6 Enterprise Resource Planning (ERP)

Let us learn

- Introduction
- Concept of Enterprise, Resource, Planning.
- Functional units of ERP
- ERP and related Technologies.
- ERP solution providers/ERP packages
- ERP and Internet
- Benefits of ERP
- Limitations in ERP implementation
- Future of ERP

6.1 Introduction

In today's competitive world, one has to manage the future of an enterprise more cleverly. Managing the future means managing the information. A large enterprise may generate huge amount of data such as financial data, customer details, purchase details, employee data etc. Only the organization that makes the best possible use of this information can succeed. In this age of information explosion, it is very difficult to manage this huge information by people alone.

Information technology and its related technologies can be used for planning and organizing resources and information of an enterprise. Hence most of the organizations are moving to Enterprise Resource Planning (ERP) packages as a solution to their information management problem.

6.2 What is an Enterprise?

"An enterprise is a group of people and other resources working together for a common goal".

An enterprise acts as a single entity and an organisation is divided into different units based on the operations performed in it.

An enterprise may consist of different sections such as manufacturing or production, planning, sales, purchase, finance, distribution etc. Each department will have their own duties and responsibilities and they are working to achieve the objective which is set for the enterprise.

Fig. 6.1 : An Enterprise

6.3 What is Resource?

There are different types of resources in an enterprise like men, material, money and machine. Information system can be designed for various departments of an enterprise so that accurate and timely data can be provided to the concerned persons.

6.4 What is Planning?

Planning helps managers **to improve future performance,** by establishing objectives and selecting a course of action, for the benefit of the organisation.

6.5 Concept of Enterprise Resource Planning

In some enterprises, different departments function independently. So the information that is produced by each department may be available only to the top management of the department and it is not available to the other departments. In Fig.6.2 there is no communication between different sections of an enterprise. The ERP system often integrates accounts payables, stock control systems, order monitoring systems and customer databases into one system.

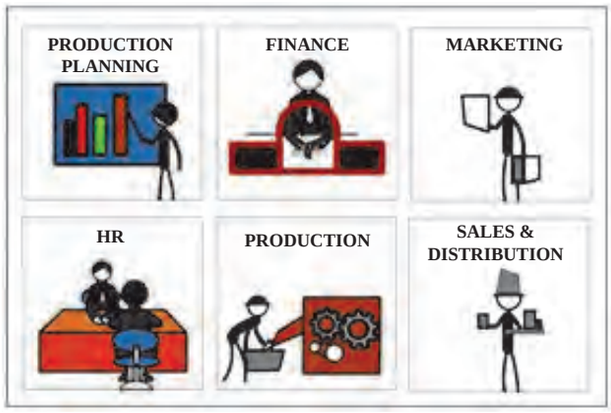

Fig. 6.2 : An enterprise with no or little Communication between departments

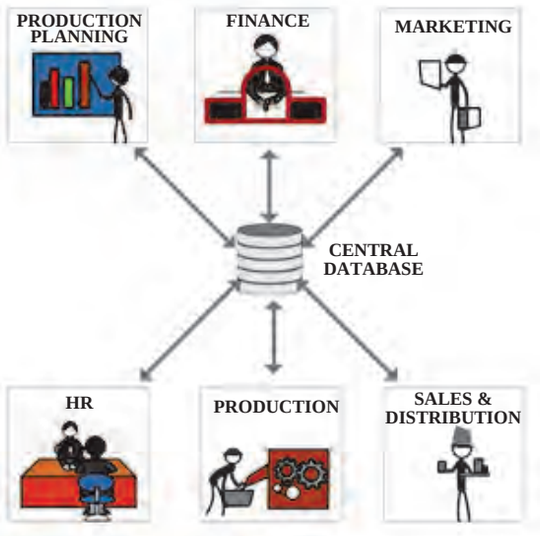

Fig. 6.3 : An enterprise with Central Database

For better benefit and efficiency, each department must know what the other departments are doing. An enterprise can be considered as a system and all its departments as its sub systems. Information about the entire enterprise can be stored in a centralized database and it is made available to all departments as can be seen in fig.6.3

Conceptually, ERP replaces the old stand alone computer systems in each area of an enterprise such as finance, human resource, manufacturing, sales, etc. With a single software program that facilitates various functional modules. Thus, employees in any department get the required information related to the activities of the respective department. In addition to this, the information will be available across the departments.

For example, Finance department can use ERP to see if any sales order has been shipped from the warehouse so as to make further payments.

6.6 Functional Units of ERP

The resources available in an enterprise must be utilized effectively. So it is the responsibility of the management to plan the resources. The ERP system helps the management in making the planning process more productive and efficient. The entire ERP package contains many modules or sub units.

Fig. 6.4 : Functional units of ERP

1. **Financial module :** This module is the core of many ERP software packages. It can collect financial data from various functional departments and generate valuable financial reports. Financial reports include balance sheets, general ledger, trial balance, financial statements, etc. This module also includes financial accounting, investment management, enterprise controlling and treasury.
2. **Manufacturing module :** Manufacturing module contains necessary business rules to manage the entire production process. This module of ERP enables an enterprise to combine technology and business processes to get integrated solutions. It also provides freedom to change manufacturing and planning methods as and when required.
3. **Production planning module :** This module is used for optimising the utilisation of available resources and helps the organisation to plan their production. This module identifies the materials required, allocates optimal resources using data and sales forecasting with the sales data.
4. **HR module :** HR stands for Human Resource. HR module maintains an updated and complete employee database including personal information, salary details, attendance, performance, promotion, etc. of all employees in an enterprise.

5. **Inventory control module :** This module covers processes of maintaining the appropriate level of stock in the warehouse. It is responsible for identifying the inventory requirements and setting the target of the stock items required.

6. **Purchasing module :** Purchase Module helps for generating purchase order evaluating the supplier, and billing. It is closely connected with the inventory, finance and production planning module.

7. **Marketing module :** Marketing module is used for monitoring and tracking customer orders, increasing customer satisfaction and for eliminating credit risks.

8. **Sales and distribution module :** This module helps for tracking enquiries, order placement, order scheduling, dispatching and invoicing. This module is closely integrated with the e-commerce website of the organization.

9. **Quality management module :** This module is used for managing the quality of the product. The quality management module fulfills the following functions-Quality planning, Quality inspection and Quality control.

6.7 ERP and related technologies

An ERP system integrates separate business functions - material management, product planning, sales, distribution, financial and others - into single applications. If some other technologies which are going to be discussed in this section are used along with stand alone ERP package, the performance of the enterprise will be increased significantly. Let us discuss some of the related technologies used along with ERP packages.

1. **Product Life Cycle Management (PLM) :** Product Life Cycle Management is the process of managing the entire life cycle of a product. Product life cycle is used for determining the lifespan of a product. As shown in the fig.6.5 the general schematic diagram of four stage product life cycle which consists of development and introduction of a new product, then its growth in the market, its maturity and at last its decline if it cannot compete with similar products of other companies.

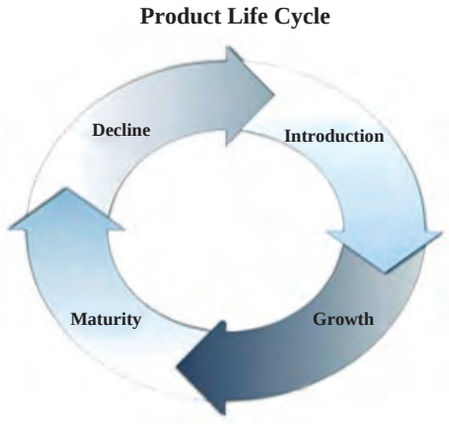

Fig. 6.5 : General schematic diagram of four stage product life cycle

The information gathered from product life cycle will help an enterprise to understand the state/ status of a product in the existing market.

2. **Management Information System (MIS) :** In MIS there are three components those are Management, Information and System. Management is the end user of the data that is decision maker, information is the processed data and system is the integration and holistic view of the enterprise. An enterprise may contain different categories of employees like clerks, assistants, officers, executives, managers etc. All of them are the users of MIS. MIS will collect relevant data from inside and outside an enterprise. This data is processed and stored in a centralized database and is made available to its users whenever it is needed. MIS has the capability to generate reports as and when the user demands it.

3. **Supply Chain Management (SCM):** The supply chain consists of all the activities associated with moving goods from the supplier to the customer. It begins with collecting raw materials and ends with receiving the goods by the consumer. It is very important for companies to move product to their customers quickly. Faster product delivery or availability will increase the sale and satisfaction of customers. So it is very important to manage the activities in supply chain. Software packages are available in the market for managing the same.

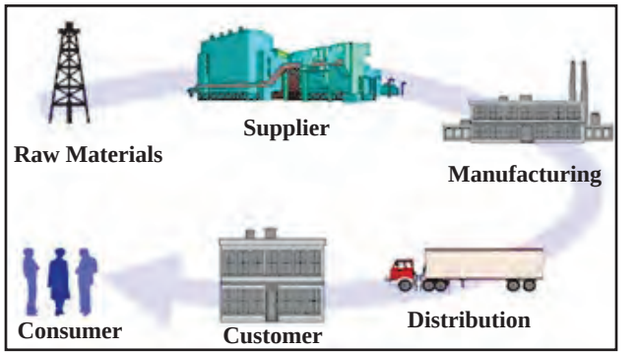

Fig. 6.6 : Activities involved in SCM Supply Chain Management

4. **Customer Relationship Management(CRM) :**

CRM is a term applied to processes implemented by a company to handle its contact with its customers. CRM covers methods and technologies used by companies to manage their relationships with clients. It is not only the responsibility of customer service group or IT team. It touches all major part of an enterprise. Fig 6.7 shows the processes involved in CRM. It includes the capture, storage and analysis of customer information. The data gathered as a part of CRM must consider customer privacy and data security. Customers want the assurance that their data is not shared with third parties without their consent

Fig. 6.7 : Process in CRM

and not accessed illegally by third parties. Customers also want their data used by companies to provide a benefit to them.

The technology requirement of customer relationship management consists of a database to store entire information about the customer and a software for interacting, analyzing and supporting customers.

5. **Decision Support System (DSS) :** Decision Support Systems are interactive, computer-based systems that aid users in judgment and choice activities. It is a computer program application that analyses business data and presents it so that users can make business decisions more easily. DSS focuses on providing help in analysing situations rather than providing right information in the form of various types of reports. DSS needs a strong database management system to provide the support in decision making.

Fig. 6.8 : Function of DSS

6.8 ERP solution providers/ERP packages

Selection of ERP package is very crucial in the implementation of an ERP system. If an ERP package is chosen correctly, implemented judiciously and used efficiently, the productivity of the enterprise will be increased. ERP package vendors are investing huge amount of time, money and effort in the research and development of packaged solutions. There are so many ERP vendors in the world. Some of the popular ERP packages are Oracle, SAP, Odoo, Bitrix24 etc. Microsoft Dynamics, and Tally.

1. **Oracle :** Oracle was originally known for its database system rather than its ERP system. The ERP310 package from Oracle provides strong finance and accounting module. It also provides good customer and supplier interaction, effective production analysis, efficient human resource management and better pricing module.
2. **SAP :** SAP stands for Systems, Applications and Products for data processing. SAP developed Customer Relationship Management (CRM), Supply Chain Management (SCM), and Product Life cycle Management (PLM) software.
3. **Odoo :** Odoo is an open source ERP tool that offers capabilities such as CRM, HR, accounting, sales, document management, inventory management, invoicing, project management, The software is available in both cloud-based and on-premise options.
4. **Bitrix24 :** Bitrix24 is a free online ERP solution that works for businesses of all sizes. It includes apps for customer relationship management (CRM), project management, task management, employee management, document management, and human resource (HR) management.

5. **Microsoft Dynamics :** Microsoft Dynamics is part of Microsoft business solutions. It provides a group of enterprise resource planning products primarily aimed at midsized enterprises. This package can be installed and used easily and it provides good user interface. It also provides customer relationship management (CRM) software

6. **Tally ERP :** Tally solutions Pvt Ltd is an Indian Software Company. Tally ERP is a business accounting software for accounting, inventory and payroll system.

In the near future, new ERP vendor may introduce new ERP packages and existing ERPs may get more facilities and capabilities Selecting an ERP solution is a serious exercise and has to be executed with great care.

6.9 ERP and Internet

New trend in ERP development and use involves vendors making the software available to client companies on the internet. The communication between the server where an ERP system is installed and many clients(End-User Pc's) is done through the internet. Implementation of Web based ERP gives the end user cost effective solution tool for ERP management. Today, many ERP systems (ERP suites) run in the cloud as a SaaS(Software as a Service). A cloud ERP makes it easier and more secure for businesses to manage their information. These systems can be maintained by a company who specializes in upkeep on servers and databases, keeping them secure, and can make it easier to scale as your business grows. For companies that cannot have or do not want their data in the cloud, on-premise ERP can run on a company's data center. Alternatively, a company can have a hybrid ERP that runs some of their systems in the cloud and other systems on premise.

6.10 Benefits of ERP

There are so many advantages on implementing an ERP system in an enterprise. Some of the major benefits are briefly explained :

1. **Improved resource utilization :** An enterprise can plan and manage its resources effectively by installing ERP software. So the wastage or loss of all types of resources can be reduced, and improved resource utilization can be ensured.

2. **Better customer satisfaction :** Customer satisfaction means meeting maximum customers' requirements for a product or service. Using an ERP system, a customer will get more attention and service of an enterprise without spending more money and time.

3. **Provides accurate information :** In today's competitive world, an enterprise has to plan and manage the future cleverly. To achieve this an enterprise needs high quality, relevant, updated and accurate information.

4. **Decision making capability :** Accurate and relevant information given to decision makers will help

them to take better decisions for running a system more smoothly. Better decision from an enterprise will help them to go a step ahead of its competitors.

5. **Increased flexibility :** An ERP system allows organizations to be more flexible so that they can more easily adapt and capitalize on new business opportunities.

6. **Information integrity :** The most important advantage of ERP is in its promotion of integration of various departments and hence we will get an integrated form of information about the enterprise. The entire information about an enterprise is stored in a centralized database, so that complete visibility into all the important processes across various departments of an organisation can be achieved.

6.11 Limitations in ERP implementation

Some of the problems and limitations of using an ERP package in an enterprise are as follows -

1. **High cost**

   The cost of ERP software configuration and implementation is very high. The high price of the package, associated license fees and other charges are the main problems of ERP installation.

2. **Requirement of additional trained staff :** To run an ERP system, trained and experienced employees are to be appointed in the enterprise. The correct selection of an ERP package alone cannot guarantee the success of an enterprise. In addition, the contribution of skilled and trained persons in using ERP system is very important.

3. **Operational and maintenance issues :** Implementation of an ERP needs major changes in the current process of an enterprise. Sometimes, it will be difficult to adjust with these changes by employees and management of an enterprise, as it is human nature to resist changes.

4. **Security Control :** Implementation of an ERP needs to follow security measures on each and every stage. This includes access controlled restrictions based on hierarchy in an organisation. The system has to take care of unauthorized access at each level in an organisation.

Future of ERP

1. Artificial Intelligence services are impacting every facet of business operations.
2. The concept of machine learning is going to revolutionize ERP. It will help businesses to achieve high levels of automation.
3. Embedded business intelligence, analytics and data management features built into ERP will be the next future ERP.
4. There will be more ERP transactions triggered by sensors and external systems or devices.

Summary

- An enterprise is a group of people and other resources working together for a common goal.
- Different types of resources in an enterprise are men, material, money and machine.
- Planning helps to improve future performance of an organisation.
- ERP is a computer systems consist of various functional modules so that authorised employee of any department in an organisation can access information of other department whenever needed.
- Financial , Manufacturing , Production planning , HR ,Inventory control , Purchasing , Marketing , Sales and distribution , Quality management etc are functional modules of ERP
- There are many technologies used in ERP, some of them are - Business Process Re-engineering, Data Warehouse, Product Life Cycle Management (PLM), Management Information System (MIS), Customer Relationship Management (CRM) etc.
- There are so many ERP vendors in the world. Some of the popular ERP packages are Oracle, SAP, Odoo, Microsoft Dynamics, and Tally.
- There are lots of benefits of implementing ERP in an orgazization.
- There are some areas where the an oraganisation may face some problems for implementing ERP.

Exercise

Q.1 Fill in the blanks.

1. "An ……... is a group of people and other resources working together for a common goal".
2. Different types of resources in an enterprise are men, ……..., money and machine.
3. The …….. module can collect financial data from various functional departments and generate valuable financial reports.
4. A ……is a source of an organization's electronically stored data.

Q.2 State True or False.

1. Planning helps to improve future performance of an organisation.
2. MIS is implemented by a company to handle its contact with its customers
3. To run an ERP system, trained and experienced employees are needed.
4. Better decision from an enterprise will help them to go a step ahead of its competitors.

Q.3 Match the following.

Group 'A'	Group 'B'
1. Trained Staff	a) ERP Package
2. Information integrity	b) Problem in ERP Implementation
3. Odoo	c) ERP Technology
4. MIS	d) Benefits of ERP

Q.4. Write short answers.

1. Give any four benefits of ERP system.
2. List down different modules of ERP system.
3. Describe any 2 problem areas in ERP implementation.

❐❐❐

Do it Yourself

List out few more ERP solutions providers / packages.