job descriptions, performance measurements, skill development, training and use of IT.

3.   Technological Risks: The organizations implementing ERP systems should keep abreast of the latest technological developments and implementation which is required to survive and thrive.

Table 2.3.1(C): Risks and corresponding Controls related to Technological Risks

Aspect	Risk Associated	Control Required
Software Functionality	ERP systems offer a myriad of features and functions, however, not all organizations require those many features. Implementing all the functionality and features just for the sake of it can be disastrous for an organization.	Care should be taken to incorporate the features that are required by the organization and supporting additional features and functionality that might be required at a future date.
Technological Obsolescence	With the advent of more efficient technologies every day, the ERP system also becomes obsolete as time goes on.	This requires critical choice of technology, architecture of the product, ease of enhancements, ease of upgrading, quality of vendor support.
Enhancement and Upgrades	ERP Systems are not upgraded and kept up-to-date. Patches and upgrades are not installed and the tools are underutilised.	Care must be taken while selecting the vendor and upgrade/support contracts should be signed to minimize the risks.
Application Portfolio Management	These processes focus on the selection of new business applications and the projects required delivering them.	By bringing to the light the sheer number of applications in the current portfolio, IT organizations can begin to reduce duplication and complexity.

4.   Implementation Issues: Many times, ERP implementations are withdrawn because of the following factors.

Table 2.3.1(D): Risks and corresponding Controls related to some other implementation issues

Aspect	Risk Associated	Control Required
Lengthy implementation time	ERP projects are lengthy that takes anywhere between 1 to 4 years depending upon the size of the organization. Due to technological developments happening every day, the business and technological environment during the start and completion of the project will never be the same. Employee turnover is another problem.	Care must be taken to keep the momentum high and enthusiasm live amongst the employees, so as to minimize the risk.
Insufficient Funding	The budget for ERP implementation is generally allocated without consulting experts and then implementation is stopped along the way, due to lack of funds.	It is necessary to allocate necessary funds for the ERP implementation project and then allocate some more for contingencies.
Data Safety	As there is only one set of data, if this data is lost, whole business may come to stand still.	Back up arrangement needs to be very strong. Also, strict physical control is needed for data.
Speed of Operation	As data is maintained centrally, gradually the data size becomes more and more and it may reduce the speed of operation.	This can be controlled by removing redundant data, using techniques like data warehousing and updating hardware on a continuous basis.
System Failure	As everybody is connected to a single system and central database, in case of failure of system, the whole business may come to stand still may get affected badly.	This can be controlled and minimized by having proper and updated back up of data as well as alternate hardware / internet arrangements. In case of failure of primary system,

		secondary system may be used.
Data Access	Data is stored centrally and all the departments access the central data. This creates a possibility of access to non-relevant data.	Access rights need to be defined very carefully and to be given on "Need to know" and Need to do" basis only.

5.   Post Implementation issues: ERP operation and maintenance require a lifelong commitment by the company management and users of the system.

Table 2.3.1(E): Risks and corresponding Controls related to post-implementation issues

Aspect	Risk Associated	Control Required
Lifelong commitment	Even after the ERP implementation, there will always be new modules/versions to install, new persons to be trained, new technologies to be embraced, refresher courses to be conducted and so on.	This requires a strong level of commitment and consistency by the management and users of the system.

2.3.3 Role Based Access Control (RBAC) in ERP System

In computer systems security, **Role-Based Access Control** is an approach to restricting system access to authorized users. RBAC sometimes referred to as Role-Based Security is a policy neutral access control mechanism defined around roles and privileges that lets employees having access rights only to the information they need to do their jobs and prevent them from accessing information that doesn't pertain to them. It is used by most enterprises and can implement **Mandatory Access Control (MAC)** or **Discretionary Access Control (DAC)**.

- MAC criteria are defined by the system administrator, strictly enforced by the Operating System and are unable to be altered by end users. Only users or devices with the required information security clearance can access protected resources. A central authority regulates access rights based on multiple levels of security. Organizations with varying levels of data classification, like government and military institutions, typically use MAC to classify all end users.

- Whereas, DAC involves physical or digital measures and is less restrictive than other access control systems as it offers individuals complete control over the resources they own. The owner of a protected system or resource sets policies defining who can access it.

The components of RBAC such as role-permissions, user-role and role-role relationships make it simple to perform user assignments. RBAC can be used to facilitate administration of security in large organizations with hundreds of users and thousands of permissions. Roles for staff are defined in organization and permission to access a specific system or perform certain operation is defined as per the role assigned. E.g. a junior accountant in accounting department is assigned a role of recording basic accounting transactions, an executive in human resource department is assigned a role of gathering data for salary calculations on monthly basis, etc.

Types of Access

While assigning access to Master Data, Transaction Data and Reports to different users; following options are possible.

(i) **Create** – Allows to create data;

(ii) **Alter** – Allows to alter data;

(iii) **View** – Allows only to view data; and

(iv) **Print** – Allows to print data.

Example 2.4: Let us consider a small case study for better understanding of Role Based Access and Controls in Financial and Accounting Systems. Indradhanu Consulting Private Limited, a company dealing in project management is having different users as given in the Table 2.3.2 under.

Table 2.3.2: Users Database of Indradhanu Consulting Private Limited
(Illustrative)

S. No.	Employee Name	Designation	Allow Access To	Dis-allow access to
1	Swapnil Ghate	Director	Complete access to all the reports, masters and transactions but limited to viewing purpose only. No need to give any alteration or creation access.	Creation / Alteration
2	CA. Pankaj Deshpande	CFO	Same as director but in some cases,	

			creation or alteration access to masters and transactions may be given.	
3	Mayura Rahane	Head HR	Full access to all HR related masters and transactions, e.g. Creation and alteration of employees, pay heads, salary structures, leave types etc. Creation and alteration of leave and salary calculations etc.	All non-related masters, transactions and reports.
4	Amit Shriwas	Head-Accounts	Full access to all accounting masters, transactions and reports.	All non-related masters, transactions and reports.
5	Sachi Dongre	Accountant	Only voucher entry and viewing accounting master data.	Reports like Balance Sheet, Profit & Loss access to ledger creation or alteration.
6	Tanushree Daware	Head-Marketing	Fully access to customer master data, transaction history, purchase habits of customers may be given. Only view access for sales data.	All non-related masters, transactions and reports.
7	Sujay Kalkotwar	Manager-Taxation	Full access to taxation reports, tax related transactions, Access to Balance Sheet and Profit & Loss Account is also needed as tax	All non-related masters, transactions and reports.

			figures affect these reports.	
8	Aditi Kurhekar	Head-Purchases	Full Access to Purchase Order, Goods Receipt Note and Purchase Vouchers should be given. View access to vendor master data is also needed.	All non-related masters, transactions and reports.
9	Gayatri Rathod	Data Entry Operator	Very limited access should be given.	Access to accounting master data creation or alteration, access to reports like balance sheet, profit & loss accounts.
10	Sanjay Somkuwar	Cashier	Cash payment and cash receipt vouchers only.	All master and transaction data (other than cash), Backdated voucher entry.
11	Surbhee Chincholkar	Stores Incharge	Creation, Alteration of Inventory master data, Inventory transactions, Inventory reports, etc.	All non-related masters, transactions and reports.

2.4 AUDIT OF ERP SYSTEMS

The fundamental objectives of an audit of controls do not change in an ERP environment. When evaluating controls over ERP systems, decisions must be made regarding the relevance of operational internal control procedures to Information Technology (IT) controls. Specific control procedures for audit objectives must be tested. ERP systems should produce accurate, complete, and authorized information that is supportable and timely. In a computing environment, this is accomplished by a combination of controls in the ERP System, and controls in the

environment in which the ERP system operates, including its operating system. Controls are divided into **General Controls** and **Application Controls**.

- **General Controls** include controls over Information Technology management controls addressing the information technology oversight process; Information Technology infrastructure, security management and software acquisition; monitoring and reporting information technology activities; business improvement initiatives; and development and maintenance. These controls apply to all systems – from mainframe to client/server to desktop computing environments. General controls can be further divided into **Management Controls** and **Environmental Controls**.

- **Management Controls** deal with organizations, policies, procedures, planning, and so on.

- **Environmental Controls** are the operational controls administered through the computer centre/computer operations group and the built-in operating system controls.

- **Application Controls** pertain to the scope of individual business processes or application systems. Individual applications may rely on effective operation of controls over information systems to ensure that interface data are generated when needed, supporting applications are available and interface errors are detected quickly.

Some of the questions auditors should ask during an ERP audit are pretty much the same as those that should be asked during development and implementation of the system:

- Does the system process as per GAAP (Generally Accepted Accounting Principles) and GAAS (Generally Accepted Auditing Standards)?

- Does it meet the needs for reporting, whether regulatory or organizational?

- Were adequate user requirements developed through meaningful interaction?

- Does the system protect confidentiality and integrity of information assets?

- Does it have controls to process only authentic, valid, accurate transactions?

- Are effective system operations and support functions provided?

- Are all system resources protected from unauthorized access and use?

- Are user privileges based on what is called "role-based access?"

- Is there an ERP system administrator with clearly defined responsibilities?

- Is the functionality acceptable? Are user requirements met? Are users happy?

♦ Have workarounds or manual steps been required to meet business needs?

♦ Are there adequate audit trails and monitoring of user activities?

♦ Can the system provide management with suitable performance data?

♦ Are users trained? Do they have complete and current documentation?

♦ Is there a problem-escalation process?

Auditing aspects in case of any ERP system can be summarized as under:

(i) Auditing of Data

• **Physical Safety** – Ensuring physical control over data.

• **Access Control** – Ensuring access to the system is given on "need to know" (a junior accountant need not view Profit & Loss Account of the business) and "need to do basis" (HR executive need not record a Purchase Order).

(ii) Auditing of Processes

• **Functional Audit –** This includes testing of different functions / features in the system and testing of the overall process or part of process in the system and its comparison with actual process. E.g. Purchase Process, Sales Process, Salary Calculation Process, Recruitment Process, etc. Auditor may check this process in the system and compare it with actual process. It is quite possible that all the aspect present in the actual process may not be integrated in the ERP system. There may be some manual intervention.

• **Input Validations –** This stands for checking of rules for input of data into the system. E.g. a transaction of cash sales on sales counter must not be recorded in a date other than today (not a future date or a back date), amount field must not be zero, stock item field shall not be empty, etc. Input validations shall change according to each data input form.

2.5 ERP CASE STUDY OF A CHARTERED ACCOUNTANT FIRM

As everybody is familiar with working environment in a Chartered Accountant (CA) firm, let us consider possibility of implementing ERP system in a CA Firm.

Example 2.5: Nirman Infrastructures Pvt. Ltd. a client of Ghate Deshpande & Co. (a CA Firm) receives a notice for scrutiny assessment from Income Tax Department. Following shall be the events in normal case.

(i)   Client informs about receipt of notice to CA. Pankaj Deshpande (Partner) on phone and sends the copy of notice to CA Firm.

(ii)   Notice is received at CA firm, read and understood. A task for giving reply to Income Tax Department is allotted to Sachi Dongre, an article clerk.

(iii)   Sachi asks for some original documents (PAN, Memorandum of Articles, Agreements etc.) from client for working. These documents need to be returned to client after the work.

(iv)   Sachi works on this task, prepares the reply and submits it with Income Tax Department. Also, She updates CA. Pankaj Deshpande and Mayura (Accountant) about it.

(v)   Bill is prepared by Mayura and approved by CA. Pankaj Deshpande.

(vi)   Bill is submitted with client.

(vii)   Documents are returned to client.

(viii)   Cheque received from client against the bill submitted.

(ix)   Receipt is recorded in books of accounts.

This is how a simple case is handled in a CA Firm. Let us now discuss important points regarding this case. In case of any ERP System, two aspects are very important – Communication (Internal and External) and Documentation.

Refer Fig. 2.5.1 to understand the workflow of CA Firm using Integrated System.

♦   Communication in this case is starting from client.

♦   Instead of client calling his CA, he should put the information as a service request in the central database maintained by CA Firm.

♦   As soon as service request is put by client into the system, one or more partner should be informed by the system about new service request.

♦   Partner shall convert this request into the task and allot it to one of the assistant.

♦   On allotment of task to the assistant, client must be updated about this task allotment.

♦   Article assistant shall contact client for requirement of information regarding work.

♦   Client shall submit the document through the system and update the information in central database.

♦   Article shall complete the work and send it for approval of his boss.

♦   After approval of work by article, client shall be automatically informed about it through the system only.

♦   Information shall be passed on to accounts department for preparation of bill for this assignment.

♦   Bill shall be raised from the system and sent to client through email.

♦   Client shall pay the fees and receipt is recorded in the same system.
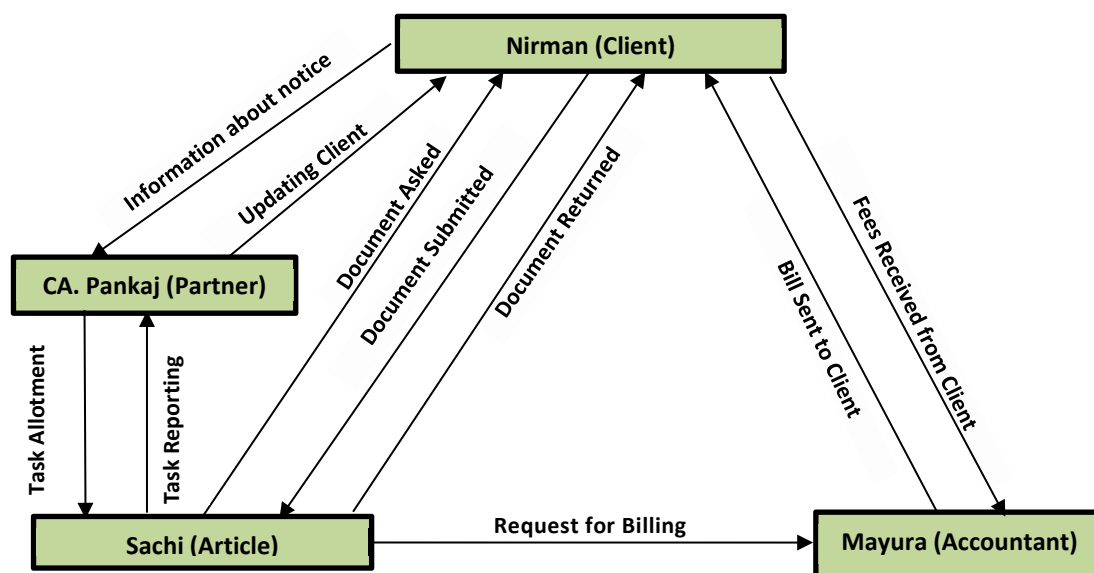
Fig. 2.5.1: Example 2.5 of a CA Firm Workflow

In this whole process, two important aspects, i.e. Communication and Documentation are taken care of in the best possible manner. Instead of a person communicating with other, system is communicating automatically after every updation. Fig. 2.5.2 showing different people connected to central database.

In case of an Integrated System, there shall be only one system of communication with others. But in case of non-integrated system people use multiple modes for communication like making a phone call, sending SMS, Email, WhatsApp or personal meeting. But the major problem with these multiple option is that there is no inter-connectivity between these modes and hence track of the overall process is not available.
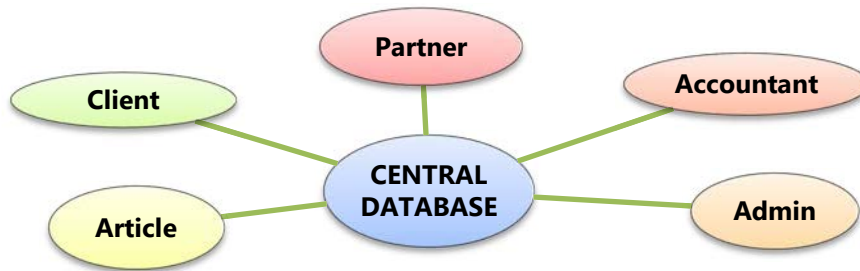
Fig. 2.5.2: Different people connected to Central Database

2.6 BUSINESS PROCESS MODULES AND THEIR INTEGRATION WITH FINANCIAL AND ACCOUNTING SYSTEMS

2.6.1 What is a Business Process?

A **Business Process** consists of a set of activities that are performed in coordination in an organizational and technical environment. These activities jointly realize a business goal. Each business process is enacted by a single organization, but it may interact with business processes performed by other organizations. To manage a process-

♦   The first task is to **define** it. This involves defining the steps (tasks) in the process and mapping the tasks to the roles involved in the process.

♦   Once the process is mapped and implemented, **performance measures** can be established. Establishing measurements creates a basis to improve the process.

♦   The last piece of the process management definition describes the **organizational setup** that enables the standardization and adherence to the process throughout the organization. Assigning enterprise process owners and aligning employees' performance reviews and compensation to the value creation of the processes could accomplish this.

Process management is based on a view of an organization as a system of interlinked processes which involves concerted efforts to map, improve and adhere to organizational processes; whereas traditional organizations are composed of departments and functional stages, this definition views organization as networks or systems of processes. Process orientation is at the core of BPM.

2.6.2 Business Process Flow

As discussed earlier, a **Business Process** is a prescribed sequence of work steps performed to produce a desired result for the organization. A business process is initiated by a kind of event, has a well-defined beginning and end, and is usually completed in a relatively short period. Organizations have many different business processes such as completing a sale, purchasing raw materials, paying employees and paying vendors, etc. Each of the business processes has either a direct or indirect effect on the financial status of the organization. The number and type of business processes and how the processes are performed would vary across enterprises and is also impacted by automation. However, most of the common processes would flow a generic life cycle.

Example 2.6: Accounting Process Flow

Accounting or Book-keeping cycle covers the business processes involved in recording and processing accounting events of a company. It begins when a transaction or financial event occurs and ends with its inclusion in the financial statements. A typical life cycle of an accounting transaction may include the following transactions as depicted in Fig. 2.6.1:
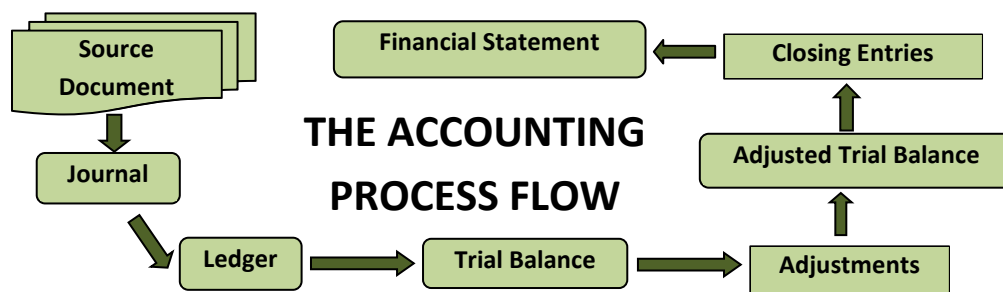

Fig. 2.6.1: Accounting Process Flow

(a) **Source Document:** A document that captures data from transactions and events.

(b) **Journal:** Transactions are recorded into journals from the source document.

(c) **Ledger:** Entries are posted to the ledger from the journal.

(d) **Trial Balance:** Unadjusted trial balance containing totals from all account heads is prepared.

(e) **Adjustments:** Appropriate adjustment entries are passed.

(f) **Adjusted Trial balance:** The trial balance is finalized post adjustments.

(g) Closing Entries: Appropriate entries are passed to transfer accounts to financial statements.

(h) Financial statement: The accounts are organized into the financial statements.

(Many examples like Order to Cash Process Flow (O2C), Procure to Pay Process Flow (P2P) have already been discussed in detail in Chapter 1 of the study material).

2.6.3 ERP - Business Process Modules (BPM)

#### A. Business Categories of BPM

There are three different nature and types of businesses that are operated with the purpose of earning profit. Each type of business has distinctive features.

*   **Trading Business –** Trading simply means buying and selling goods without any modifications, as it is. Hence inventory accounting is a major aspect in this case. Purchase and sales transactions cover major portion of accounting. This industry requires accounting as well as inventory modules.

*   **Manufacturing Business –** This type of business includes all aspects of trading business plus additional aspect of manufacturing. Manufacturing is simply buying raw material, changing its form and selling it as a part of trading. Here also, inventory accounting plays a major role. This type of industry requires accounting and complete inventory along with manufacturing module.

*   **Service Business –** This type of business does not have any inventory. It is selling of skills/knowledge/efforts/time. E.g. Doctors, Architects, Chartered Accountants, are the professionals into service business. There may be other type of business into service, i.e. courier business, security service, etc. This industry does not require inventory module.

B. Functional Modules of ERP

Business process may change per type of business. There may be different business units within a business. Hence different modules are possible in an integrated system. There may be modules as under. Fig. 2.6.2 shows different business process modules in ERP System. There may be some other modules also. Different types of industries require different modules.
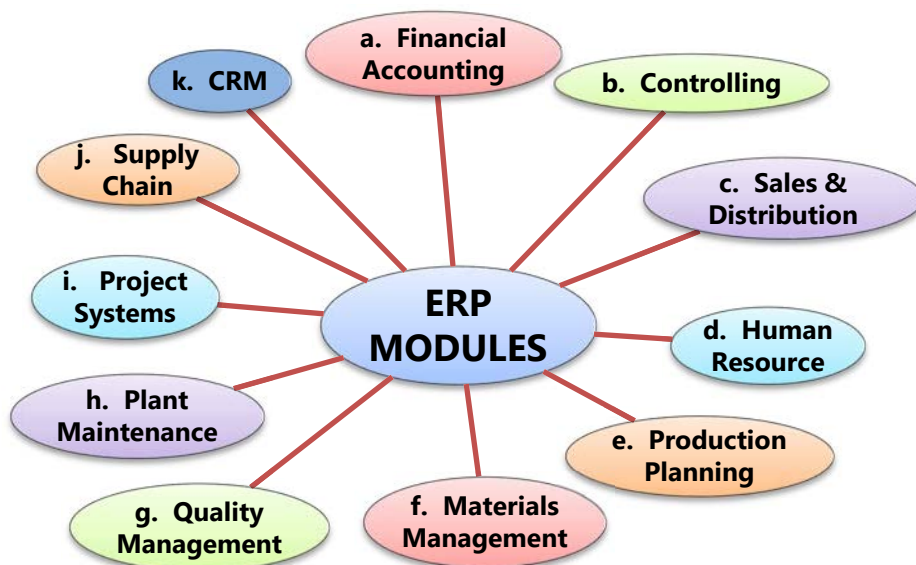
Fig. 2.6.2: ERP Modules

a.   Financial Accounting Module

This module is the most important module of the overall ERP System and it connects all the modules to each other. Every module is somehow connected with module. **Following are the key features of this module.**

♦   Tracking of flow of financial data across the organization in a controlled manner and integrating all the information for effective strategic decision making.

♦   Creation of Organizational Structure (Defining Company, Company Codes, business Areas, Functional Areas, Credit Control, Assignment of Company Codes to Credit Controls).

♦   Financial Accounting Global Settings (Maintenance of Fiscal Year, Posting Periods, defining Document types, posting keys, Number ranges for documents).

♦   General Ledger Accounting (Creation of Chart of Accounts, Account groups, defining data transfer rules, creation of General Ledger Account).

♦   Tax Configuration & Creation and Maintenance of House of Banks.

♦   Account Payables, accounts receivable, fixed assets, general ledger and cash management, etc. (Creation of Vendor Master data and vendor-related finance attributes like account groups and payment terms).

♦   Account Receivables (Creation of Customer Master data and customer-related finance attributes like account groups and payment terms).

♦   Asset Accounting.

♦   Integration with Sales and Distribution and Materials Management.

b.   Controlling Module

This module facilitates coordinating, monitoring, and optimizing all the processes in an organization. It controls the business flow in an organization. This module helps in analysing the actual figures with the planned data and in planning business strategies. Two kinds of elements are managed in Controlling Module – **Cost Elements** and **Revenue Elements**. These elements are stored in the Financial Accounting module.

Key features of this module are as under:

•   **Cost Element Accounting:** This component provides overview of the costs and revenues that occur in an organization. The cost elements are the basis for cost accounting and enable the user the ability to display costs for each of the accounts that have been assigned to the cost element. Examples of accounts that can be assigned are Cost Centres, Internal Orders, WBS (Work Breakdown Structures).

•   **Cost Centre Accounting:** This provides information on the costs incurred by the business. Cost Centres can be created for such functional areas as Marketing, Purchasing, Human Resources, Finance, Facilities, Information Systems, Administrative Support, Legal, Shipping/Receiving, or even Quality. Some of the benefits of Cost Centre Accounting are that the managers can set budget / cost Centre targets; Planning; Availability of Cost allocation methods; and Assessments / Distribution of costs to other cost objects.

•   **Activity-Based-Accounting:** This analyses cross-departmental business processes and allows for a process-oriented and cross-functional view of the cost centres.

•   **Internal Orders:** Internal Orders provide a means of tracking costs of a specific job, service, or task. These are used as a method to collect those costs and business transactions related to the task. This level of monitoring can be very detailed but allows management the ability to review Internal Order activity for better-decision making purposes.

•   **Product Cost Controlling:** This calculates the costs that occur during the manufacture of a product or provision of a service and allows the management

the ability to analyse their product costs and to make decisions on the optimal price(s) to market their products.

*   **Profitability Analysis:** This allows the management to review information with respect to the company's profit or contribution margin by individual market segment.

*   **Profit Centre Accounting:** This evaluates the profit or loss of individual, independent areas within an organization.

c.　Sales and Distribution Module

Sales and Distribution is one of the most important modules. It has a high level of integration complexity. Sales and Distribution is used by organizations to support sales and distribution activities of products and services, starting from enquiry to order and then ending with delivery.
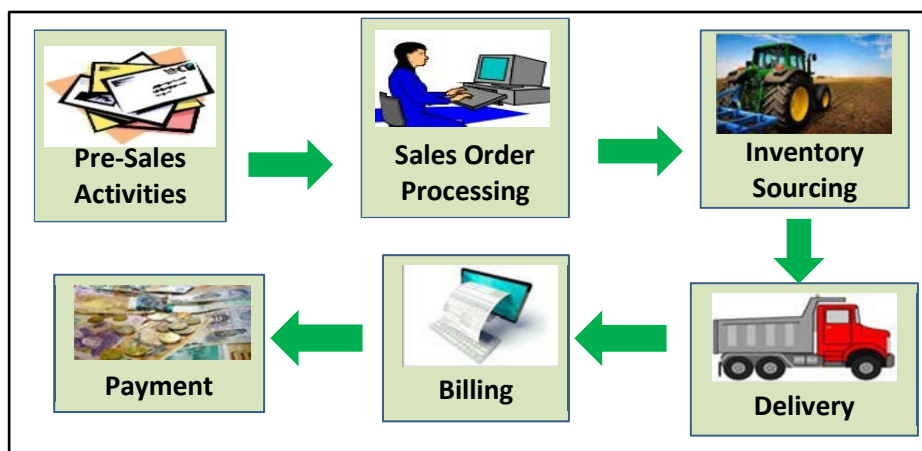
Fig. 2.6.3: Sales and Distribution with ERP

Sales and Distribution can monitor a plethora of activities that take place in an organization such as products enquires, quotation (pre-sales activities), placing order, pricing, scheduling deliveries (sales activity), picking, packing, goods issue, shipment of products to customers, delivery of products and billings. In all these processes, multiple modules are involved such as FA (Finance & Accounting), CO (Controlling), MM (Material Management), PP (Production Planning), LE (Logistics Execution), etc.; which shows the complexity of the integration involved.

Key features of Sales and Distribution Module are discussed as under:

♦　**Setting up Organization Structure:** Creation of new company, company codes, sales organization, distribution channels, divisions, business area, plants, sales area, maintaining sales offices, storage location;

♦ **Assigning Organizational Units:** Assignment of individual components created in the above activities with each other per design like company code to company, sales organization to company code, distribution channel to sales organization, etc.;

♦ **Defining Pricing Components:** Defining condition tables, condition types, condition sequences;

♦ Setting up sales document types, billing types, and tax-related components; and

♦ Setting up Customer master data records and configuration.

Sales and Distribution Process (Referring Fig. 2.6.3)

♦ **Pre-Sales Activities:** Include prospecting of customers, identifying prospective customers, gathering data, contacting them and fixing appointments, showing demo, discussion, submission of quotations, etc.

♦ **Sales Order:** Sales order is recorded in our books after getting a confirmed purchased order from our customer. Sales order shall contain details just like purchase order. E.g. Stock Item Details, Quantity, Rate, Due Date of Delivery, Place of Delivery, etc.

♦ **Inventory Sourcing:** It includes making arrangements before delivery of goods; ensuring goods are ready and available for delivery.

♦ **Material Delivery:** Material is delivered to the customer as per sales order. All inventory details are copied from Sales Order to Material Delivery for saving user's time and efforts. This transaction shall have a linking with Sales Order. Stock balance shall be reduced on recording of this transaction.

♦ **Billing:** This is a transaction of raising an invoice against the delivery of material to customer. This transaction shall have a linking with Material Delivery and all the details shall be copied from it. Stock balance shall not affect again.

♦ **Receipt from Customer / Payment:** This is a transaction of receiving amount from customer against sales invoice and shall have a linking with sales invoice.
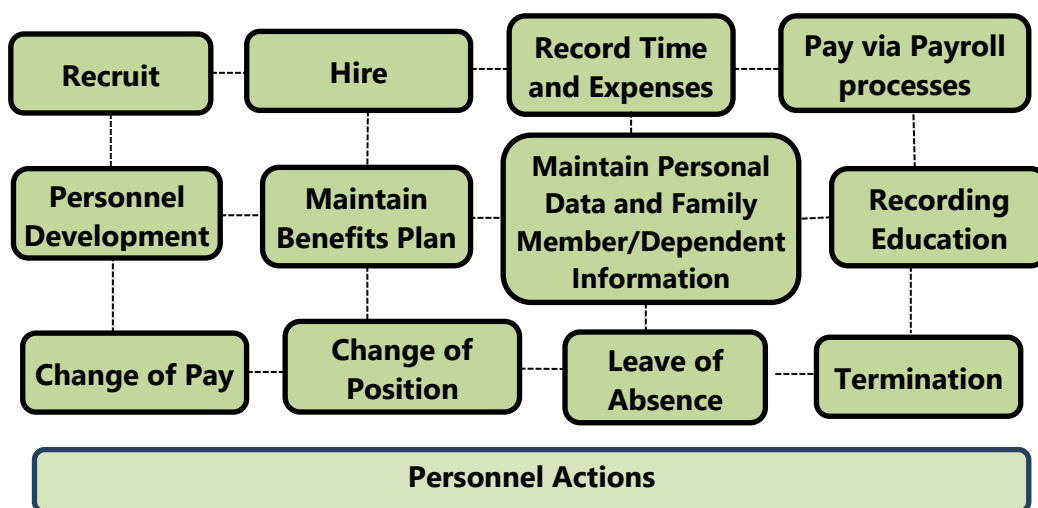
d.   Human Resource Module

This module enhances the work process and data management within HR department of enterprises. Right from hiring a person to evaluating one's performance, managing promotions, compensations, handling payroll and other related activities of an HR is processed using this module. The task of managing the details and task flow of the most important resource i.e. human resource is managed using this module.

The most important objective of master data administration in Human Resources is to enter employee-related data for administrative, time-recording, training and payroll

purposes. Payroll and Personnel departments deal with Human Resource of the organization. This department maintains total employee database. Wage, time and attendance related information comes to this department. They also prepare wage sheet for workmen; handle Provident Fund, ESI related formalities. This is perhaps the only module, which exchange very few information with other modules.

Concerning manpower, its requirement and utilization is one of the major chunks of profit for an organization. So, in this regard, every aspect of business transaction is taken care of by defining the master shifts master, Provident Fund (PF) ESI (Employees' State Insurance) master, leave, holiday, loans, employee master, operations and sub-operations masters etc. Also, the various input transaction such as Attendance Entry, Leave, holiday, Earning/Deduction entry, Advances etc. Finally, different types of Payroll reports, which can be of various types according to specified company standard. Fig. 2.6.4 showing processes involved in Human Resource Department.

Fig. 2.6.4: Process in Human Resource Department

♦   The module starts with the employee and workmen master.

♦   Employees being a part of a department so there will be provision of department and designation master. The job of this module is to record the regular attendance of every employee.

♦   Usage of magnetic card or finger print recognition devices will help to improve the attendance system and provide an overall security in terms of discarding proxy attendance.

♦ Moreover, if the attendance related information can be digitised then the major portion of monthly salary can be automated. But the authority should study the feasibility of this kind of system.

♦ This module will also deal with the financial entries like advance or loan to employees.

♦ From Holiday master provided with the module, the user could feed all possible holidays at the beginning of a year, so leave related information can be automated. This module will generate monthly wage sheet from which the salary payment can be made and respective accounts will be updated.

♦ All figures will be protected under password. Only authorized person will be eligible to access information from this module
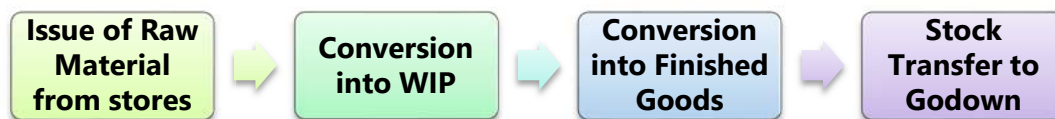
e.   Production Planning (PP) Module

Production Planning (PP) Module is another important module that includes software designed specifically for production planning and management. This module also consists of master data, system configuration and transactions to accomplish plan procedure for production. PP module collaborates with Master Data, Sales and Operations Planning (SOP), Distribution Resource Planning (DRP), Production Planning, Material Requirements Planning (MRP), Capacity Planning, Product Cost Planning and so on while working towards production management in enterprises.

♦ **Master Data** –This includes the material master, work centres, routings and bill of materials.

♦ **SOP** - Sales and Operations Planning (SOP) provides the ability to forecast sales and production plans based on historical, current and future data.

♦ **DRP** - Distribution Resource Planning (DRP) allows companies the ability to plan the demand for distribution centres.

♦ **Production Planning** –This includes material forecasting, demand management, long term planning and master production scheduling (MPS).

♦ **MRP** - Material Requirements planning relies on demand and supply elements with the calculation parameters to calculate the net requirements from the planning run.

♦ **Capacity Planning** –This evaluates the capacity utilized based on the work centres available capacity to show capacity constraints.

♦ **Product Cost Planning** –This is the process of evaluating all the time values and value of component materials to determine the product cost.

Fig. 2.6.5 discusses Production Planning Module.

| Issue of Raw Material from stores	→	Conversion into WIP	→	Conversion into Finished Goods	→	Stock Transfer to Godown

Fig. 2.6.5: Process in Production Planning Module

Conversion into Work In Process (WIP) may include more than one step. Also, conversion into Finished Goods may include packing process also.

f.   Material Management (MM) Module

Material Management (MM) Module as the term suggests manages materials required, processed and produced in enterprises. Different types of procurement processes are managed with this system. Some of the popular sub-components in MM module are vendor master data; consumption based planning, purchasing, inventory management, invoice verification and so on. Material Management also deals with movement of materials via other modules like logistics, Supply Chain Management, sales and delivery, warehouse management, production and planning. Fig. 2.6.6 showing overall purchase process.

♦ **Purchase Requisition from Production Department:** Production department sends a request to purchase department for purchase of raw material required for production.

♦ **Evaluation of Requisition:** Purchase department shall evaluate the requisition with the current stock position and purchase order pending position and shall decide about accepting or rejection the requisition.

♦ **Asking for Quotation:** If requisition is accepted, quotations shall be asked to approve vendors for purchase of material.

♦ **Evaluation of Quotations:** Quotations received shall be evaluated and compared.

♦ **Purchase Order:** This is a transaction for letting an approved vendor know what we want to purchase, how much we want to purchase, at what rate we want to purchase, by what date we want the delivery, where we want the delivery. Hence, a typical purchase order shall have following information.

   o   Description of **stock items** to be purchased.

   o   **Quantity** of these stock items.

o **Rate** for purchases.

o **Due Date** by which material is to be received.

o **Godown** where material is to be received.
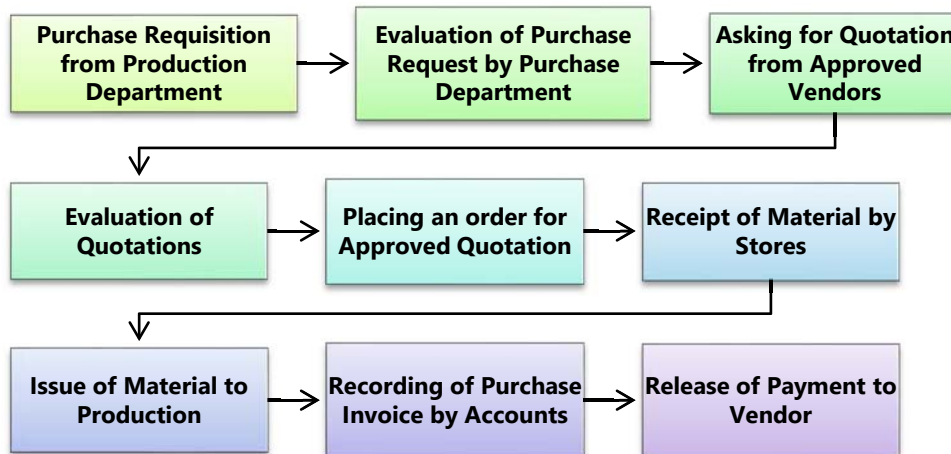
Fig. 2.6.6: Process showing Overall Purchase Process

♦ **Receipt of Material:** This is a transaction of receipt of material against purchase order which is commonly known as Material Receipt Note (MRN) or Goods Receipt Note (GRN). This transaction shall have a linking with Purchase Order. Information in Purchase Order is automatically copied to Material Receipt Voucher for saving time and efforts of user. Stock is increased after recording of this transaction.

♦ **Issue of Material:** Material received by stores shall be issued to production department as per requirement.

♦ **Purchase Invoice:** This is a financial transaction. Trial balance is affected due this transaction. Material Receipt transaction does not affect trial balance. This transaction shall have a linking with Material Receipt Transaction and all the details of material received shall be copied automatically in purchase invoice. As stock is increased in Material Receipt transaction, it will not be increased again after recording of purchase invoice.

♦ **Payment to Vendor:** Payment shall be made to vendor based on purchase invoice recorded earlier. Payment transaction shall have a linking with purchase invoice.

Please note that Purchase Order and Material Receipt are not part of financial accounting and does not affect trial balance. But these transactions are part of overall Financial and Accounting System.

g. Quality Management Module

Quality Management (QM) Module helps in management of quality in productions across processes in an organization. This module helps an organization to accelerate their business by adopting a structured and functional way of managing quality in different processes. Quality Management module collaborates in procurement and sales, production, planning, inspection, notification, control, audit management and so on. Fig. 2.6.7 showing Process in Quality Management Module.

♦ **Quality Planning:** Quality planning is the process of planning the production activities to achieve the goals of meeting the customer requirements in time, within the available resources.

♦ **Quality Control:** It is a system for ensuring the maintenance of proper standards in manufactured goods, especially by periodic random inspection of the product. IT involves the checking and monitoring of the process and products with an intention of preventing non-conforming materials from going to the customer. Various result areas are identified for each process and studies are conducted to verify whether those results are being achieved.

♦ **Quality Assurance:** Quality assurance concentrates on identifying various processes, their interactions and sequence, defining the objectives of each process, identifying the key result areas and measures to measure the results, establishing the procedures for getting the required results, documenting the procedures to enable everyone to follow the same, educating the people to implement the procedures, preparing standard operating instructions to guide the people on work spot, monitoring and measuring the performance, taking suitable actions on deviations and continuously improving the systems.

♦ **Quality Improvement:** Quality improvement is a never-ending process. The customer's needs and expectations are continuously changing depending on the changes in technology, economy, political situation, ambitions and dreams, competition, etc.
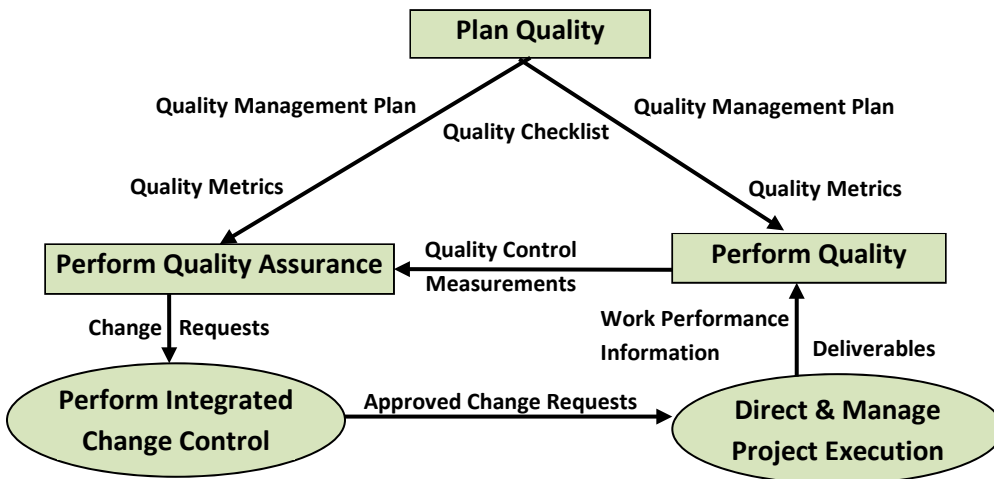
Fig. 2.6.7: Process in Quality Management Module

Quality Management Process includes the following:

♦ Master data and standards are set for quality management;

♦ Set Quality Targets to be met;

♦ Quality management plan is prepared;

♦ Define how those quality targets will be measured;

♦ Take the actions needed to measure quality;

♦ Identify quality issues and improvements and changes to be made;

♦ In case of any change is needed in the product, change requests are sent;

♦ Report on the overall level of quality achieved; and

♦ Quality is checked at multiple points, e.g. inwards of goods at warehouse, manufacturing, procurement, returns.

h.   Plant Maintenance Module

Plant Maintenance (PM) is a functional module which handles the maintaining of equipment and enables efficient planning of production and generation schedules. This application component provides us a comprehensive software solution for all maintenance activities that are performed within a company. It supports cost-efficient maintenance methods such as risk-based maintenance or preventive maintenance, and provides comprehensive outage planning and powerful work order management.

Objectives of Plant Maintenance Module

(i)   To achieve minimum breakdown and to keep the plant in good working condition at the lowest possible cost.

(ii) To keep machines and other facilities in a condition that permits them to be used at their optimum (profit making) capacity without any interruption or hindrance.

(iii) To ensure the availability of the machines, buildings and services required by other sections of the factory for the performance of their functions at optimum return on investment whether this investment be in material, machinery or personnel.

Fig. 2.6.8 is showing process in Plant Maintenance.

♦ **Equipment Master** is a repository of the standard information that one needs related to a specific piece of equipment.

♦ **Equipment/Plant** Maintenance provides a variety of reports to help us to review and manage information about our equipment and its maintenance.

♦ **Plant Maintenance (PM)** Reports are used to review and manage information about preventive maintenance schedules and service types within any maintenance organization.

Different PM reports are required to review PM information, such as:

♦ Status of service types for a piece of equipment;

♦ Maintenance messages;

♦ The frequency of occurrence for selected service types; and

♦ All equipment transactions.
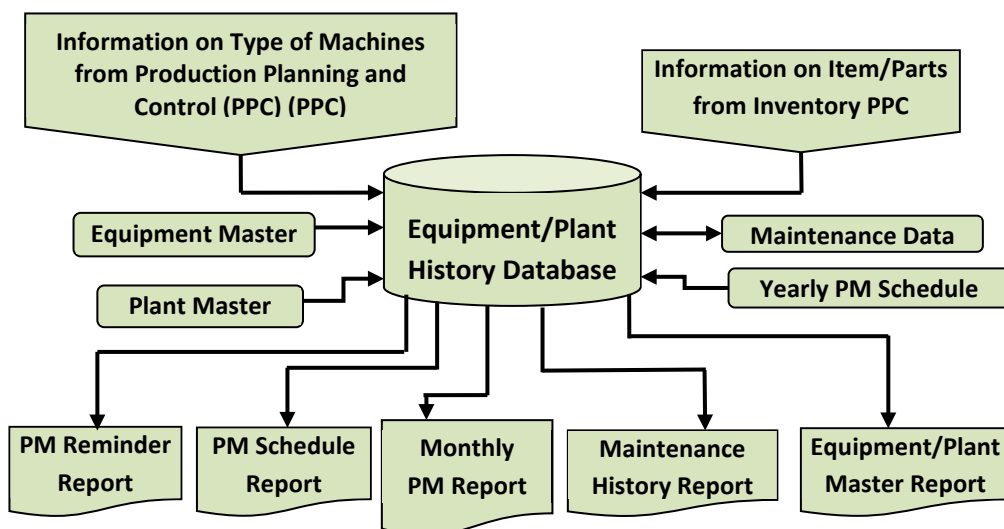
Fig. 2.6.8: Process in Plant Maintenance

i.   Project Systems Module

This is an integrated **project management tool** used for planning and managing projects and portfolio management. It has several tools that enable project management process such as cost and planning budget, scheduling, requisitioning of materials and services, execution, until the project completion. Fig. 2.6.9 showing process in Project Systems.

Project System is closely integrated with other ERP modules like Logistics, Material Management, Sales and Distribution, Plant Maintenance, and Production Planning module etc. Before a project is initiated, it is required that project goal is clearly defined and the activities be structured. The Project Manager has a task to ensure that these projects are executed within budget and time and to ensure that resources are allocated to the project as per the requirement.
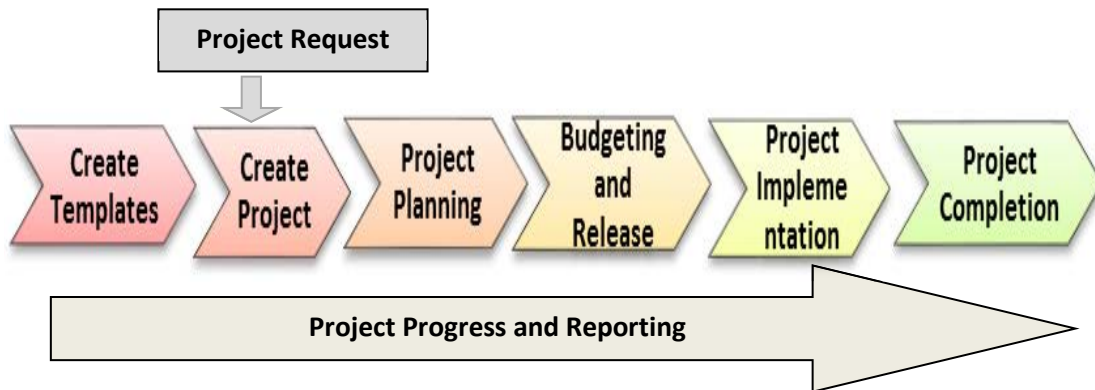

Fig. 2.6.9: Process in Project Systems

In Project System, each process has a defined set of tasks to be performed known as process flow in Project Lifecycle. When a project request is received, a project is created and it undergoes the following steps in project process flow/lifecycle.

j.   Supply Chain Module

A **Supply Chain** is a network of autonomous or semi-autonomous business entities collectively responsible for procurement, manufacturing, and distribution activities associated with one or more families of related products. This module provides extensive functionality for logistics, manufacturing, planning, and analytics involving the activities like inventory, supply chain planning, supplier scheduling, claim processing, order entry, purchasing, etc. In other words, a supply chain is a network of facilities that procure raw materials, transform them into intermediate goods and then finished products, and then finally deliver the products to customers through a distribution system or a chain.

You can optimize your supply chain for months in advance; streamline processes such as supply network, demand, and material requirement planning; create detailed scheduling; refine production integration and maximize transportation scheduling. Fig. 2.6.10 showing process in supply chain.
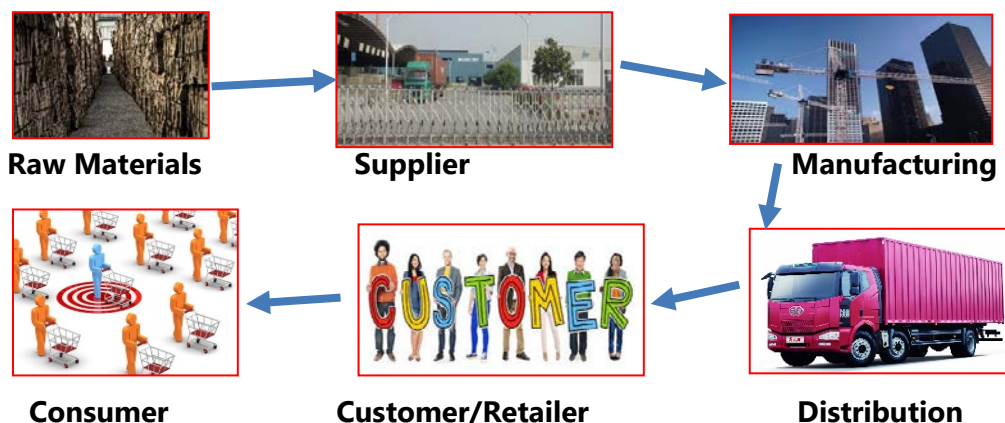
Fig. 2.6.10: Process in Supply Chain

In Supply Chain Management System, any product which is manufactured in a company, first reaches directly from manufacturer to distributors where manufacturer sells the product to the distributor with some profit of margin. Distributors supply that product to retailer with his/her profit and then finally customers receive that product from retailer. This is called **Supply Chain Management System** which implies that a product reaches from manufacturer to customer through supply.

k.   Customer Relationship Management (CRM)

Customer Relationship Management is a system which aims at improving the relationship with existing customers, finding new prospective customers, and winning back former customers. This system can be brought into effect with software which helps in collecting, organizing, and managing the customer information. Information in the system can be accessed and entered by employees in different departments, such as sales, marketing, customer service, training, professional development, performance management, human resource development, and compensation. Details on any customer contacts can also be stored in the system. The rationale behind this approach is to improve services provided directly to customers and to use the information in the system for targeted marketing.

CRM manages the enterprise's relationship with its customers. This includes determining who the high-value customers are and documenting what interactions the customers have had with the enterprise. Only large ERP packages have a CRM module. The CRM module uses the existing ERP tables as the source of its data. This is primarily the Contact, Customer, and Sales tables. CRM does not exchange transactions with other modules as CRM does not have transactions. Implementing a CRM strategy is advantageous to both small-scale and large-scale business ventures. Key benefits of a CRM module are as under.

♦ **Improved customer relations:** One of the prime benefits of using a CRM is obtaining better customer satisfaction. By using this strategy, all dealings involving servicing, marketing, and selling out products to the customers can be carried out in an organized and systematic way. Better services can be provided to customers through improved understanding of their issues and this in turn helps in increasing customer loyalty and decreasing customer agitation. In this way, continuous feedback from the customers regarding the products and services can be received. It is also possible that the customers may recommend the product to their acquaintances, when efficient and satisfactory services are provided.

♦ **Increase customer revenues:** By using a CRM strategy for any business, the revenue of the company can be increased. Using the data collected, marketing campaigns can be popularized in a more effective way. With the help of CRM software, it can be ensured that the product promotions reach a different and brand new set of customers, and not the ones who had already purchased the product, and thus effectively increase the customer revenue.

♦ **Maximize up-selling and cross-selling:** A CRM system allows up-selling which is the practice of giving customers premium products that fall in the same category of their purchase. The strategy also facilitates cross selling which is the practice of offering complementary products to customers, based on their previous purchases. This is done by interacting with the customers and getting an idea about their wants, needs, and patterns of purchase. The details thus obtained will be stored in a central database, which is accessible to all company executives. So, when an opportunity is spotted, the executives can promote their products to the customers, thus maximizing up-selling and cross selling.

♦ **Better internal communication:** Following a CRM strategy helps in building up better communication within the company. The sharing of customer data between different departments will enable them to work as a team. This is

better than functioning as an isolated entity, as it will help in increasing the company's profitability and enabling better service to customers.

♦ **Optimize marketing:** CRM enables to understand the customer needs and behavior in a better way, thereby allowing any enterprise to identify the correct time to market its product to the customers. CRM will also give an idea about the most profitable customer groups, and by using this information, similar prospective groups, at the right time will be targeted. In this way, marketing resources can be optimized efficiently and time is not wasted on less profitable customer groups.

2.6.4 Integration with Other Modules

Any ERP System is like a human body. There are different units and each unit relates to another units. All the units must work in harmony with other units to generate desired result. Following points are important for integration of modules with Financial and Accounting System:

♦ Master data across all the modules must be same and must be shared with other modules where-ever required.

♦ Common transaction data must be shared with other modules where-ever required.

♦ Separate voucher types to be used for each module for easy identification of department recording it.

♦ Figures and transaction may flow across the department, e.g. closing stock value is taken to Trading Account as well as Balance Sheet. Correct closing stock value is dependent on two things, complete and correct accounting of inventory transactions and appropriate method of valuation of closing stock. Closing stock quantity is required by Purchase Department, Stores Department, Accounts Department, and Production Department, Similarly, salary figures are used by Human Resource Department and Accounts Department simultaneously. Hence, it is necessary to design the system accordingly.

I.　Integration Points

Some of the points regarding integration with other modules are discussed here.

(i)　Material Management Integration with Finance and Controlling (FICO)

It is integrated in the area like Material Valuation, Vendor payments, Material costing etc. Whenever any inventory posting is done, it updates the General Ledger (G/L) accounts online in the background. Logistics invoice verification will create vendor liability in vendor account immediately on posting the document. Any

advance given against the purchase order updates the Purchase Order history. For every inventory posting, there is corresponding Controlling document to update profit centre accounting reporting.

(ii) Human Resource Module Integration with Finance and Controlling

Attendance and leave record is used for calculation of salary on monthly basis. Salary is also a part of financial accounting. Hence salary processed and calculated by Human Resource Module shall be integrated with Finance & Controlling Module.

(iii) Material Management Integration with Production Planning (PP)

It is integrated in the areas like Material Requirement Planning, Receipts/issues against production orders, Availability check for stocks etc. Material requirement Planning is based on Stocks, expected receipts, expected issues. It generates planned orders or purchase requisitions which can be converted to purchase orders/Contracts. Inventory Management is responsible for staging of the components required for production orders. The receipt of the finished products in the Warehouse is posted in Inventory Management.

(iv) Material Management Integration with Sales and Distribution (SD)

It is integrated in the areas like Delivery, Availability Check, Stock transfers requirements etc. As soon as a sales order is created, it can initiate a dynamic availability check of stocks on hand. When the delivery is created, the quantity to be delivered is marked as "Scheduled for delivery". It is deducted from the total stock when the goods issue is posted. Purchase order can be directly converted to delivery for a stock transfer requirement.

(v) Material Management Integration with Quality Management (QM)

It is integrated with QM for Quality inspection at Goods Receipt, In-process inspection etc. In the case of a goods movement, the system determines whether the material is subject to an inspection operation. If so, a corresponding activity is initiated for the movement in the Quality Management system. Based on quality parameters vendor evaluation is done.

(vi) Material Management Integration with Plant Maintenance (PM)

The material/service requirement is mentioned in Maintenance order. This leads to generation of Purchase Requisition. This PR will be converted to Purchase Order by MM. The goods for a PO will be in warded to Maintenance by MM. The spares which were reserved for maintenance order will be issued by MM against the reservation number.

Example 2.7: Let us consider a case of an ice-cream manufacturing company to see various examples of ERP modules.

A.　Material Management Module

　　a.　Placing a purchase order for purchase of raw material like milk, dry fruits, milk powder, butter, essence, sugar, etc. on an approved vendor.

　　b.　Received raw material at stores.

B.　Production Module

　　a.　Seeking raw material from stores.

　　b.　Converting raw material into WIP and WIP into finished goods.

　　c.　Sending the finished goods to cold room.

C.　Supply Chain Module

　　a.　Distributing finished goods, i.e. ice cream to the customers.

　　b.　Keeping a track of all deliveries.

　　c.　Planning and scheduling of all deliveries.

D.　Finance & Accounting

　　a.　Recording of all financial transactions.

　　b.　Payments to vendors.

　　c.　Collections from customers.

E.　Human Resource Module

　　a.　Keeping record of all human resource related activities.

　　b.　Attendance, leave, salary calculations, joining and leaving of employees.

F.　Sales & Distribution

　　a.　Performing pre-sales activities.

　　b.　Recording sales orders.

　　c.　Keeping track of all customer related transactions till collection against invoices.

2.7 REPORTING SYSTEM AND MANAGEMENT INFORMATION SYSTEMS (MIS)

2.7.1 Reporting System

A **Report** simply means presentation of information in proper and meaningful way. We have already discussed about system earlier. So, basically reporting system is a system of regular reporting on the pre-decided aspects.

The basic purpose of any Financial and Accounting system is to give right information at right point of time to right people for right decision making. Two basic reports, i.e. **Balance Sheet** and **Profit & Loss Account** are used for basic analysis of financial position and financial performance. But only these two reports are not sufficient for all types of decision making. Hence, we need a proper reporting system to serve the purpose.

Companies generally have a finance function which monitors the financial position monthly. Key reports are analysed by management to determine if appropriate financial decisions are made at the right time. For example, comparing actual revenue by region and comparing to budgets to ensure forecasts are met. These periodic reviews also ensure financial hygiene is kept and no mis-statements creep in, in the preparation of year-end financial reports.

Companies especially the large listed corporations publish their annual reports to public at large providing many insights as to their operations, their future and their social responsibilities too. MD&A (Management Discussion & Analysis) section in these annual reports discusses how management have prepared the financial position, their interpretation of the company's performance, the industry in which they operate and provide critical guidance on where the company is heading.

2.7.2 Management Information System (MIS)

An **MIS** report is a tool that managers use to evaluate business processes and operations. There are different kinds of MIS reports and that may be used to visually present different kinds of information.

I.   What is an MIS Report?

Assume that you are the manager of a medium-sized company's customer service department. Your staff takes phone calls and emails from over 300 customers every day. For the most part, they do a very good job, but recently, customers have started to complain that it takes too long to get their questions answered. Upper management at your company is concerned about this and wants to know what

they can do to fix the problem. But before they decide, they need you to give them more information. How will you do this?

This is where MIS reports come in. Business managers at all levels of an organization, from assistant managers to executives, rely on reports generated from these systems to help them evaluate their businesses' daily activities or problems that arise, make decisions, and track progress. MIS system reporting is used by businesses of all sizes and in every industry.

II.   Who uses MIS Reports?

MIS systems automatically collect data from various areas within a business. These systems can produce daily reports that can be sent to key members throughout the organization. Most MIS systems can also generate on-demand reports. On-demand MIS reports allow managers and other users of the system to generate an MIS report whenever they need it. Many large businesses have specialized MIS departments, whose only job is to gather business information and create MIS reports. Some of these businesses use sophisticated computing technology and software to gather information. However, the method of collecting information does not have to be that complex. Smaller businesses often use simple software programs and spreadsheets for their MIS reporting needs.

There can be as many types of MIS reports as there are divisions within a business. For example, information about sales revenue and business expenses would be useful in MIS reports for finance and accounting managers. Warehouse managers would benefit from MIS reports about product inventory and shipping information. Total sales from the past year could go into an MIS report for marketing and sales managers.

III.   Type of Information in a MIS Report

Example 2.8: In our pretend manager example, you've been asked to present information about your department's customer service calls. An MIS report for this would likely contain data such as:

♦   The number of calls your staff takes;

♦   The number of emails that come in each day;

♦   The average amount of time it takes to answer a phone call or email; and

♦   The number of questions that your staff answers correctly vs. the number that are incorrect.

To make this information most useful, you also need to ensure that it meets the following criteria:

♦ **Relevant -** MIS reports need to be specific to the business area they address. This is important because a report that includes unnecessary information might be ignored.

♦ **Timely -** Managers need to know what's happening now or in the recent past to make decisions about the future. Be careful not to include information that is old. An example of timely information for your report might be customer phone calls and emails going back 12 months from the current date.

♦ **Accurate -** It's critical that numbers add up and that dates and times are correct. Managers and others who rely on MIS reports can't make sound decisions with information that is wrong. Financial information is often required to be accurate to the dollar. In other cases, it may be OK to round off numbers.

♦ **Structured -** Information in an MIS report can be complicated. Making that information easy to follow helps management understand what the report is saying. Try to break long passages of information into more readable blocks or chunks and give these chunks meaningful headings.

Example 2.9: Let us take a case of MIS Report regarding control over cash balance. The objective of this MIS report is to have control over cash balance and accounting of cash transactions. A simple report of weekly cash report is depicted in the Table 2.7.1.

Table 2.7.1: Image of weekly cash report

Indradhanu Consulting Private Limited						
Weekly Cash Report						
Date	**Physical Cash**				**System Cash**	**Difference**
	Opening Balance	**Total Receipts**	**Total Payments**	**Closing Balance**		
1/7/2017	40,200	13,043	15,403	37,840	37,840	-
2/7/2017	37,840	45,760	33,443	50,157	50,157	-
3/7/2017	50,157	45,300	23,009	72,448	72,448	-
4/7/2017	72,448	32,333	34,200	70,581	70,581	-
5/7/2017	70,581	7,600	8,131	70,050	70,100	50
6/7/2017	70,050	56,400	17,050	109,400	109,400	-

7/7/2017	109,400	60,000	30,100	139,300	139,300	-

This report can be further improved by adding date wise denomination of notes as shown under in the Table 2.7.2.

Table 2.7.2: Improved version of Sales MIS Report of weekly cash

Denominations	2000	500	100	50	20	10	5	2	1	Coins	Total
1/7/2017											
Quantity	10	20	25	60	60	111	2	5	10	0	
Value	20,000	10,000	2,500	3,000	1,200	1,110	10	10	10	-	37,840

For a sales oriented business, Sales MIS Report can be designed as under in Table 2.7.3.

Table 2.7.3: Sales MIS Report

Month	Demos Shown	Sales		
		No.	Value	Collection
Apr-17	38	12	148,800	129,600
May-17	42	13	161,200	140,400
Jun-17	33	15	186,000	162,000
Jul-17	45	21	260,400	226,800
Aug-17	50	22	272,800	237,600
Sep-17	26	14	173,600	151,200
Oct-17	29	10	124,000	108,000
Nov-17	44	28	347,200	347,200
Dec-17	32	21	260,400	226,800
Jan-18	43	16	198,400	172,800
Feb-18	53	27	334,800	291,600
Mar-18	47	20	248,000	216,000
Total	482	219	2,715,600	2,410,000
Unattended Prospects				48

2.8 DATA ANALYTICS AND BUSINESS INTELLIGENCE

Data Analytics is the process of examining data sets to draw conclusions about the information they contain, increasingly with the aid of specialized systems and

software. Data analytics technologies and techniques are widely used in commercial industries to enable organizations to make more-informed business decisions and by scientists and researchers to verify or disprove scientific models, theories and hypotheses.

As a term, Data Analytics predominantly refers to an assortment of applications, from basic Business Intelligence (BI), reporting and Online Analytical Processing (OLAP) to various forms of advanced analytics. In that sense, it's similar in nature to business analytics, another umbrella term for approaches to analysing data - with the difference that the latter is oriented to business uses, while data analytics has a broader focus. The expansive view of the term isn't universal, though: In some cases, people use data analytics specifically to mean advanced analytics, treating Business Intelligence as a separate category.

Data Analytics initiatives can help businesses increase revenues, improve operational efficiency, optimize marketing campaigns and customer service efforts, respond more quickly to emerging market trends and gain a competitive edge over rivals -- all with the goal of boosting business performance. Depending on the particular application, the data that's analysed can consist of either historical records or new information that has been processed for real-time analytics uses. In addition, it can come from a mix of internal systems and external data sources.

2.8.1 Types of Data Analytics Applications

At a high level, Data Analytics methodologies include **Exploratory Data Analysis (EDA)**, which aims to find patterns and relationships in data, and **Confirmatory Data Analysis (CDA)**, which applies statistical techniques to determine whether hypotheses about a data set are True or False. EDA is often compared to detective work, while CDA is akin to the work of a judge or jury during a court trial - a distinction first drawn by statistician John W. Tukey in 1977 in his book Exploratory Data Analysis. Data Analytics can also be separated into **Quantitative Data Analysis** and **Qualitative Data Analysis.**
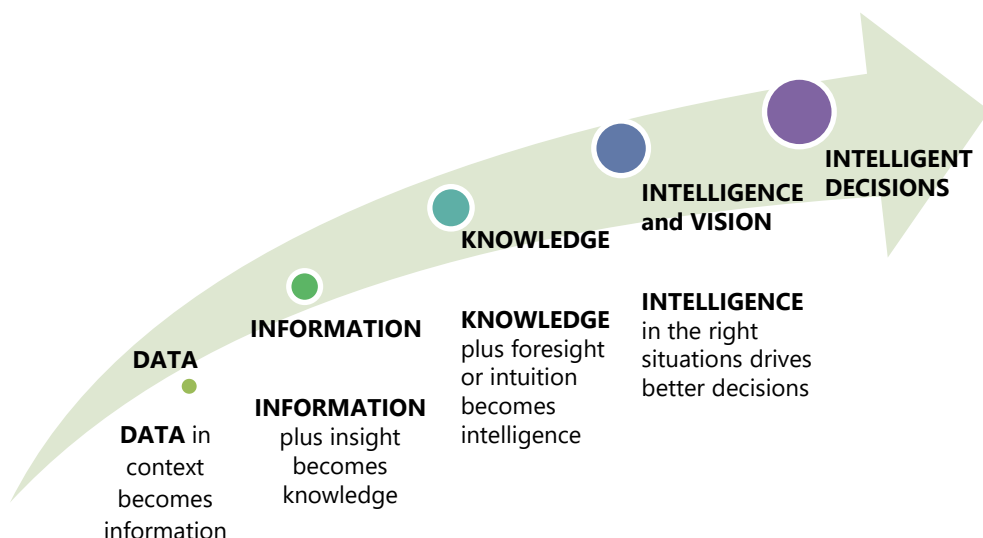
♦   **Quantitative Data Analysis:** This involves analysis of numerical data with quantifiable variables that can be compared or measured statistically.

♦   **Qualitative Data Analysis:** The qualitative approach is more interpretive - it focuses on understanding the content of non-numerical data like text, images, audio and video, including common phrases, themes and points of view.

At the application level, Business Intelligence and reporting provides business executives and other corporate workers with actionable information about key performance indicators, business operations, customers and more. In the past, Data

queries and reports typically were created for end users by BI developers working in IT or for a centralized BI team; now, organizations increasingly use self-service BI tools that let executives, business analysts and operational workers run their own ad hoc queries and build reports themselves. More advanced types of Data Analytics include–

♦ **Data Mining**, which involves sorting through large data sets to identify trends, patterns and relationships;

♦ **Predictive Analytics**, which seeks to predict customer behaviour, equipment failures and other future events; and

♦ **Machine Learning**, an artificial intelligence technique that uses automated algorithms to churn through data sets more quickly than data scientists can do via conventional analytical modelling.

Big Data Analytics applies data mining, predictive analytics and machine learning tools to sets of big data that often contain unstructured and semi-structured data. Text mining provides a means of analysing documents, emails and other text-based content. Fig. 2.8.1 showing the process of converting raw data into knowledge leading to Intelligent Decisions.

INTELLIGENT DECISIONS

INTELLIGENCE and VISION

KNOWLEDGE

INTELLIGENCE in the right situations drives better decisions

INFORMATION

KNOWLEDGE plus foresight or intuition becomes intelligence

DATA

INFORMATION plus insight becomes knowledge

DATA in context becomes information

Fig. 2.8.1: Process of converting raw data into knowledge

Some Application areas of Data Analytics are as follows:

♦ Data Analytics initiatives support a wide variety of business uses. For example, banks and credit card companies analyse withdrawal and spending patterns to prevent fraud and identity theft.

♦ E-commerce companies and marketing services providers do click stream analysis to identify website visitors who are more likely to buy a product or service based on navigation and page-viewing patterns.

♦ Mobile network operators examine customer data to forecast so they can take steps to prevent defections to business rivals; to boost customer relationship management efforts. Other companies also engage in CRM analytics to segment customers for marketing campaigns and equip call centre workers with up-to-date information about callers.

♦ Healthcare organizations mine patient data to evaluate the effectiveness of treatments for cancer and other diseases.

2.8.2 Inside the Data Analytics Process

Data Analytics applications involve more than just analysing data. Particularly on advanced analytics projects, much of the required work takes place upfront, in collecting, integrating and preparing data and then developing, testing and revising analytical models to ensure that they produce accurate results. In addition to data scientists and other data analysts, analytics teams often include data engineers, whose job is to help get data sets ready for analysis.

Data Collection: The analytics process starts with data collection, in which data scientists identify the information they need for an analytics application and then work on their own or with data engineers and IT staffers to assemble it for use. Data from different source systems may need to be combined via data integration routines transformed into a common format and loaded into an analytics system, such as a Hadoop cluster, NoSQL database or data warehouse. In other cases, the collection process may consist of pulling a relevant subset out of a stream of raw data that flows into, say, Hadoop and moving it to a separate partition in the system so it can be analysed without affecting the overall data set.

Find and Fix Data Quality Problem: Once the data that's needed is in place, the next step is to find and fix data quality problems that could affect the accuracy of analytics applications. That includes running data profiling and data cleansing jobs to make sure that the information in a data set is consistent and that errors and duplicate entries are eliminated. Additional data preparation work is then done to manipulate and organize the data for the planned analytics use, and data governance policies are applied to ensure that the data hews to corporate standards and is being used properly.

At that point, the data analytics work begins in earnest. A data scientist builds an analytical model, using predictive modelling tools or other analytics software and

programming languages such as Python, Scala, R and SQL. The model is initially run against a partial data set to test its accuracy; typically, it's then revised and tested again, a process known as "training" the model that continues until it functions as intended. Finally, the model is run in production mode against the full data set, something that can be done once to address a specific information need or on an ongoing basis as the data is updated.

Building Analytical Model: In some cases, analytics applications can be set to automatically trigger business actions. For example, stock trades by a financial services firm. Otherwise, the last step in the data analytics process is communicating the results generated by analytical models to business executives and other end users to aid in their decision-making. That usually is done with the help of data visualization techniques, which analytics teams use to create charts and other info graphics designed to make their findings easier to understand. Data visualizations often are incorporated into BI dashboard applications that display data on a single screen and can be updated in real time as new information becomes available.

2.8.3 Business Intelligence (BI)

Business Intelligence (BI) is a technology-driven process for analysing data and presenting actionable information to help corporate executives, business managers and other end users make more informed business decisions. BI encompasses a wide variety of tools, applications and methodologies that enable organizations to collect data from internal systems and external sources, prepare it for analysis, develop and run queries against the data, and create reports, dashboards and data visualizations to make the analytical results available to corporate decision makers as well as operational workers.

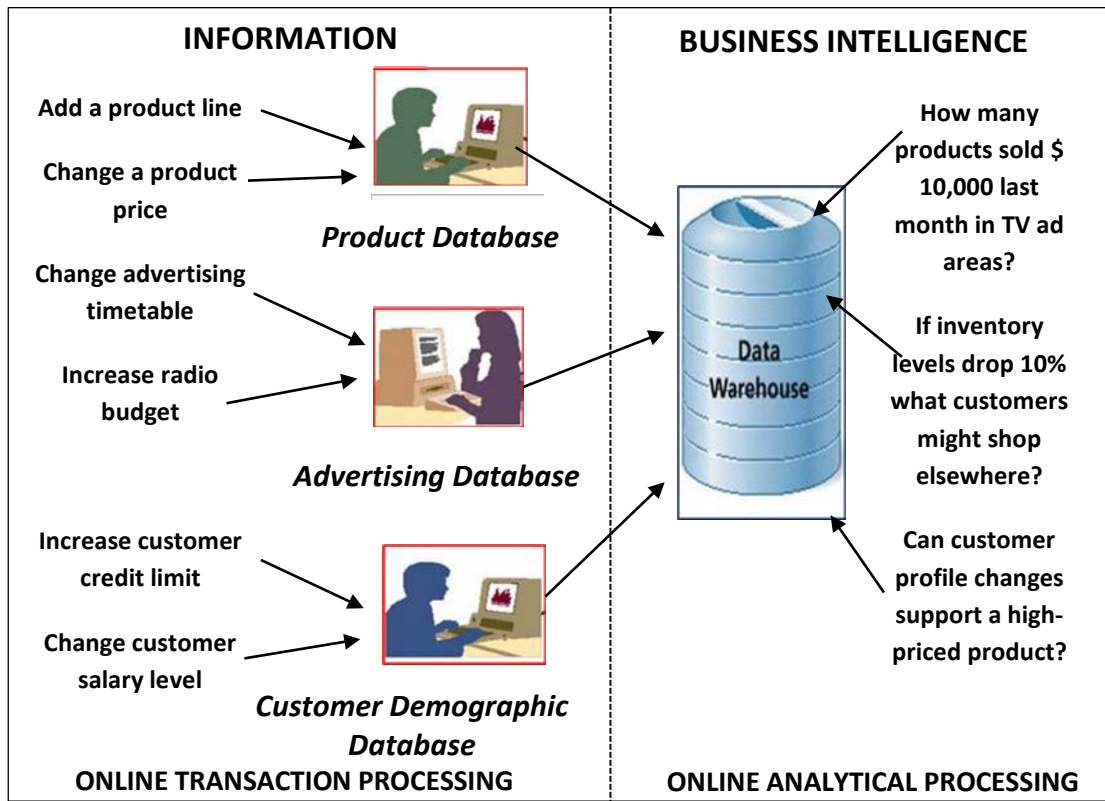**Reasons for Business Intelligence**

BI enables organizations to make well-informed business decisions and thus can be the source of competitive advantages. This is especially true when we can extrapolate information from indicators in the external environment and make accurate forecasts about future trends or economic conditions. Once business intelligence is gathered effectively and used proactively, we can make decisions that benefit our organization before the competition does.

The ultimate objective of business intelligence is to improve the timeliness and quality of information. Business intelligence reveals to us –

♦   The position of the firm in comparison to its competitors.

♦   Changes in customer behaviour and spending patterns.

♦   The capabilities of the firm.

♦   Market conditions future trends, demographic and economic information.

♦   The social, regulatory and political environment.

♦   What the other firms in the market are doing.

Example 2.10: Fig. 2.8.2 showing example that Business Intelligence uses data from different sources and helps to finds answers to various questions as shown on right hand side.

Fig. 2.8.2: Depicting Example 2.10 of Business Intelligence

BI data can include historical information, as well as new data gathered from source systems as it is generated, enabling BI analysis to support both strategic and tactical decision-making processes. Initially, BI tools were primarily used by data analysts and other IT professionals who ran analyses and produced reports with query results for business users. Increasingly, however, business executives and workers are using BI software themselves, thanks partly to the development of self-service BI and data discovery tools.

Benefits of Business Intelligence

♦ BI improves the overall performance of the company using it. The potential benefits of business intelligence programs include –

   o accelerating and improving decision making;

   o optimizing internal business processes;

   o enhancing communication among departments while coordinating activities;

   o increasing operational efficiency;

   o driving new revenues; and

   o gaining competitive advantages over business rivals.

♦ BI systems can also help companies identify market trends and spot business problems that need to be addressed.

♦ BI systems help in enhancing customer experience, allowing for the timely and appropriate response to customer problems and priorities.

Business Intelligence Technology

Business Intelligence combines a broad set of data analysis applications, including ad hoc analysis and querying, enterprise reporting, Online Analytical Processing (OLAP), mobile BI, real-time BI, operational BI, cloud and software as a service BI, open source BI, collaborative BI and location intelligence.

BI technology also includes data visualization software for designing charts and other info-graphics, as well as tools for building BI dashboards and performance scorecards that display visualized data on business metrics and key performance indicators in an easy-to-grasp way. BI applications can be bought separately from different vendors or as part of a unified BI platform from a single vendor.

BI programs can also incorporate forms of advanced analytics, such as data mining, predictive analytics, text mining, statistical analysis and big data analytics. In many cases, though, advanced analytics projects are conducted and managed by separate teams of data scientists, statisticians, predictive modellers and other skilled analytics professionals, while BI teams oversee more straightforward querying and analysis of business data.

Business Intelligence data typically is stored in a data warehouse or smaller data marts that hold subsets of a company's information. In addition, Hadoop systems are increasingly being used within BI architectures as repositories or landing pads for

BI and analytics data, especially for unstructured data, log files, sensor data and other types of big data. Before it's used in BI applications, raw data from different source systems must be integrated, consolidated and cleansed using data integration and data quality tools to ensure that users are analysing accurate and consistent information.

In addition to BI managers, Business Intelligence team generally include a mix of BI architects, BI developers, business analysts and data management professionals; business users often are also included to represent the business side and make sure its needs are met in the BI development process. To help with that, a growing number of organizations are replacing traditional waterfall development with Agile BI and data warehousing approaches that use Agile software development techniques to break up BI projects into small chunks and deliver new functionality to end users on an incremental and iterative basis. Doing so can enable companies to put BI features into use more quickly and to refine or modify development plans as business needs change or new requirements emerge and take priority over earlier ones.

Business intelligence is sometimes used interchangeably with business analytics; in other cases, business analytics is used either more narrowly to refer to advanced data analytics or more broadly to include both BI and advanced analytics.

2.9 BUSINESS REPORTING AND FUNDAMENTALS OF XBRL

2.9.1 Business Reporting

Business Reporting or **Enterprise Reporting** is the public reporting of operating and financial data by a business enterprise or the regular provision of information to decision-makers within an organization to support them in their work.

Reporting is a fundamental part of the larger movement towards improved business intelligence and knowledge management. Often implementation involves Extract, Transform, and Load (ETL) procedures in coordination with a data warehouse and then using one or more reporting tools. While reports can be distributed in print form or via email, they are typically accessed via a corporate intranet.

With the dramatic expansion of information technology, and the desire for increased competitiveness in corporations, there has been an increase in the use of computing power to produce unified reports which join different views of the enterprise in one place. This reporting process involves querying data sources with

different logical models to produce a human readable report - for example; a computer user has to query the Human Resources databases and the Capital Improvements databases to show how efficiently space is being used across an entire corporation.

Organizations conduct a wide range of reporting, including financial and regulatory reporting; Environmental, Social, and Governance (ESG) reporting (or sustainability reporting); and increasingly integrated reporting.

Organizations communicate with their stakeholders about:

♦ mission, vision, objectives, and strategy;

♦ governance arrangements and risk management;

♦ trade-offs between the shorter- and longer-term strategies; and

♦ financial, social, and environmental performance (how they have fared against their objectives in practice).

Why is Business Reporting Important?

Effective and transparent business reporting allows organizations to present a cohesive explanation of their business and helps them engage with internal and external stakeholders, including customers, employees, shareholders, creditors, and regulators.

High-quality business reporting is at the heart of strong and sustainable organizations, financial markets, and economies, as this information is crucial for stakeholders to assess organizational performance and make informed decisions with respect to an organization's capacity to create and preserve value. (Value in this context is not necessarily limited to monetary value, but can also comprise, for example, social, environmental, or wider economic value.) As organizations fully depend on their stakeholders for sustainable success, it is in their interest to provide them with high-quality reports. For example, effective high-quality reporting reduces the risk for lenders and may lower the cost of capital.

Many organizations are increasingly complex, and have larger economic, environmental, and social footprints. Thus, various stakeholder groups are demanding increased Environmental, Social and Global (ESG) information, as well as greater insight into how these factors affect financial performance and valuations.

High-quality reports also promote better internal decision-making. High-quality information is integral to the successful management of the business, and is one of the major drivers of sustainable organizational success.

2.9.2 Fundamentals of XBRL

XBRL (eXtensible Business Reporting Language) is a freely available and global standard for exchanging business information. XBRL allows the expression of semantic meaning commonly required in business reporting. The language is XML-based and uses the XML syntax and related XML technologies such as XML Schema, XLink, XPath, and Namespaces. One use of XBRL is to define and exchange financial information, such as a financial statement. The XBRL Specification is developed and published by XBRL International, Inc. (XII).

I.   What is XBRL?

XBRL is the open international standard for digital business reporting, managed by a global not for profit consortium, XBRL International. XBRL is used around the world, in more than 50 countries. Millions of XBRL documents are created every year, replacing older, paper-based reports with more useful, more effective and more accurate digital versions.

In a nutshell, XBRL provides a language in which reporting terms can be authoritatively defined. Those terms can then be used to uniquely represent the contents of financial statements or other kinds of compliance, performance and business reports. XBRL let's reporting information move between organizations rapidly, accurately and digitally.

XBRL is a standards-based way to communicate and exchange business information between business systems. These communications are defined by metadata set out in taxonomies, which capture the definition of individual reporting concepts as well as the relationships between concepts and other semantic meaning. Information being communicated or exchanged is provided within an XBRL instance.

The change from paper, PDF and HTML based reports to XBRL ones is a little bit like the change from film photography to digital photography, or from paper maps to digital maps. The new format allows you to do all the things that used to be possible, but also opens up a range of new capabilities because the information is clearly defined, platform-independent, testable and digital. Just like digital maps, digital business reports, in XBRL format, simplify the way that people can use, share, analyse and add value to the data.

II. What does XBRL do?

Often termed "bar codes for reporting", XBRL makes reporting more accurate and more efficient. It allows unique tags to be associated with reported facts, allowing:

♦ people publishing reports to do so with confidence that the information contained in them can be consumed and analysed accurately.

♦ people consuming reports to test them against a set of business and logical rules, to capture and avoid mistakes at their source.

♦ people using the information to do so in the way that best suits their needs, including by using different languages, alternative currencies and in their preferred style.

♦ people consuming the information to do so confident that the data provided to them conforms to a set of sophisticated pre-defined definitions.

III. What is XBRL tagging?

XBRL Tagging is the process by which any financial data is tagged with the most appropriate element in an accounting taxonomy (a dictionary of accounting terms) that best represents the data in addition to tags that facilitate identification/classification (such as enterprise, reporting period, reporting currency, unit of measurement etc.). Since all XBRL reports use the same taxonomy, numbers associated with the same element are comparable irrespective of how they are described by those releasing the financial statements.

Comprehensive definitions and accurate data tags allow preparation, validation, publication, exchange, consumption; and analysis of business information of all kinds. Information in reports prepared using the XBRL standard is interchangeable between different information systems in entirely different organizations. This allows for the exchange of business information across a reporting chain. People that want to report information, share information, publish performance information and allow straight through information processing all rely on XBRL.

In addition to allowing the exchange of summary business reports, like financial statements, and risk and performance reports, XBRL has the capability to allow the tagging of transactions that can themselves be aggregated into XBRL reports. These transactional capabilities allow system-independent exchange and analysis of significant quantities of supporting data and can be the key to transforming reporting supply chains.

IV. Who uses it?

The international XBRL consortium is supported by more than 600 member organizations, from both the private and public sectors. The standard has been developed and refined over more than a decade and supports almost every kind of conceivable reporting, while providing a wide range of features that enhance the quality and consistency of reports, as well as their usability. XBRL is used in many ways, for many different purposes, including by:

(i) Regulators

- Financial regulators that need significant amounts of complex performance and risk information about the institutions that they regulate.

- Securities regulators and stock exchanges that need to analyse the performance and compliance of listed companies and securities, and need to ensure that this information is available to markets to consume and analyse.

- Business registrars that need to receive and make publicly available a range of corporate data about private and public companies, including annual financial statements.

- Tax authorities that need financial statements and other compliance information from companies to process and review their corporate tax affairs.

- Statistical and monetary policy authorities that need financial performance information from many different organizations.

(ii) Companies

- Companies that need to provide information to one or more of the regulators mentioned above.

- Enterprises that need to accurately move information around within a complex group.

- Supply chains that need to exchange information to help manage risk and measure activity.

(iii) Governments

- Government agencies that are simplifying the process of businesses reporting to government and reducing red tape, by either harmonizing data definitions or consolidating reporting obligations (or both).

- Government agencies that are improving government reporting by standardizing the way that consolidated or transactional reports are prepared and used within government agencies and/or published into the public domain.

(iv) Data Providers

- Specialist data providers that use performance and risk information published into the market place and create comparisons, ratings and other value-added information products for other market participants.

(v) Analysts and Investors

- Analysts that need to understand relative risk and performance.

- Investors that need to compare potential investments and understand the underlying performance of existing investments.

(vi) Accountants

- Accountants use XBRL in support of clients reporting requirements and are often involved in the preparation of XBRL reports.

V. Important features of XBRL

♦ **Clear Definitions:** XBRL allows the creation of reusable, authoritative definitions, called taxonomies that capture the meaning contained in all the reporting terms used in a business report, as well as the relationships between all the terms. Taxonomies are developed by regulators, accounting standards setters, government agencies and other groups that need to clearly define information that needs to be reported upon. XBRL doesn't limit what kind of information is defined: it's a language that can be used and extended as needed.

♦ **Testable Business Rules:** XBRL allows the creation of business rules that constrain what can be reported. Business rules can be logical or mathematical, or both and can be used, for example, these business rules can be used to:

- stop poor quality information being sent to a regulator or third party, by being run by the preparer while the report is in draft.

- stop poor quality information being accepted by a regulator or third party, by being run at the point that the information is being received. Business reports that fail critical rules can be bounced back to the preparer for review and resubmission.

- flagging or highlighting questionable information, allowing prompt follow up, correction or explanation.

- create ratios, aggregations and other kinds of value-added information, based on the fundamental data provided.

♦ **Multi-lingual Support:** XBRL allows concept definitions to be prepared in as many languages as necessary. Translations of definitions can also be added by third parties. This means that it's possible to display a range of reports in a different language to the one that they were prepared in, without any additional work. The XBRL community makes extensive use of this capability as it can automatically open up reports to different communities.

♦ **Strong Software Support:** XBRL is supported by a very wide range of software from vendors large and small, allowing a very wide range of stakeholders to work with the standard.

2.10 APPLICABLE REGULATORY & COMPLIANCE REQUIREMENTS

2.10.1 What is Regulatory Compliance?

In general, **Compliance** means conforming to a rule, such as a specification, policy, standard or law. **Regulatory Compliance** describes the goal that organizations aspire to achieve in their efforts to ensure that they are aware of and take steps to comply with relevant laws, policies, and regulations. Due to the increasing number of regulations and need for operational transparency, organizations are increasingly adopting the use of consolidated and harmonized sets of compliance controls. This approach is used to ensure that all necessary governance requirements can be met without the unnecessary duplication of effort and activity from resources.

Regulatory compliance is an organization's adherence to laws, regulations, guidelines and specifications relevant to its business. Violations of regulatory compliance regulations often result in legal punishment, including interest, penalty, and prosecution in some cases.

By and large we can classify the compliance and regulatory requirements in two types as under.

a.   **General –** Applicable to all irrespective of anything.

b.   **Specific –** Applicable to specific type of businesses only.

Example 2.11: Income Tax compliance is applicable to all subject to basic exemption limit. But compliance regarding GST, Labour Law, Company Law, etc. are applicable to specific type of businesses / entities only.

2.10.2 Regulatory Compliance and Accounting Systems

Regulatory compliance and accounting systems are closely connected with each other. Most of the regulatory compliance requires accounting data and accounting data comes from accounting systems. E.g. Income tax returns are prepared based on accounting data only. There may be two approaches for making compliances requiring accounting data.

a.   Using same software for accounting and tax compliance; and

b.   Using different software for accounting and tax compliance.

Software is needed for tax compliances as almost all the tax compliance today is through electronic mode only. If separate software is used for accounting and tax compliance, we need to put data in tax compliance software either manually or electronically. There are some pros and cons of both the approaches as discussed in the Table 2.10.1.

Table 2.10.1: Pros and Cons of having single software for

Accounting and Tax Compliance

S. No.	Particulars	Accounting & Tax Compliance Software	Only Tax Compliance Software
1	**Ease of software operation**	**Less** – as this is integrated system of accounting and tax compliance, everything connected with other and making changes at one place may affect other aspects also.	**More** – as this is used only for one single purpose, i.e. tax compliance, it is less complicated and bound to be easy.
2	**Features and facilities**	**Less** – as this system is not an exclusive system for tax compliance, it may have limited features for tax compliance.	**More** – as this is an exclusive and specifically designed system for tax compliance, naturally more features and facilities shall exist in this system.
3	**Time and efforts required**	**Less** – as this is an integrated system, time required to	**More** – as this is a separate software, data

		transfer data to compliance software is zero.	from accounting software need to put in this for preparation of returns. This may take extra time and efforts.
4	**Accuracy**	**More –** As this is an integrated system and hence accounting data and tax compliance data shall always be same. No need to transfer data to compliance software and reconcile the data.	**Less –** as there are two separate systems, reconciliation with accounting data is needed, and possibility of mismatch of data is always there.
5	**Cost**	**More** – if tax compliance feature is not available in accounting system, getting it customized may require some amount of cost which may be higher than buying separate software.	**Less** – as this is specific purpose software, there shall be less complications and the cost also shall be less.

ILLUSTRATION 2.1

XYZ a leading publication house of Delhi was facing many issues like delay in completing the order of its customers, manual processing of data, increased lead time, inefficient business processes etc. Hence, the top management of XYZ decided to get SAP - an ERP system implemented in the publication house.

Using the proper method of vendor selection, Digisolution Pvt. Ltd. was selected to implement SAP software in XYZ publication house. To implement the software, the IT team of Digisolution Pvt. Ltd. visited XYZ's office number of times and met its various officials to gather and understand their requirements. With due diligence, the SAP software was customized and well implemented in the publishing house.

After the SAP implementation, the overall system became integrated and well connected with other departments. This raised a concern in the mind of few employees of XYZ worrying about their jobs' security leading to quitting of jobs. The top management of XYZ showed its concern on this issue and wanted to retain few of its employees.

Answer the following questions:

1. Imagine you are core team member of Digisolution Pvt. Ltd. While customizing the Sales and Distribution Module of SAP software, you need to know the correct sequence of all the activities involved in the module. Identify the correct option that reflects the correct sequence of the activities.

    (i)   Material Delivery

    (ii)   Billing

    (iii)   Pre-Sales Activities

    (iv)   Sales Order

    (v)   Payments

    (vi)   Inventory Sourcing

    Choose the correct sequence from the following

    (a)   (i) - (iii) – (ii) – (iv) – (v)- (vi)

    (b)   (ii) – (iv)- (vi) – (iii) – (i) – (v)

    (c)   (iii)- (iv) – (vi)- (i) –(ii) – (v)

    (d)   (iv)- (i) – (iii), (v), (ii), (vi)

2. In purview of above situation, which of the following control can be helpful to management of XYZ ubliching house to retain its employees and stopping them to leave the company?

    (a)   Training can be imparted to employees by skilled consultant.

    (b)   Allocation of employees to task matching their skill set, fixing of compensation package.

    (c)   Management should stop the implementation of ERP.

    (d)   Backup arrangement is required.

3. The SAP software was successfully implemented by XYZ publication house after overcoming many challenges. The risk associated with "Patches and upgrades not installed and the tools being under-utilized" belongs to _____ risk.

    (a)   Technological

    (b)   Implementation

(c)   People

(d)   Process

SOLUTION

Question No.	Answer	Question No.	Answer
1.	(c) (iii)- (iv) – (vi)- (i) –(ii) – (v)	**2.**	(b) Allocation of employees to task matching their skill set, fixing of compensation package
3.	(a) Technologica**l**		

ILLUSTRATION 2.2

Unique Services, a well-established firm of Chartered Accountants with nine branches at different locations in Delhi, deals in accounting, auditing and taxation assignments like – return filing, corporate taxation and planning, company formation and registration of foreign companies etc. The firm has its own ERP software. The firm decided to come up with Real Estate Regulatory Authority (RERA) registration which requires upgradation in its software. Hence, the principal partner of the firm asked its associate partner to prepare a list of various clients dealing in construction and development of flats, commercial properties etc.

The firm's management took care to select the vendor to upgrade their ERP software which will act as an online assistant to its clients providing them the complete details about registration and filling of various forms and resolving their frequently asked questions. The firm also wanted a safe and secure working environment for their employees to filing various forms under RERA Act on behalf of clients using digital signature. The management also instructed its employees to mandatorily use Digital Signature of clients for fair practices and any dishonesty found in this regard may lead to penal provisions under various act including IT Act, 2000.

Answer the following questions:

1.   In purview of case scenario, Unique Services requires to make changes in its software for its users for RERA related matters. Identify the part of the overall software which actually interacts with the users using the software?

(a)   Back end

    (b)   Front end

    (c)   Middle layer

    (d)   Reports

2.   The firm decided to have an online assistant for its clients to provide complete details regarding taxation, registration and filling of various forms and solve their queries. This is an example of _____ application.

    (a)   Installed application

    (b)   Web Application

    (c)   Cloud Based Application

    (d)   Direct Application

3.   While filling the tax for its client ABC, the firm Unique Services enters the detail of its TDS and GST in the requisite forms. Identify from the following which type of master data it belongs to.

    (a)   Accounting Master data

    (b)   Inventory Master Data

    (c)   Statutory Master data

    (d)   Payroll master Data

SOLUTION

Question No.	Answer	Question No.	Answer
1.	(b) Front end	**2.**	(c) Cloud Based Application
3.	(c) Statutory Master data		

SUMMARY

A.   Integrated & Non-Integrated System

Central database is the main characteristics of an ERP system. In case of non-integrated systems, separate database is maintained by each department separately. Central database is accessed by all the departments for their data needs and communication with other departments. Processes are defined and followed in ERP system. ERP system contains different modules for different purposes. These

modules are connected to other modules as per requirements. Mismatch of master data and communication gaps between departments / business units are two major problems of non-integrated systems. Data is stored in two parts, master data and transaction data. Master data is that data which is not expected to change frequently. Voucher in manual accounting is a documentary evidence of transaction. In case of software, it also a place, input form where transaction data is input into the system. Grouping of ledgers is extremely important as reports are prepared based on grouping only. Software consists of two parts, front end and back end. Front end is used to interact with user and back end is used to store the data.

B.   Business process modules and their integration with financial and accounting systems

Business process modules are developed according to need of specific industries. Various modules like Financial Accounting, Controlling, Sales and Distribution, Materials Management, Human Resources etc., are there in an ERP System. These modules are integrated with other modules depending on the nature of transaction. Financial and Accounting Systems are small and medium levels may or may not have inventory accounting.

C.   Reporting System and MIS, Data Analytics and Business Intelligence

Business reporting or enterprise reporting is the public reporting of operating and financial data by a business enterprise. With the dramatic expansion of information technology, and the desire for increased competitiveness in corporations, there has been an increase in the use of computing power to produce unified reports which join different views of the enterprise in one place. High-quality reports also promote better internal decision-making.

D.   Business Reporting & Fundamentals of XBRL

XBRL (eXtensible Business Reporting Language) is a freely available and global standard for exchanging business information. XBRL is used by Government, Companies, Regulators, Data Providers, Accountants, Analysts and Investors also.

E.   Applicable regulatory and compliance requirements

Compliance means conforming to a rule, such as a specification, policy, standard or law. Regulatory compliance is an organization's adherence to laws, regulations, guidelines and specifications relevant to its business. Violations of regulatory compliance regulations often result in legal punishment, including interest, penalty and prosecution in some cases. There may be two types of compliances, General and Specific.

TEST YOUR KNOWLEDGE

Theoretical Questions

1. As an Auditor, prepare a checklist of the questions that you would ask while performing an ERP Audit. **(Refer Section 2.4)**

2. Determine the reasons for the importance of Business Reporting. Identify the global standard for exchanging business information and discuss it in detail.

   (Refer Section 2.9.1 and 2.9.2)

3. An enterprise ABC Ltd. intends to acquire software for Accounting as well as Tax compliance. Prepare a list of pros and cons of having single software for Accounting and Tax compliance. **(Refer Table 2.10.1 under Section 2.10.2)**

4. An article joined an Audit firm where he was briefed on various steps involved during Accounting Process Flow. Explain these steps involved in the process.

   (Refer Section 2.6.2)

5. The Material Management (MM) Module in an ERP systems manages materials required, processed and produced in enterprises. Discuss the steps involved in overall purchase process. **(Refer Section 2.6.3[B(f)])**

6. Explain the term "Business Intelligence" with example. **(Refer Section 2.8.3)**

7. As a manager of a telecom service provider, you are concerned with MIS Report about your department's customer service calls. Determine the various criterions that the information in the report should meet so that the report becomes useful for you. **(Refer Section 2.7.2)**

8. Explain the term "Data Analytics" and recognize its application areas in today's world. **(Refer Section 2.8)**

9. Explain the different ways in which the Regulators can use eXtensible Business Reporting Language (XBRL) for various purposes. **(Refer Section 2.9.2)**

10. Discuss the key features of Controlling Module in an Enterprise Resource Planning (ERP). **(Refer Section 2.6.3[B(b)])**

11. Nowadays, many organizations are switching over to 'Cloud Applications' as the organizations do not want to indulge themselves in maintenance of their own IT infrastructure to run their businesses. You, being an IT consultant, list out some of the advantages and disadvantages of using these Cloud applications. **(Refer Table 2.2.5)**

12. Central database is the main feature of an Enterprise Resource Planning (ERP) System. As the complete data is stored at one place, ensuring safety of data and minimizing risk of loss of data is a big challenge. As an IT expert, discuss various risks involved during ERP implementation. **(Refer Table 2.3.1[D])**

13. Discuss in brief the following terms:

    (a) Regulatory Compliance **(Refer Section 2.10.1)**

    (b) Three tier Architecture of Application Software **(Refer Section 2.2.4(iii))**

    (c) Role-based Access Control (RBAC) in ERP **(Refer Section 2.3.3)**

14. Customer Relationship Management (CRM) is a system which aims at improving relationship with customers. Briefly explain key benefits of CRM Module of ERP.

    (Refer Section 2.6.3[B(k)])

15. A business organization is shifting from traditional accounting system to computerized accounting system. The organization needs to store the data that is relatively permanent and not expected to change frequently in accounting system. As a financial expert, suggest the types of data used in computerized accounting system. **(Refer Section 2.2.3)**