

# AN OVERVIEW OF ENTERPRISE RESOURCE PLANNING (ERP)

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## BASIC CONCEPTS

1. **ERP:** An Enterprise resource planning system is a fully integrated business management system covering functional areas of an enterprise like Logistics, Production, Finance, Accounting and Human Resources. It organizes and integrates operation processes and information flows to make optimum use of resources such as men, material, money and machine. ERP is a global, tightly integrated closed loop business solution package and is multifaceted.
  - 1.1 **ERP Characteristics:** An ERP system is not only the integration of various organization processes. Any system has to possess few key characteristics to qualify for a true ERP solution. These features are: Flexibility, Modular and Open, Comprehensive, Beyond the Company, Best Business Practices.
  - 1.2 **Why Companies undertake ERP?:** Companies should undertake ERP because of the following points: Integrate Financial information, Integrate customer order information, Standardize and speed up manufacturing processes, Reduce Inventory, Standardize HR Information.
2. **Business Process Reengineering (BPR):** The most accepted and formal definition for BPR, given by Hammer and Champy is reproduced here: “BPR is the fundamental rethinking and radical redesign of processes to achieve dramatic improvement, in critical, contemporary measures of performance such as cost, quality, service and speed”.
3. **Key Planning and Implementation Decisions:** This discussion looks at a number of the key decisions that need to be made when considering an enterprise integration effort. Major points are: ERP or not to ERP?, Follow Software's Processes or Customize?, In-house or Outsource?, 'Big Bang' or Phased Implementation?. Other implementation approaches include: The Wave Approach, Parallel Implementation, Instant cutovers (flip-the-switch).

4. **ERP Implementation Methodology:** Several steps are involved in the implementation of a typical ERP package. These are:
  - Identifying the needs for implementing an ERP package,
  - Evaluating the 'As Is' situation of the business i.e., to understand the strength and weakness prevailing under the existing circumstances,
  - Deciding the 'Would be' situation for the business i.e., the changes expected after the implementation of ERP,
  - Reengineering the Business Process to achieve the desired results in the existing processes,
  - Evaluating the various available ERP packages to assess suitability,
  - Finalizing of the most suitable ERP package for implementation,
  - Installing the required hardware and networks for the selected ERP package,
  - Finalizing the Implementation consultants who will assist in implementation, and
  - Implementing the ERP package.
5. **Risk and Governance Issues in an ERP:** Organizations face several new business risks when they migrate to real-time, integrated ERP systems. Those risks include: Single Point of Failure, Structural Changes, Job Role Changes, Online Real-time, Change Management, Distributed Computing Experience, Broad System Access, Dependency on external assistance, Program interfaces and data conversions, Audit Expertise. More recently, some of the additional risks and good governance issues introduced by the e-enabled ERP environments concern: Single sign on, Data Content Quality, and Privacy and Confidentiality.
6. **Sample List of ERP Vendors:** This list includes: Baan, Business Planning and Control System (BPCS), Mapics XA (Marcam Corporation), MFG/Pro (QAD), Oracle Applications (Oracle), Prism (Marcam Corporation), R/3 (SAP), System 21 (JBA)
7. **ERP Software Package (SAP):** SAP has a number of Application Modules in the package. Some of these modules are: Financials, Controlling, Investment Management, Treasury, Integrated Enterprise Management, Sales and Distribution, Production Planning and Control, Materials Management, Human Resource Management, and Internet and Intranet.
  - 7.1 **Financials:** This includes: Financial Accounting, General Ledger, Accounts receivable and payable, Fixed Asset Accounting.

- 7.2 Controlling Cost:** This includes: Overhead Cost Control, Cost Center Accounting, Overhead Orders, Activity based Costing, Product Cost Control, Cost Object Controlling, Profitability Analysis.
- 7.3 Investment Management:** It includes: Corporate wide budgeting, Appropriation requests, Investment measures, Automatic settlement to fixed assets, Depreciation Forecast.
- 7.4 Treasury:** It includes: Cash Management, Treasury Management, Market risk management, Funds Management,
- 7.5 Enterprise Controlling:** Enterprise can be managed by using an Integrated Enterprise Management. This consists of getting accounting data prepared by subsidiaries for corporate reporting which will be automatically prepared simultaneously within the local books of each subsidiary. This data is transferred to a module called Enterprise Controlling (EC). Enterprise Controlling consists of three modules: EC-CS, EC-PCA, and EC-EIS.
- 7.6 Product Data Management (PDM):** PDM supports in creating and managing product data throughout product lifecycle. SAP supports two basic scenarios in PDM environment.
- 7.7 Sales and Distribution:** The system's Sales and Distribution application offers access to real-time, online information from sales support to the billing process.
- 7.8 Production Planning and Control:** This module is used for planning, executing and controlling production. This covers the complete production process starting from creation of master data, production planning, MRP, capacity planning, production control and costing. Product planning modules are: Sales and Operation Planning (SOP), Production Control Modules, Quality Management, Project System, Project Information System.
- 7.9 Materials Management:** The system's materials management module contains all functions required to simplify business processes in Requirements planning, Purchasing, Inventory Management, Warehouse management and Invoice Verification. It also introduces a high degree of automation into standard procedures.
- 7.10 Human Resource Management (HR):** HR provides comprehensive process driven solutions that can address organization's human resources needs worldwide. The module consists of various components such as Personnel

Management, Personnel administration, Recruitment management, Travel Management, Benefits administration, Salary administration etc.

**7.11 Payroll Accounting:** R/3 HR payroll accounting addresses payroll functions from a global point of view. It is possible to centralize or decentralize payroll processing based on country or legal entities. It also enables to establish business rules without modifying existing payroll. This includes: Payroll Processing, Integration, Global Solutions, Time Management, Time data, Time evaluation, Time management Review, Integration and Interfaces, and Shift Planning.

**7.12 Internet and Intranet:** The R/3 system offers a special Internet functionality for large number of business processes. It also gives an opportunity to advertise vacancies to potential applicants all over the world. The application itself could be carried out online by calling up an application form filling it out and returning it by e-mail. The application would be processed automatically in R/3 HR.

### Question 1

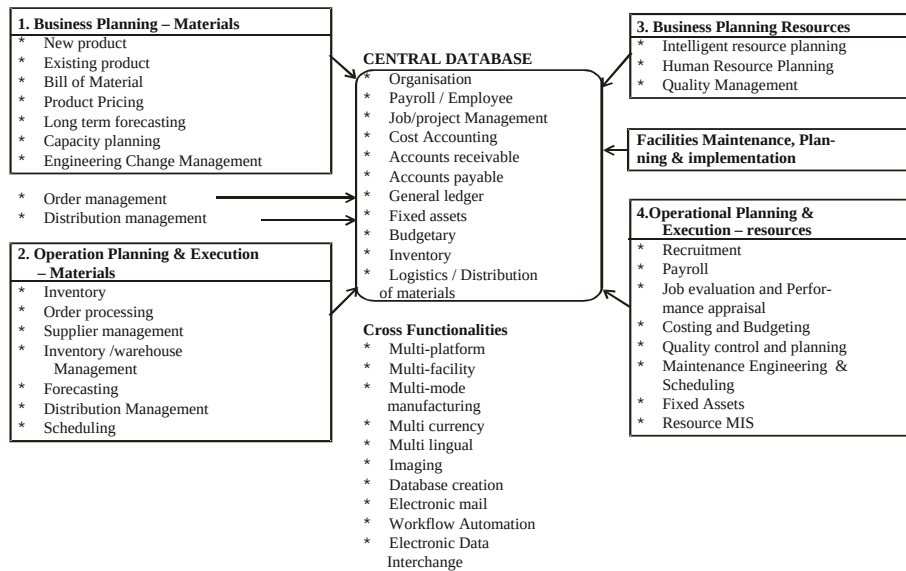
*Briefly explain Enterprise Resource Planning (ERP) and describe five of its characteristics.*

### Answer

Enterprise Resource Planning (ERP) is the latest high-end solution, which information technology has lent to business applications. ERP solutions streamline and integrate operation processes and information flows in the company to synergize the resources of an organization namely men, material, money and machine through information. An ERP system is a fully integrated business management system covering functional areas of an enterprise like Logistics, Production, Finance, Accounting and Human Resources.

**General Model of ERP:** ERP is a global, tightly integrated closed loop business solution package and is multifaceted. It promises one database, one application, and one user interface for the entire enterprise, where once disparate systems ruled manufacturing, distribution, finance and sales.

## An Overview of enterprise Resource Planning (ERP)



**Fig.: General Model of an ERP**

Taking information from every function it is a tool that assists employees and manager's plan, monitor and control the entire business. A modern ERP system enhances a manufacturer's ability to accurately schedule production, fully utilize capacity, reduce inventory, and meet promised shipping dates. ERP systems are implemented in a three Tier Client Server Architecture; the server stores the data, maintaining its integrity and consistency and processes the requests of the user from the client desktops. The load of data processing and application logic is divided between the server and the client. As companies implementing ERP solutions have multiple locations of operation and control, online data transfer has to be done across locations. To facilitate these transactions, the important enabling technologies for ERP systems are Workflow, Work group, Group Ware, Electronic Data Interchange (EDI), Internet, Intranet, Data warehousing, etc.

**ERP Characteristics:** An ERP system is not only the integration of various organization processes, any system has to possess few key characteristics to qualify for a true ERP solution. These features are:

- **Flexibility:** An ERP system should be flexible to respond to the changing needs of an enterprise. The client server technology enables ERP to run across various database back ends through Open Database Connectivity (ODBC).
- **Modular and Open:** ERP system has to have open system architecture. This means that any module can be interfaced or detached whenever required without affecting the other modules. It should support multiple hardware platforms for the

companies having heterogeneous collection of systems. It must support some third party add-ons also.

- **Comprehensive:** It should be able to support variety of organizational functions and must be suitable for a wide range of business organizations.
- **Beyond The Company:** It should not be confined to the organizational boundaries, rather support the on-line connectivity to the other business entities of the organization.
- **Best Business Practices:** It must have a collection of the best business processes applicable worldwide. An ERP package imposes its own logic on a company's strategy, culture and organization.

### Question 2

*What is an ERP?*

#### Answer

**ERP:** "An Enterprise resource planning system is a fully integrated business management system covering functional areas of an enterprise like logistics, production, finance, accounting and human resources".

It organizes and integrates operation processes and information flows to make optimum use of resources such as men, material, money and machine.

"Enterprise resource planning promises one database, one application, and one user interface for the entire enterprise, where once disparate systems ruled manufacturing, distribution, finance and sales."

### Question 3

*What are the major features of ERP?*

#### Answer

Major features of ERP:

- ERP provides multi-platform, multi-mode manufacturing, multi-currency, multi-lingual facilities.
- It supports strategic and business planning activities, operational planning and execution activities, creation of materials and resources. All these functions are effectively integrated for flow and update of information immediately upon entry of any information.
- Has end to end supply chain management to optimize the overall demand and supply data.

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- ERP facilitates company-wide integrated information system covering all functional areas like manufacturing, selling and distribution, payables, receivables, inventory accounts, human resources, purchases etc.
- ERP performs core activities and increases customers service, thereby augmenting the corporate image.
- ERP bridges the information gap across organizations.
- ERP provides complete integration of systems not only across departments but also across companies under the same management.
- ERP is the solution for better project management.
- ERP allows automatic introduction of the latest technologies like Electronic Fund Transfer (EFT), Electronic Data Interchange (EDI), Internet, Intranet, Video Conferencing, E-commerce etc.
- ERP eliminates most business problems like materials shortages, productivity enhancements, customer service, cash management, inventory problems, quality problems, prompt delivery etc.
- ERP provides intelligent business tools like decision support system, Executive Information System, Data mining and easy working systems to enable better decisions.

### Question 4

*What is an ERP system? Bring out the major challenges involved in its implementation.*

### Answer

An Enterprise Resource Planning system is a fully integrated business management system covering functional areas of an enterprise like Logistics, Production, Finance, Accounting and Human Resources. It organizes and integrates operation processes and information flows to make optimum use of resources such as men, material, money and machine. ERP is a global, tightly integrated closed loop business solution package and is multifaceted.

In simple words, enterprise resource planning promises one database, one application, and one user interface for the entire enterprise, where once disparate systems ruled manufacturing, distribution, finance and sales. Taking information from every function, it is a tool that assists employees and managers plan, monitor and control the entire business. A modern ERP system enhances a manufacturer's ability to accurately schedule production, fully utilize capacity, reduce inventory, and meet promised shipping dates.

The characteristics of an ERP system are:

(1) Flexibility, (2) Open system architecture, (3) Comprehensive, (4) On-line connectivity to other business entities, (5) Collection of best business practices.

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Some of the major features of ERP are:

- (1) Provides multi-platform, multi-facility, multi-currency, etc facilities
- (2) Supports strategic and business planning activities
- (3) Has end-to-end supply chain management
- (4) Provides intelligent business tools
- (5) Provides complete integration of systems
- (6) Better project management
- (7) Automatic introduction of latest technologies like EFT, EDI, Internet, etc.

*The challenges involved in ERP implementation are:*

- (i) Consultants, vendors and users have to work together to achieve the overall objectives of the organization. The consultants have to clearly understand the user needs and the prevailing business realities and design the business solutions keeping in mind all these factors.
- (ii) Proper customization of package to the organization has to be in tune with the users needs and business objectives.
- (iii) Roles and responsibilities of the employees have to be clearly identified, understood and configured in the system.
- (iv) Acceptance by employees for the new processes and procedures is critical for the success of the package.
- (v) Package to be implemented in totality to achieve the maximum benefit.
- (vi) Defining the implementation methodology to be followed – identifying needs, evaluation of the current situation, predicting the future situation, reengineering the business process, selection of correct package.
- (vii) Installation of hardware, software required for the package.
- (viii) Selection of right kind of consultants.
- (ix) Preparing the implementation guidelines – training users, effective leadership, adapting the new systems and making changes in the working environment etc.
- (x) Post implementation monitoring of Key Performance indicators, Critical success factors etc.



**Question 5**

*What are the steps involved in the implementation of an ERP package?*

**Answer**

**Steps of ERP Implementation:**

These steps are given as follows:

- (i) Identifying the needs for implementing an ERP package.
- (ii) Evaluating the “As Is” situation of the business i.e. to understand the strength and weakness prevailing under the existing circumstances.
- (iii) Deciding the ‘would be’ situation for the business i.e. the changes expected after the implementation of ERP.
- (iv) Re-engineering the Business Process to achieve the desired results in the existing processes.
- (v) Evaluating the various available ERP packages to assess suitability.
- (vi) Finalizing of the most suitable ERP package for implementation.
- (vii) Installing the required hardware and networks for the selected ERP package.
- (viii) Finalizing the implementation consultants who will assist in implementation.
- (ix) Implementing the ERP package.

**Question 6**

*Write down the general guidelines which are to be followed before starting the implementation of an ERP package.*

**Answer**

**Implementation Guidelines For ERP:** There are certain general guidelines, which are to be followed before starting the implementation of an ERP package:

- (i) Understanding the corporate needs and culture of the organization and then adopt the implementation technique to match these factors.
- (ii) Doing a business process redesign exercise prior to starting the implementation.
- (iii) Establishing a good communication network across the organization.
- (iv) Providing a strong and effective leadership so that people down the line are well motivated.
- (v) Finding an efficient and capable project manager.
- (vi) Creating a balanced team of implementation consultants who can work together as a team.

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- (vii) Selecting a good implementation methodology with minimum customization.
- (viii) Training end-users.
- (ix) Adapting the new system and making the required changes in the working environment to make effective use of the system in future.

### Question 7

*ABC Limited has recently migrated to real-time Integrated ERP System. As an IS Auditor, advice the company as to what kinds of businesses risks it can face?*

### Answer

The company, ABC Limited may face several new business risks when they migrate to real-time, integrated ERP systems. These risks include the following:

1. *Single point of failure* – All input data of an organization and transaction processing is within one application system.
2. *Structural Changes* - Significant personnel and organizational structural changes associate with reengineering or redesigning business processes.
3. *Job Role Changes* - Traditional roles of users are changed to empowered-based role. They have more chances to access enterprise information in real-time. This point of control shifts from the back-end financial processes to the front-end point of creation.
4. *Online Real-Time* – This environment requires a continuous business interaction. This warrants the capabilities of utilizing the ERP application and responds quickly to any problem that requires a re-entry of information (e.g., if field personnel are unable to transmit orders from handheld terminals, customer service staff may need the skills to enter orders into the ERP system correctly so the production and distribution operations will not be adversely impacted).
5. *Change Management* - It is challenging to bring together a highly integrated environment when different business processes have existed among business units for long. The level of user acceptance of the system has a significant influence on its success. Training and awareness of users is mandatory, to understand that their actions or inaction have a direct impact upon other users and in the performance of their day-to-day duties.
6. *Distributed Computing Experience* - Inexperience with implementing and managing this kind of environment may pose significant challenges.
7. *Broad System Accessibility* – Increased remote access by users and outsiders and high integration among application functions allow increased access to the application and data.

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8. *Dependency on External Assistance* – Organization accustomed to in-house legacy systems may find that they have to rely on external help. Unless such external assistance is properly managed, it could introduce an element of security and resource management risk that may expose the organizations to a greater risk.
9. *Program Interfaces and Data Conversions*–Extensive interfaces and data conversions from legacy systems and other commercial software are necessary. The exposures of data integrity, security and capacity requirements for ERP are much higher.
10. *Audit Expertise* – Specialist expertise is required to effectively audit and control an ERP environment. The relative complexity of ERP systems has created specialization such that each specialist may know only a relatively small fraction of the entire ERP's functionality in a particular core module, e.g. FI auditors, who are required to audit the entire organization's business processes, have to maintain a good grasp of all the core modules to function effectively.
11. *Single sign on* - It reduces the security administration efforts associated with administering web-based access to multiple systems, but simultaneously introduces additional risks in that an incorrect assignment of access may result in inappropriate access to multiple systems.
12. *Data content quality* - As enterprise applications are opened to external suppliers and customers, the need for integrity in enterprise data becomes paramount.
13. *Privacy and confidentiality* - Regularity and governance issues surrounding the increased capture and visibility of personal information, i.e. spending habits.

### Question 8

*Identify the risks and governance issues an organization faces while migrating to an integrated ERP system.*

### Answer

Organizations face several new business risks when they migrate to real-time, integrated ERP systems. Those risks include:

- **Single point of failure:** Since all the organization's data and transaction processing is within one application system and transaction processing is within one application system.
- **Structural changes:** Significant personnel and organizational structures changes associates with reengineering or redesigning business processes.

- **Job role changes:** Transition of traditional user's roles to empowered-based roles with much greater access to enterprise information in real time and the point of control shifting from the back-end financial processes to the front-end point of creation.
- **Online, real-time:** An online, real-time system environment requires a continuous business environment capable of utilizing the new capabilities of the ERP application and responding quickly to any problem requiring of re-entry of information (e.g., if field personnel are unable to transmit orders from handheld terminals, customer service staff may need the skills to enter orders into the ERP system correctly so the production and distribution operations will not be adversely impacted).
- **Change management:** It is challenging to embrace a tightly integrated environment when different business processes have existed among business units for so long. The level of user acceptance of the system has a significant influence on its success. Users must understand that their actions or inaction have a direct impact upon other users and, therefore, must learn to be more diligent and efficient in the performance of their day-to-day duties. Considerable training is therefore required for what is typically a large number of users.
- **Distributed computing experience:** Inexperience with implementing and managing distributed computing technology may pose significant challenges.
- **Broad system access:** Increased remote access by users and outsiders and high integration among application functions allow increased access to application and data.
- **Dependency on external assistance:** Organization accustomed to in-house legacy systems may find they have to rely on external help. Unless such external assistance is properly managed, it could introduce an element of security and resource management risk that may expose the organizations to greater risk.
- **Program interfaces and data conversions:** Extensive interfaces and data conversions from legacy systems and other commercial software are often necessary. The exposures of data integrity, security and capacity requirements for ERP are therefore often much higher.
- **Audit expertise:** Specialist expertise is required to effectively audit and control an ERP environment. The relative complexity of ERP systems has created specialization such that each specialist may know only a relatively small fraction of the entire ERP's functionality in a particular core module, e.g. FI auditors, who are required to audit the entire organization's business processes, have to maintain a good grasp of all the core modules to function effectively.

The governance issues in an ERP environment are:

- **Single sign on:** It reduces the security administration effort associated with administering web-based access to multiple systems, but simultaneously introduces additional risk in that an incorrect assignment of access may result in inappropriate access to multiple systems.
- **Data content quality:** As enterprise applications are opened to external suppliers and customers, the need for integrity in enterprise data becomes paramount.
- **Privacy and confidentiality:** Regularity and governance issues surrounding the increased capture and visibility of personal information, i.e. spending habits.

### Question 9

*Write a detailed note on the expectations, fears and the ground realities that a corporate management faces during the post-implementation phase of ERP.*

### Answer

Most of the post-implementation problems of ERP can be traced to wrong expectations and fears. Sometimes it is also due to the ERP vendors and their pre-implementation sales hype. Popular expectations are:

- An improvement in processes,
- Increased productivity on all fronts,
- Total automation and disbanding of all manual processes,
- Improvement of all key performance indicators,
- Elimination of all manual record keeping,
- Real time information system available to concerned people on a need basis,
- Total integration of all operations.

ERP software attempts to integrate all departments and functions across the enterprise onto a single computer system that serves the individual requirements of different departments. Instead of having discreet systems for finance and HR, it provides a common system for all. So if required, the materials department can view pending orders and instantly calculate the quantity of raw materials to be purchased. This keeps inventory levels within safe limits and hence controls costs. While all this may sound like a silver bullet to enterprises, ERP has gone sour for many companies in the past. The problems have been primarily with integration. Also, the software required people to change their business processes too drastically.

An ERP implementation impacts people, systems, and the organization as a whole and barriers are expected from these areas since work processes are expected to be altered when ERP is introduced. Business processes, roles, and responsibilities undergo change. And when this happens, the organizations encounter a sticky issue called 'resistance to change'.

In the evaluation stage, users should articulate their business requirements and see whether a particular ERP solution meets their needs. This way one can close the gap between what the package offers and the business requirements. Implementation should not begin without this. Often, employees have high expectations and think ERP will solve most business problems. It is necessary to make realistic and accurate expectations before embarking on an ERP project. This is addressed by preparing a project charter stating the realistic expectations, and key performance parameters to be focused on during the project, and project measurement. Having defined this, it is necessary to communicate this to the stakeholders in the ERP project.

Some of the fears on ERP implementations are:

- Job redundancy.
- Loss of importance as information is no longer an individual prerogative.
- Change in job profile:
- An organizational fear of loss of proper control and authorization.
- Increased stress caused by greater transparency.
- Individual fear of loss of authority.

Since ERP introduces transparency in operations and brings about more discipline, people who are empowered are bound to oppose it. People who are very used to a particular system or a certain set of processes, would not accept an alternative like ERP so easily and would not adapt to the new system. Change management is about handling the issues arising due to differences in legacy processes/ systems and the new ERP system. Business processes may have to be re-engineered for ERP, something that is bound to draw disapproval, especially from function heads.

Balancing the expectations and fears is a very necessary part of the implementation process. The ground realities are:

- Changing the organization involves three levers-strategies, business process and change, and consequential organization change.
- In most companies in India, many process related key performance indicators have not been measured till now, either because the company did not feel it necessary or lacked the tools to do so. Measuring such indicators brings in new culture.

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- The genetic nature of the ERP packages is such that there would be processes peculiar to some sectors and organizations, which may have to be kept out of the process.
- Some of the processes are better done manually.

ERP should be treated as a business project—not an IT project driven by the Information Systems. Changing the organization requires mindset change. Without a willingness to change, it would be a classic case of an old organization plus new technology leading to an expensive old organization. So, it is important to get the involvement of the function heads and top business executives. An organization must also be prepared for ERP and be clear about its requirements. This necessitates knowing the business objectives and goals, and mapping the processes to these. ERP is just the enabler that automates the entire process. The objectives for ERP must also be identified, documented, and communicated.

A successful ERP implementation is not the end of the road as far as change is concerned, and continuous improvements are required to reap the benefits. The expectations, fears and reality can most obviously be balanced during the process of implementation itself.

### Question 10

*Write short notes on the following:*

- Benefits of Enterprise Resource Planning*
- Business Process Reengineering (BPR).*

### Answer

#### **(a) Benefits of Enterprise Resource Planning (ERP):**

The benefits that are achieved by implementing ERP packages are:

- They make best uses of various resources
- Reduce paper documents by providing online formats for quickly entering and retrieving information.
- Improves timeliness of information by permitting posting daily instead of monthly.
- Greater accuracy of information with detailed content, better presentation, satisfactory for the auditors.
- Improved cost control.
- Faster response and follow up on customers

- More efficient cash collection.
- Better monitoring and quicker resolution of queries.
- Help to achieve competitive advantage by improving its business process.
- Improves supply demand linkage with remote locations and branches in different countries.
- Improves international operations by supporting a variety of tax structures, invoicing schemes, multiple currencies etc.
- Improves information access and management throughout the enterprise.

(b) **Business Process Reengineering (BPR):** ERP is a result of a modern Enterprise's concept of how the Information System is to be configured to the challenging environments of new business opportunities. However, merely putting in place an information system is not enough. Every company that intends to implement ERP has to re-engineer its processes in one form or the other. This process is known as Business Process Reengineering (BPR). BPR is the fundamental rethinking and radical redesign of processes to achieve dramatic improvement in critical, contemporary measure of performance such as cost, quality, service and speed.

Radical Redesign means BPR is reinventing and not enhancing or improving. According to BPR philosophy, whatever was being done in past, it was all wrong, so one has to reassemble the new system to redesign it afresh. There is no point in simplifying or automating a business process, which does not add any value to the customer; such business processes should be eliminated altogether.

BPR aims at major transformation of the business processes to achieve dramatic improvement. Here, the business objectives of the enterprise such as profits, customer– satisfaction through optimal cost, quality, deliveries etc. are achieved by transformation of the business processes which may, or may not, require the use of IT.

The concept of BPR when merges with the concept of IT, the business engineering emerges, which is the rethinking of Business Processes to improve speed, quality and output of materials or services. In other words, business engineering is the method of development of business processes according to changing requirements.

### Question 11

*Write short notes on Business Engineering.*



### Answer

**Business Engineering** has come out of merging of two concepts namely Information Technology and Business Process Reengineering. Business Engineering is the rethinking of Business Processes to improve speed, quality and output of materials or services. The emphasis of business engineering is the concept of Process Oriented Business Solutions enhanced by the client-server computing in information technology. The main point in business engineering is the efficient redesigning of company's value added chains. Value added chains are a series of connected steps running through a business which when efficiently completed, add value to enterprise and customers. Information technology helps to develop business models, which assist in redesigning of business processes.

In short, Business Engineering is the method of development of business process according to changing requirements.

### Question 12

*Discuss the functions and facilities provided by Treasury Cash Management module of an ERP package.*

### Answer

**Treasury Cash Management:** Treasury Cash Management component allows the analysis of financial transactions for a given period. It identifies and records future developments for the purpose of financial budgeting.

In Treasury Cash Management, the company's payment transactions are grouped into cash holdings, cash inflows and cash outflows. Cash Management module provides:

- (i) Information on the sources and uses of funds to secure liquidity to meet payment obligations when they become due.
- (ii) Monitors and controls incoming and outgoing payments flows.
- (iii) Supplies data required for managing short term market investment and borrowings.
- (iv) Enables to know current cash position, short term cash management and medium and long term financial budgeting.
- (v) Enables analysis of liquidity.
- (vi) Helps in cash management decisions.
- (vii) In bank accounting, it helps in electronic banking and control functions for managing and monitoring of bank accounts.

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- (viii) The liquidity forecast function integrates anticipated payment flows from financial accounting, purchasing and sales to create liquidity outlook from medium to long term.
- (ix) Covers foreign currency holdings and foreign currency items.

### Question 13

*List any five ERP Vendors and briefly describe the ERP packages offered by them.*

### Answer

There are quite a few ERP packages available in the market these days. Some of these are developed indigenously also. However, these indigenous packages may not be able to compete with the global ERP packages in terms of functionality and coverage of business segments and scale. Some of the global packages along with the vendors are listed below:

- **Baan (The Baan Company):** Initially developed for an aircraft company, it was subsequently launched as a generalized package in 1994. It offers sound technology and coverage of broad functional scope.
- **Business Planning and Control System (BPCS):** It targets only manufacturing companies. It offers strong functionality for discrete and Kanban manufacturing. However, it lags in process oriented implementation tools and workflow.
- **Mapics XA (Marcam Corporation):** It is viewed by many as a legacy application.
- **MFG/Pro (QAD):** Strong in repetitive manufacturing, originally designed to meet MRPII standards, it offers reliable manufacturing functionality and straight forward implementation.
- **Oracle Applications (Oracle):** It gives Internet-enabled, network-centric computing. It also offers database, tools, implementation, applications and UNIX operating systems under one stop-shop umbrella. It is currently running on wide choice of hardware.
- **R/3 (SAP):** It is a market leader with excellent philosophy of matching business processes with its modules. It covers almost all business segments.
- **Systems 21 (JBA) :** Its software license revenues are small compared to other major ERP vendors. It offers a rugged, reliable manufacturing solution.

### Question 14

*Identify the SAP module used to consolidate the financial statements including elimination of inter-company transactions.*

### Answer

An enterprise can be managed by using an Integrated Enterprise Management. This consists of getting accounting data prepared by subsidiaries for corporate reporting which will be automatically prepared simultaneously within the local books of each subsidiary. This data is transferred to a module called Enterprise Controlling (EC).

It allows controlling the whole enterprise from a corporate and a business unit perspective within one common infrastructure. It helps to speed up provision of business control information by fully automated corporate reporting from operative accounting via financial consolidation to management reporting.

From EC-EIS top-level reports, end users can drill down to more detailed information within EC or any other R/3 application. EC can work with data from SAP and non-SAP sources. It is easy to transfer the data to the EC module to automatically set up consolidated financial statements including elimination of inter-company transactions, currency translation etc.

Enterprise Controlling consists of three modules.

- **EC-CS:** This component is used for financial statutory and management consolidation which also allows fully automated consolidation of investments-even for many companies and complex investment structures.
- **EC-PCA:** Allows to work with internal transfer prices and at the same time to have the right values from company, profit centre, and enterprise perspectives in parallel. Any transaction that touches an object such as customer order, plant or cost centre allocated to a profit centre will be automatically posted to EC-PCA.

It is also possible to take data directly from EC-PCA to EC-CS consolidation to prepare complete financial statutory statements and management reports in parallel. This provides the management with a consistent view of external and internal financial management reports.

- **EC-EIS (Executive Information System):** Executive Information System allows to take financial data from EC-PCA ,EC-CS or any other application and combine with any external data such as market data, industry benchmarks and /or data from non-SAP applications to build a company specific comprehensive enterprise information system.

### Question 15

*Discuss the various evaluating criteria to assess suitability of an ERP package on implementation.*

### Answer

**Evaluation of various ERP packages:** ERP implementation in an organization brings together in one platform, different business functions, different personalities, procedures, ideologies and philosophies with an aim to pool knowledge base to effectively integrate and bring worthwhile and beneficial changes throughout the organization. Implementation of ERP is a risky effort since it involves considerable amount of time, efforts and valuable resources. Even with all these, the success of an implementation is not guaranteed.

The ability of the ERP package to manage and support dynamically changing business processes is a critical requirement for the organization and therefore the package should be expandable and adaptable to meet these changes. The ERP implementation methodology involves several steps of which one is evaluating the various available ERP packages to assess suitability.

Evaluation of ERP packages are done based on the following criteria:

- **Flexibility:** It should enable organizations to respond quickly by leveraging changes to their advantage, letting them concentrate on strategically expanding to address new products and markets.
- **Comprehensive:** It should be applicable across all sizes, functions and industries. It should have in-depth features in accounting and controlling, production and materials management, quality management and plant maintenance, sales and distribution, human resources management and plant maintenance, sales and distribution, human resources management, and project management. It should also have information and early warning systems for each function and enterprise-wide business intelligence system for informed decision making at all levels. It should be open and modular.

It should embrace an architecture that supports components or modules, which can be used individually, expandable in stages to meet the specific requirements of the business, including industry specific functionality. It should be technology independent and mesh smoothly with in-house/third-party applications, solutions and services including the Web.

- **Integrated:** It should overcome the limitations of traditional hierarchical and function oriented structures. Functions like sales and materials planning, production planning, warehouse management, financial accounting, and human resources management should be integrated into a workflow of business events and processes across departments and functional areas, enabling knowledge workers to receive the right information and documents at the right time at their desktops across organizational and geographical boundaries.

- **Beyond the company:** It should support and enable inter-enterprise business processes with customers, suppliers, banks, government and business partners and create complete logistical chains covering the entire route from supply to delivery, across multiple geographies, currencies and country specific business rules.
- **Best business practices:** The software should enable integration of all business operation in an overall system for planning, controlling and monitoring and offer a choice of multiple ready-made business processes including best business practices that reflect the experiences, suggestions and requirements of leading companies across industries. In other words, it should intrinsically have a rich wealth of business and organizational knowledge base.
- **New technologies:** It should incorporate cutting-edge and future-proof technologies such as object orientation into product development and ensure inter-operability with the Internet and other emerging technologies.

Other factors to be considered are:

- Global presence of package.
- Local presence.
- Market Targeted by the package.
- Price of the package.
- Obsolescence of package.
- Ease of implementation of package.
- Cost of implementation.
- Post-implementation support availability.

### Question 16

*XYZ Company, engaged in the manufacturing of several types of electronic goods is having its branches all over the World. The company wishes to centralize and consolidate the information flowing from its branches in a uniform manner across various levels of the Organization.*

*The factories are already working on legacy systems using an intranet and collating information. But each factory and branch is using different software and varied platforms, which do not communicate with each other. This not only results in huge inflow of data which could not be consolidated for analysis but also the duplication of data. Even one percent change in any data entry or analysis translates into millions of Rupees and can sometimes wipe out the profits of the organization. So the company needs a system that would help them to be responsive and act fast.*

## Information Systems Control and Audit

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*Read the above carefully and answer the following with justifications:*

- (a) What are the problems that the company is facing now?*
- (b) Should the company go for ERP solution? If yes, will the company be able to share a common platform with its dealers to access servers and database to update the information of issues of mutual interest?*
- (c) For the selection of ERP package, state the issues to be considered.*
- (d) Suggest how to go about the implementation of ERP package.*

### **Answer**

- (a)** XYZ company, having its branches all over the world, is engaged in manufacturing of several types of electronic goods. It is confronted with the problem of centralizing and consolidating the information flowing in from its various branches in uniform manner across various levels of the organization.

No doubt, the factories are working on legacy systems using an intranet and collating information. As each factory is using different type of software on varied platforms, therefore, they are not able to communicate with each other. Because of this reason, there is a huge inflow of data which could not be consolidated for analysis. Lack of communication among factories has not only resulted into duplication of the data entry which is not only costly, slight change in data entry and analysis may translate into millions of rupees that can sometimes wipe out the profits of the organization. Hence, there is an urgent need of a system that would help the branches to be responsive and to act fast.

- (b)** Yes, the company should go for ERP solutions. ERP implementation brings different business functions, personalities, procedures, ideologies and philosophies on one platform, with an aim to pool knowledge base to effectively integrate and bring worthwhile and beneficial changes throughout the organization. Some of the major features of ERP are that it provides the support to multi platform, multi facility, multi mode, manufacturing, multi currency, multi lingual facilities. It supports strategic and business planning activities, operational planning and execution activities, creation of material and resources. All these functions are effectively integrated for flow and updation of information immediately upon entry of any information, thereby providing a company-wide Integrated Information System.

In case, the company decides to include a module for dealers which provides limited/restricted access to company databases and server, dealers will be able to update the information of issues of mutual interest.

- (c) While selecting the ERP package, the performance of following issues should be taken into account:
- (i) Better inventory management and control.
  - (ii) Improved financial reporting and control.
  - (iii) Automation of certain tasks that were performed manually to increase productivity.
  - (iv) Improved production planning.
  - (v) Better information on stocks at various locations.
  - (vi) Using an integrated system as opposed to disparate systems at different locations, thereby eliminating errors of duplicate entries.
  - (vii) More accurate costing of products.
  - (viii) Better credit control.
  - (ix) Improved cash flow planning.
  - (x) Automatic quality control and tracking.
  - (xi) Better after sales services.
  - (xii) Better information and reporting to top management.
- (d) In the stated scenario, several steps involved in the implementation of a typical ERP package are enumerated below:
- (i) Identifying the needs for implementing an ERP package.
  - (ii) Evaluating the 'As Is' situation of the business i.e., to understand the strength and weakness prevailing under the existing circumstances.
  - (iii) Deciding the 'Would be' situation for the business i.e., the changes expected after the implementation of ERP.
  - (iv) Reengineering the Business Process to achieve the desired results in the existing processes.
  - (v) Evaluating the various available ERP packages to assess suitability.
  - (vi) Finalizing of the most suitable ERP package for implementation.
  - (vii) Installing the required hardware and networks for the selected ERP package.
  - (viii) Finalizing the Implementation consultants who will assist in implementation.
  - (ix) Implementing the ERP package.

### Question 17

*Worldwide, a global telecom company is serving to more than 10 million customers in the area of communications through fixed land lines, mobiles, internet services, digital TV and satellite system etc.*

*The financial analysts of the company are located in different functional groups in six geographical regions. These analysts are missing the access to the same data, as well as timely access to the information. Dated budget and actual numbers for each business unit reside in seven different systems, separating critical components of the Profit and Loss account and inhibiting analyst's ability to assess results. The problem gets further complicated as the field analysts are not able to go to one universal place to retrieve the data themselves and they have to rely upon the home office for the same.*

*The objective of the company is to set some critical financial goals so that the company could remain competitive and increase market share.*

*Read the above carefully and answer the following with justifications:*

- (a) To overcome the problems which the financial analysts are facing, what kind of software the company should select?*
- (b) The company is advised that the adoption of BS7799 International Standard will help in overcoming the problems and achieving its goals. Discuss.*
- (c) How should the human resources be enriched for effective utilization of the proposed new systems and standards?*

### Answer

- (a)** As the financial analysts of the company are working in six different geographical locations and the financial data is stored on seven different systems, located world wide, therefore they are facing several problems. Few of them are as under:
- Missing the access to the same data as well as timely access to information.
  - Dated budget and actual numbers for each business unit reside in seven different systems, separating critical components of the profit and loss account thus failing the financial analysts to assess results.
  - The field analysts are not able to retrieve the data themselves from one universal place and therefore they have to rely upon the home office for the same.

It is therefore important that the company should buy new software for the solution of the problems as mentioned above.



As far as software is concerned, of course the company should select the one which could make same data available to all the financial analysts. One such software is available from Oracle Corporation known as On Line Analytical Processing (OLAP) tool for better control over costs, analyze performance, evaluate opportunities, and formulate future directions. To improve the basis for making decisions quickly and accurately with real time, to provide consistent data which will improve cost control and to simplify and shorten the budgeting process, the software should be capable of the following:

- hands on ability to consolidate budgets, based on actual data in the process,
- enabling business units to make real-time, online decisions based on more accurate information,
- user friendly.

The company is expected to be benefited by significant financial saving and therefore it should reduce the length of the budgeting cycle and the number of people involved in the process, thus keeping the company financially competitive in a growing market. The system should provide online, real time access to the information.

- (b) The **BS 7799** (ISO 17799) consists of 127 best security practices which companies can adopt to build their Security Infrastructure. The model helps the companies to maintain IT security through ongoing, integrated management of policies and procedures, personnel training, selecting and implementing effective controls, reviewing their effectiveness and improvement. The benefits of an Information Security Management Systems (ISMS) tuned to the objective of the company are improved customer confidence, a competitive edge, better personnel motivation and involvement, and reduced incident impact leading to increased profitability.

The company can use BS 7799 for the following reasons:

- Reduced operational risk,
- Increased business efficiency, and
- Assurance that information security is being rationally applied.

This is achieved by ensuring that:

- Security controls are justified.
- Policies and procedures are appropriate.
- Security awareness is good amongst staff and managers.
- All security relevant information processing and supporting activities are auditable and are being audited.

- Internal audit, incident reporting / management mechanisms are being treated appropriately.
- Management actively focuses on information security and its effectiveness.

**Note: For details of this topic, please refer Chapter 8.**

(c) The human resources involved in the systems and standards can be enriched by the following activities:

- **Training Personnel:** A system can succeed or fail depending on the way it is operated and used. Therefore, the quality of training received by the personnel involved with the system in various capacities helps in the successful implementation of information system and standards. Thus, training is a major component of systems implementation. When a new system is acquired which often involves new hardware and software, both users and computer experts need training organized by the vendor through hands-on learning techniques.
- **Training Systems Operators:** The effective implementation of new systems and standards also depend on the computer-centre personnel, who are responsible for keeping the equipment running as well as for providing the necessary support services. Their training must ensure that they are able to handle all possible operations, both routine and extra-ordinary. As part of their training, operators should be given a trouble shooting list that identifies possible problems and remedies for them. Training also involves familiarization with run procedures, which involve working through the sequence of activities needed to use a new system on an on-going basis.
- **User training:** User training deals with the operation of the system itself. Training in data coding emphasizes the methods to be followed in capturing data from transactions or preparing data for decision support activities. Users should be trained on data handling activities such as editing data, formulating inquiries (finding specific records or getting responses to questions) and deleting records of data. From time to time, users will have to prepare disks, load paper into printers, or change ribbons on printers. Some training time should be devoted to such system maintenance activities. If a micro computer or data entry system uses disks, users should be instructed in formatting and testing disks.

It is also required to have managers directly involved in evaluating the effectiveness of training activities because training deficiencies can translate into reduced user productivity level.

**Note: For details of this topic, please refer Chapter 2.**

**EXERCISE**

**Question 1**

*Explain the characteristics of ERP in brief.*

**Question 2**

*ABC Limited has migrated from traditional systems to new real-time integrated ERP systems. The technical advisor of the company advised the owner that the company should take necessary steps to analyze several types of risks. Explain those risks in brief.*

**Question 3**

*Explain the following terms with respect to ERP:*

- (a) *Business Engineering*
- (b) *Business Management*
- (c) *Business Modeling*

**Question 4**

*What is Business Process Reengineering? Explain in brief.*

**Question 5**

*Explain the criterion for evaluation of various ERP Packages in brief.*

**Question 6**

*What is Enterprise Controlling? Briefly explain its modules.*

**Question 7**

*A company is developing several types of biscuits, having its branches all over the country. The owner of the company wishes to centralize and consolidate the information flowing from its branches in a uniform manner across various levels of the organization. The technical advisor of the company recommended that the company should go for the implementation of the ERP Package. Why the company should undertake ERP?*