UNIT 8 ENTERPRISE RESOURCE PLANNING

Structure

8.1 INTRODUCTION

Enterprise Resource Planning (ERP) is an important area, which has completely revolutionized the business environment. Many organisations and business systems have re-engineered the processes and have gone for adopting ERP. Other organisations are preparing themselves for adopting ERP. It has been estimated that business around the world have been spending almost $ 10 billion per year on ERP systems. ERP aims to integrate business processes through the support of an integrated computer information system.

ERP is a software architecture that facilitates the flow of information among different functions of an enterprise. It encompasses a broad set of activities supported by multi-module application software that helps a manufacturing or other business firm to manage its business activities, like product planning, purchasing, inventory, management vendor/customer service, and order tracking. Finance, Human Resource Development (HRD), Logistics and Manufacturing, and Supply-Chain are some of the commonly available application modules with most of the vendors. ERP uses a client/server environment, supported by modern Graphic User Interface (GUI) technology. The core of the entire ERP system is integration of commonly designed applications and consolidating all business operations into uniform system environment.

Objectives

After studying this unit, you will be able to

- learn various aspects related to ERP,
- know basic definition of ERP,
- understand main features of ERP,
- get insight about the scope of ERP,
- learn useful guidelines for ERP implementation, and
- understand difficulties in ERP implementation.

8.2 MAIN FEATURES OF ERP

ERP has following main features :

(a) It is a software architecture, which integrates all the functions of the business.

(b) Seamless integration without apparent change in the decision and support system across different modules (or function) is achieved by ERP through :

(i) common database,

(ii) instant sharing of information which is common and simultaneous, and

(iii) one time entry (at one place) for the entire enterprise to get up-dated

(c) It has extremely powerful, user-friendly "graphic-user-interface" (GUI) technology.

(d) It is supported by client server architecture for communication at different levels of the system.

(e) It creates uniform system environment.

8.3 PURPOSE OF MODELLING AN ENTERPRISE

An ERP system is aimed at modeling and integrating the enterprise. Enterprise modeling is, therefore, the most important pre-requisite before the selection/implementation of an ERP system. It encompasses complete understanding and detailed mapping of the firm's business functions and decision-making process, both independently and interactively. Enterprise integration leads to :

- More agile enterprise
- Elimination of redundant or non-value added activities
- More efficient system after being enabled by IT
- Streamlining of five flows in the enterprise :

  (a) Information (b) Material

  (c) Money (d) Control, and

  (e) Intangibles, such as customer satisfaction and quality improvement
- Empowerment of employees to take action

Based on Hansen (1991), there are five reasons of building the employees motivation due to integration :

- When people understand the vision, or larger task of an enterprise and are given the right information, resources, and responsibility, they will do the right thing.
- Group of empowered people with good leadership will effectively participate in the decision making process.
- The existence of a comprehensive and effective communications network leads to distribution of knowledge and information. It embraces the openness and trust that allow the individual to feel empowered to deal with the "real" problems.
- The democratization and dissemination of information throughout the network in all directions, irrespective of organisational position, ensures true integration of the enterprise.
- Information freely shared with empowered people, who are motivated to make decisions, will naturally distribute the decision-making process throughout the entire organisation.

The integration of the enterprise helps in building an efficient and effective information network across the enterprise. Hoffman (1992) identifies the following reasons for integration :

- Identification of the major functions to be included in a program management organization.
- Defining the scope and content of the information systems' architecture and related metrics as a management guide.
- Providing guide and/or roadmap through the process of developing such an organisation to manage a large-scale integration program.

8.4 ROLE OF IT IN ENTERPRISE MODELLING

Advancement in information technology (IT) has transformed the business process in an extended-enterprise system by enabling seamless integration at the interfaces of functions and hierarchies. Table 8.1 gives the indication of shifting paradigms during recent years which have been triggered and supported by integration of enterprise and support of IT.

Table 8.1 : Changing Role of IT in Enterprise Modelling

Earlier Trend	Intervening Trend	Emerging Trend
Limited role of information technology	Use IT information in system designs, computerisation of major activities, automation, etc.	Seamless integration of enterprise through IT support
Manual analysis of data without support of IT	Computerisation and networking with limited support of IT tools	With effective support of IT tools Integrated network
MRP	MRP II	ERP
Information appears at and can be accessed from only one place, at one time.	Shared data bases, electronic mail, client server architecture	Simultaneously, one can access same information at any place and whenever needed
Only an expert can perform complex work	Expert systems, neural computing	Norices can perform complex work.
Business must be either centralized or decentralized.	Telecommunication and networks : client/server	Business can be both centralized and decentralized
Managers make all decisions.	Decision support systems, enterprise expert systems	Decision making is part of everyone's job
Field personnel need offices to receive, send, store, and process the information.	Wireless communication and portable computers, information highways, electronic mail	Field personnel can manage information from any location
Personal contact is the best contact with potential buyers.	Interactive video disk desktop teleconferencing, electronic mail	The best contact is the one that is most cost effective.
One has to locate items manually.	Tracking technology, groupware, workflow software, client/server	Items are located automatically
Overall plans get revised periodically.	With the help of high-performance computing systems plans get revised	Plans get updated instantaneously
All must come to one place to work together.	Groupware and group support systems, telecommunications, electronic mail, client server	People can work together while at different locations
Customized products and services are expensive and take long time to develop.	CAD-CAM, CASE tools, on-line systems for JIT decision making, expert systems	Customized products can be made fast and cost effectively (mass customisation)
A long period of time is spanned between the inception of an idea and its implementation (time-to-market).	CAD-CAM, electronic data interchange, groupware, imaging (document processing)	Time-to-market can be reduced by 90 per cent
Information-based organisations and processes.	Artificial intelligence, expert systems	Knowledge-based organisations and processes
Move to countries where labour is inexpensive (off-shore production).	Robots, imaging technologies, object oriented programming, expert systems, geographical information systems (GIS)	Work can be done in countries where facilities are available

SAQ 1

(a) List the main features of ERP.

(b) Describe the purpose of modeling an enterprise.

(c) Describe the role of IT in enterprise modeling.

8.5 ORGANISATIONAL IMPACT OF ERP/IT CAPABILITIES

The flow of information is the key indicator of the way an enterprise can be modeled and integrated. It requires careful analysis of what, when and how, in terms of information, that every entity needs. If this is done properly, half of the battle related to enterprise modeling is won. The capability of ERP/IT and their organisational impact is shown below :

Table 8.2 : Organisational Impacts of ERP/IT Capabilities

Capability	Organisational Impact/Benefit
Transactional	IT/ERP transform unstructured processes into reutilised and structured transactions.
Geographical	IT/ERP transfer information rapidly and ease across large distances, making processes independent of geography.
Automational	IT/ERP can replace or reduce human labour in a process.
Analytical	IT/ERP can bring complex analytical methods to bear on a process.
International	IT/ERP can bring vast amounts of detailed information into a process.
Sequential	IT/ERP can enable changes in the sequences of tasks in a process, often allowing multiple tasks to be worked on simultaneously.
Knowledge	IT/ERP allow the capture and dissemination of knowledge and expertise to improve the process.
Management	IT/ERP allow the detailed tracking of task status, inputs, and outputs.
Tracking Disintermediation	IT/ERP can be used to connect two parties within a process that would otherwise communicate through an intermediary (internal or external).

The information domain of the enterprise should be looked into two sub-domains : physical and decisional. Physical domain is the information-linking of the enterprise entities. It is mostly influenced by endogenous information. The decisional domain pertains to the planning and control aspects of the physical sub-systems of the enterprise. Its representation is given in Figure 8.1. The recognition of information domain, identification of related characteristics of information, and sharing of information without conflicts are the three key ingredients in an enterprise-modelling endeavor.

SAQ 2

What are the organisational impacts of ERP/IT capabilities?

8.6 COMMON/SHARED ENTERPRISE DATABASE

The integrated enterprise system is supported by a central database, which is also called as enterprise databases. It works as the heart of the enterprise's model. Information is stored, updated, retrieved and managed in this portion. It draws data from and feeds data

Endogenous

into various enterprise applications, that support different functions. Single database reduces information time-lag, reduces distortion in information, instant updating, enhanced reliability and streamlined flow of information (Figure 8.2).

Figure 8.1 : Representations of Different Domains of Information

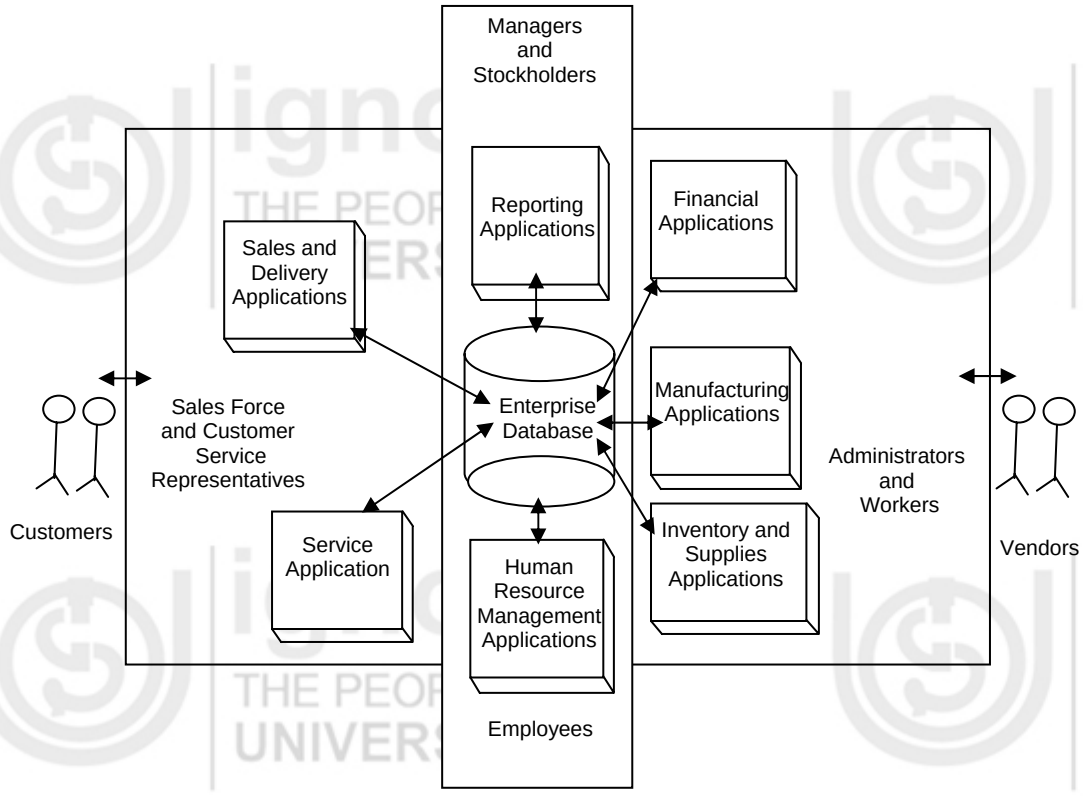

Figure 8.2 : Anatomy of an Enterprise System (*Source* : Based on Davenport, 1998)

SAQ 3

List the different functions supported by enterprise database.

8.7 SCOPE OF ENTERPRISE SYSTEM

In the 1990s, innovations in information technology led to the development of a range of software applications aimed at integrating the flow of information throughout a company, and these commercial software packages were known as Enterprise Systems.

All common ERP systems are supported by different functions such as financial, operations and logistics, human resources, sales and marketing, etc. For example SAP's R/3 packages is supported by different modules and is shown in Table 8.3 :

Table 8.3 : SAP's R/3 Package Supported by Different Modulus

Financials	Operations and Logistics
Accounts receivable and payable	Inventory management
Asset accounting	Material requirements planning
Cash management and forecasting	Materials management
Cost-element and cost-center accounting	Plant maintenance
Executive information system	Production planning
Financial consolidation	Project management
General ledger	Purchasing
Product-cost accounting	Quality management
Profitability analysis	Routing management
Profit-center accounting	Shipping
Standard and period-related costing	Vendor evaluation
Human Resources	**Sales and Marketing**
Human-resources time accounting	Order management
Payroll	Pricing
Personnel planning	Sales management
Travel expenses	Sales planning

8.8 GENERIC MODEL OF ERP SYSTEM

Design of an integrated enterprise model is a complex task as it involves mapping of all the functions, information flow, material flow, decision process, and many other aspects, which govern the dynamic process of the enterprise. Many approaches exist to do this. A generic model may comprise two building blocks : hierarchical IDEF model and object oriental model. Some other models adopt structural modeling or system approach with support from object-oriented approach to analyse and design the software (Ng. et al. 1999). A general understanding of ERP is as follows :

> Enterprise Resource Planning (ERP) is a game plan for planning and monitoring all of the resources of a manufacturing company, including the functions of manufacturing, marketing, finance, and engineering. ERP is recognized as being an effective management system that has an excellent planning and scheduling capability offering significant gains in productivity, dramatic increases in customer service, much higher inventory turns, and greater reduction in material costs. These technology innovations include the move to relational database management systems (RDBMS), the use of a graphical user interface (GUI), open systems and a client/server architecture.

The generic design of ERP involves development of a tree structure, representing different functional nodes of the enterprise. A simplified generic model of ERP system is shown in Figure 8.3. All the generic representations of this figure may further be exploded to develop the exploded generic representation.

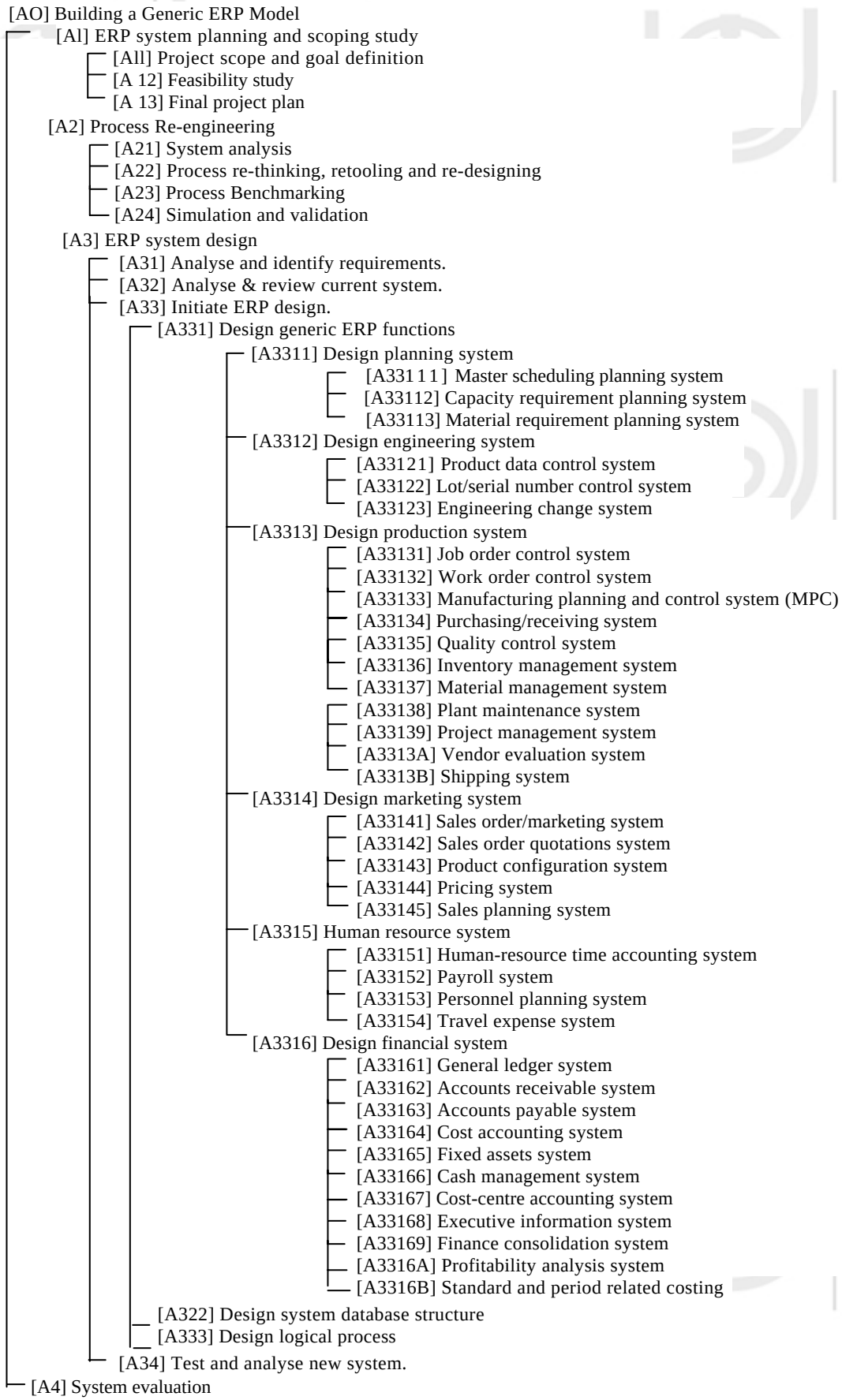

Figure 8.3 : Model of Generic ERP System Showing Few Node Trees (Modified from Ng, et al., 1999)

SAQ 4

(a) List the different modulus which support SAP's R/3 package.

(b) Please visit a company which has implemented ERP package. Write the salient features of the ERP package.

8.9 SELECTION OF ERP PACKAGE

Once it is decided that the enterprise needs an ERP package, the most crucial task would be to select the most appropriate package. The market is flooded with large variety of ERP packages and it is often very difficult to select the best suited product. The importance of this decision is mainly due to following reasons :

(a) ERP procurement and successful implementation is a very costly affair. For example, Baan IV costs Rs. 50 lakhs to Rs. 8 crores, SAP R/3 costs Rs. 2.5 lakhs per licence, RADICAL costs Rs. 25 lakhs to Rs. 1 crore (**source :** Computers Today, August 1999). Out of these, SAP's R/3 is most popular with about 30% market share. QAD Inc. captures about 26%; BaaN, BPCs, and Ramco System each captures around 8-10% market share in India. Considering the high one time cost in procurement ERP, it is very essential to make the choice very, very carefully.

(b) Implementation of ERP involves risks. Jokingly, some people have called this as Expensive Risky Proposition. The risk is mainly due to changes, which may be needed in the process and procedure so as to fit into the scope and purview of selected ERP. Resistance to changes is another risk factors. It has been observed that the benefit of ERP implementation is not immediately forth -coming. Therefore, direct ROI (return-on-investment) or productivity measure may not be sufficient to justify the ERP adoption. Moreover, if the selected ERP package is a total mismatch with the present practices, there are far greater risks of failure. Therefore, proper selection of ERP is very important.

(c) ERP selection is a strategic decision. It has far-reaching effect. It is also a long-term decision which is difficult to get reversed. Secondly, once the vendor is selected, it is not proper to go for changes in near future.

Therefore, the decision regarding whether to go for ERP or not is very important as it is normally a one-time activity, which is difficult to get reversed and is highly capital intensive.

SAQ 5

How you will select an ERP package?

8.10 DIFFICULTY IN SELECTING ERP PACKAGE

It has been observed that the selection of an appropriate ERP for the enterprise is difficult by the internal people as most of them lack experience in an ERP project. Therefore, help of external consultants is needed. The biggest difficulty in selecting an ERP is due to many interacting and some conflicting objectives which each available ERP provides. For example, an ERP package takes a lot of time in implementation. Some companies have faced difficulties as they lack objective, validated information on the vendor products and services. Due to this, they are forced to rely on what the vendor says and the literature provides.

It is a common practice to form an ERP steering team or task-force for the initial selection and implementation stage. Top executive or CEO has to play an important role in this. This would facilitate the decision-making in the selection.

These days, there is a genuine shortage of really knowledgeable consultants. In this industry, one can locate many self-imposed, ill-trained and poorly experienced consultants. Hiring such persons would certainly ruin the very purpose of the entire project. Another difficulty in hiring a consultant is related to his personal bias. A consultant, who has handled a particular vendor, would prefer the same vendor due to his individual ease with the product. ERP is a complex product. One has to spend several years on a product to understand its strength and weaknesses. Considerable knowledge about most of the products in the market is not easily possible for any individual consultant.

SAQ 6

Write the difficulty in selecting an ERP package.

8.11 APPROACH TO ERP PACKAGE SELECTION

Selection of appropriate ERP package should involve careful evaluation of existing ERP alternatives and the needs/profile of the enterprise. We will explain proof of concept (POC) approach and the traditional approach, which is called as Request for proposal (RFP). We will also describe the advantages of POC over RFP approach.

8.11.1 The "Request for Proposal" Approach

Stage 1 : Analysis Stage

RFP approach begins with the preliminary analysis, which is meant to prepare the organisation for the ERP selection project. This involves the followings steps :

(a) Launching and planning the ERP project.

(b) Collecting and reviewing related background material.

(c) Understanding the interests, needs and expectations of all those, who are affected by ERP decision.

(d) Reviewing the ideas of stakeholders and prioritizing their preferences.

(e) Developing RFP.

Output of Stage 1

(a) Detailed project plan for the activities related to the selection process.

(b) List of potential ERP-vendors.

Stage 2 : Requirement Analysis

This Stage involves :

(a) Conducting workshops on joint requirement planning

(b) Analysing results of workshop

(c) Listing the functional requirements

(d) Documenting and confirming business requirements

Output of Stage 2

Complete document of business and functional requirements.

Stage 3 : Request for Information

This stage involves :

(a) Making a high level look at the situation.

(b) Gathering general information on different ERP solutions, which may be available.

(c) Eliminating those ERP packages, which are totally irrelevant, inadequate, or inappropriate.

Follow-up of Stage 3

(a) Developing the request for proposal RFP and releasing to the selected list of 3-4 vendors, whose packages best support the business requirements.

(b) Responding to the enquiries of the vendors after they receive RFP.

(c) Evaluating vendors' response on RFP.

Output of Stage 3

(a) A list (possibly 3-4) of ERP vendors to whom the RFP would be sent.

(b) RFP documents.

Stage 4 : Selection of the System

(a) Organising a demonstration model with each vendor, selected in stage 3.

(b) Deliberating on selection of the best vendor. This is at the level of in-house ERP implementation team having hired consultants and experts from industries already using these packages.

(c) Sending the report to top management.

(d) Making final selection on the basis of evaluation and recommendation by top managers.

Output of Stage 4

Final Selection of ERP Package.

Limitations of RFP Approach

There are chances that many unrealistic requirements may get listed in the RFP. This is due to lavish "wish-list", prepared by the selection team for the desired features and capabilities of ERP solution. Many members of the selection team may not have adequate exposure of ERP system. Due to this, their list of requirements may be partly realistic. Sometime, the list of requirements may contain contradictory functional requirements, such as infinite capacity scheduling and real, finite delivery day, etc.

Another limitation of RFP approach lies in the inadequate real time experience in the implementation and adoption. RFP does not provide any opportunity to have a detailed experience on the proposed ERP before its selection. Mostly, vendors give demonstration of ERP solutions for a day or two days. With such acquaintance, there is little possibility of rightly reconfiguring the business system with the ERP package. Hence, the decision related to selection of the ERP, which fits best with the business, is quite difficult.

8.11.2 Proof of Concept (POC) Approach

POC-approach is a comprehensive and real-time selection approach for ERP solution. In this approach, the organisation is provided with the ERP software (which may be a truncated version also) for few months. The purpose is to get confidence on the software before a final selection is made. Following stages are incorporated in the POC approach :

Stage 1 : Preparation of Project and Constitution of ERP -Team

This stage involves following activities :

(a) Understanding the project objectives.

(b) Confirming the objectives.

(c) Reviewing of documentation.

(d) Interviewing stakeholders.

(e) Identifying persons for the ERP-team (also called as task-force). Defining the role.

(f) Identifying the organisational resources needed for the ERP implementation.

(g) Assessing the risks involved in the project.

(h) Developing a plan to address the risk and capacity of the project.

(i) Launching the project through an effective internal communication campaign. Involve all.

Output of Stage 1

A plan, which would prepare the task-force in particular and organisation in general, for the next stage of POC activity.

Stage 2 : Analysis of Key (Business) Requirements

Unlike RFP approach, analysis of the functional requirement and analysis of key (business) requirements is done in POC approach. This is followed by the development of a process model for achieving the benefits of the ERP project. Following activities are involved in this stage :

(a) Conducting seminars/workshops/presentation to plan the joint requirements.

(b) Developing a comprehensive process model and testing with sample transaction and pin-point areas of process-improvements.

Output of Stage 2

(a) List of business requirements.

(b) A process model.

Stage 3 : Selection of System

In this stage, the potential alternatives of the ERP-vendors are narrowed down to one. Following activities are involved in this stage :

(a) Identifying resource-persons, who are experienced in the software and are willing to advise. These experts must have exposure of potential alternatives of ERP packages. The needs of the organisation must be known to them. It is the duty of the task-force to fully acquaint them about the organisational needs.

(b) Identifying persons, who were involved in the implementation of ERP in different projects. Taking their advice on the choice of ERP solutions.

(c) Deliberating on the outcomes of the expert advice and views of the taskforce.

(d) Making a final choice on the ERP solution. Informing the concerned vendor.

Output of Stage 3

Freezing the choice for ERP vendor

Stage 4 : Reaching Team Agreement on Product to Prototype

This is a product confirmation stage. This stage may continue from few weeks to few months as per the mutual agreement with the vendor. Following activities are intended in this stage :

(a) Arranging the testing of the project. The purpose is to make a thorough analysis of ERP solution.

(b) Preparing the test system with a process model.

(c) Undertaking a gap-analysis. Identifying the items, which indicate major differences between software capability and business need.

Output of Stage 4

(a) Decision regarding whether to go for the ERP solution or not.

(b) Understanding of the business model, price and technology involved in ERP implementation.

Application of POC-Approach

The decision regarding final choice of one ERP-solution is extremely difficult. Many of the available alternatives would be capable of serving the requisite function. Therefore, a considerable level of confidence is needed before going for trial or final stage of procurement. The confidence may be achieved by an actual trial in the company's environment for a reasonable period of time, say, one or two months.

The use of POC-approach is illustrated in the Figure 8.4 below :

The POC approach and its implementation is supported by vendor, who should be willing to extend his facilities. Consultants, if hired till this stage, advise regarding efforts needed for the change. Help of somebody, who has hands-on experience on previous implementation, is very useful. The role of the task-force is to coordinate and organize the business activities and make an in-depth deliberation on various issues.

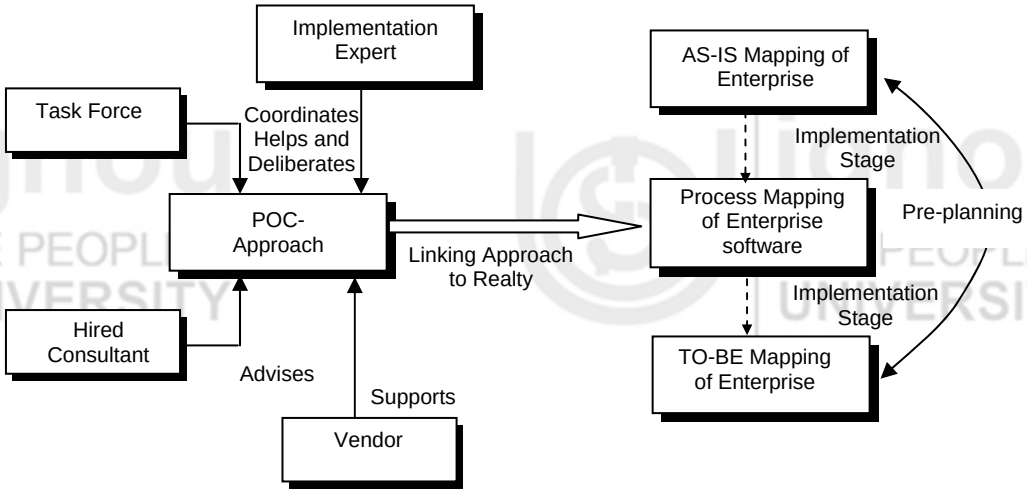

Figure 8.4 : Use of POC-Approach in Transforming Business into "TO-BE" Situation

Next aspect would be linking the approach to reality. For this, some pre-planning is needed. To start with, the enterprise should prepare the present scenario in the minutest detail. This we call, "AS-IS mapping of enterprise". Next thing that is needed is to visualize scenario, which may emerge after the implementation. This we call, "TO-BE mapping of the Enterprise".

Now, the POC is applied to map the processes of the enterprise on the software. The objective would be how to transform the enterprise from an "AS-IS" situation to "TO-BE" situation. At this level, the help of implementation expert and support of vendor are very crucial.

8.11.3 Comparison of RFP and POC Approaches

(a) The time consumed in both approaches is nearly same (Prosser and Canty, 1998).

(b) RFP and POC both involve understanding the functions of ERP product.

(c) RFP provides only a general idea of how the new processes will affect the business, POC-approach provides a much better understanding of the new processes and re-engineered business model.

Figure 8.5 shows the time-wise comparison of RFP and COP approaches.

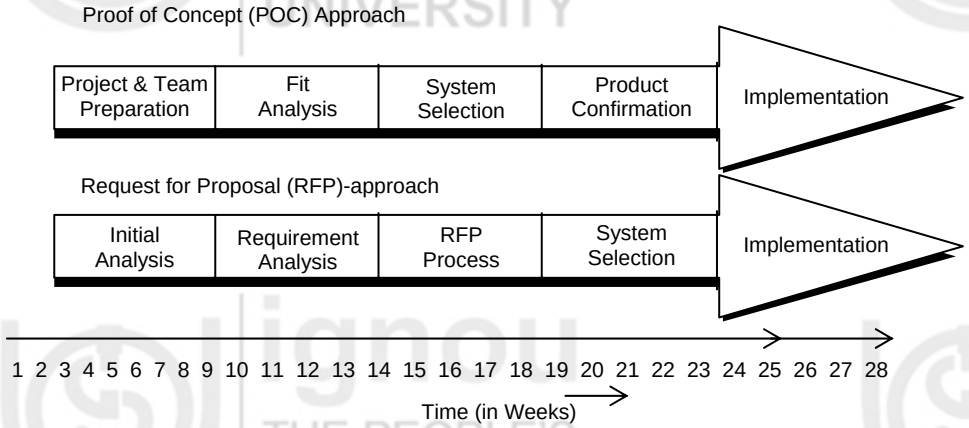

Figure 8.5 : Proven System Selection Alternatives

SAQ 7

Compare two approaches for ERP package selection.

8.12 NARROWING ERP ALTERNATIVES

During selection of ERP, it is generally not very difficult to narrow down the choices to three or four options. Further, narrowing of choice to one single vendor is very difficult. This is due to following reasons :

(a) ERP selection, being a multi-criteria decision making problem is difficult to handle.

(b) Subjectivity in deciding the relative merit of each alternative ERP solution.

(c) Divergent criteria, on whose basis the decision is taken.

(d) Difference in opinion by different team members.

(e) Conflicting nature of few criteria for the selection of ERP.

(f) Inter-dependence of few criteria.

(g) Personal biasness of the consultant/team members.

(h) Lack of quantitative estimate regarding the performance of ERP solution on a real time situation.

8.13 ERP IMPLEMENTATION

The implementation of ERP is generally done in close association with the vendor, who supplies the package. Many organisations go for hiring professionals/consultants to facilitate the implementation process. Within the organisation, there is a need to form an ERP-team. This team comprises of people with high caliber and motivation. They are from different streams. Process engineer, industrial engineer, HRD personnel, financial executive and work-manager are sure to find a place in this team. The role of the top management is very crucial, as the commitment and required flow of finance are the two major ingredients without which any effort whatsoever is futile.

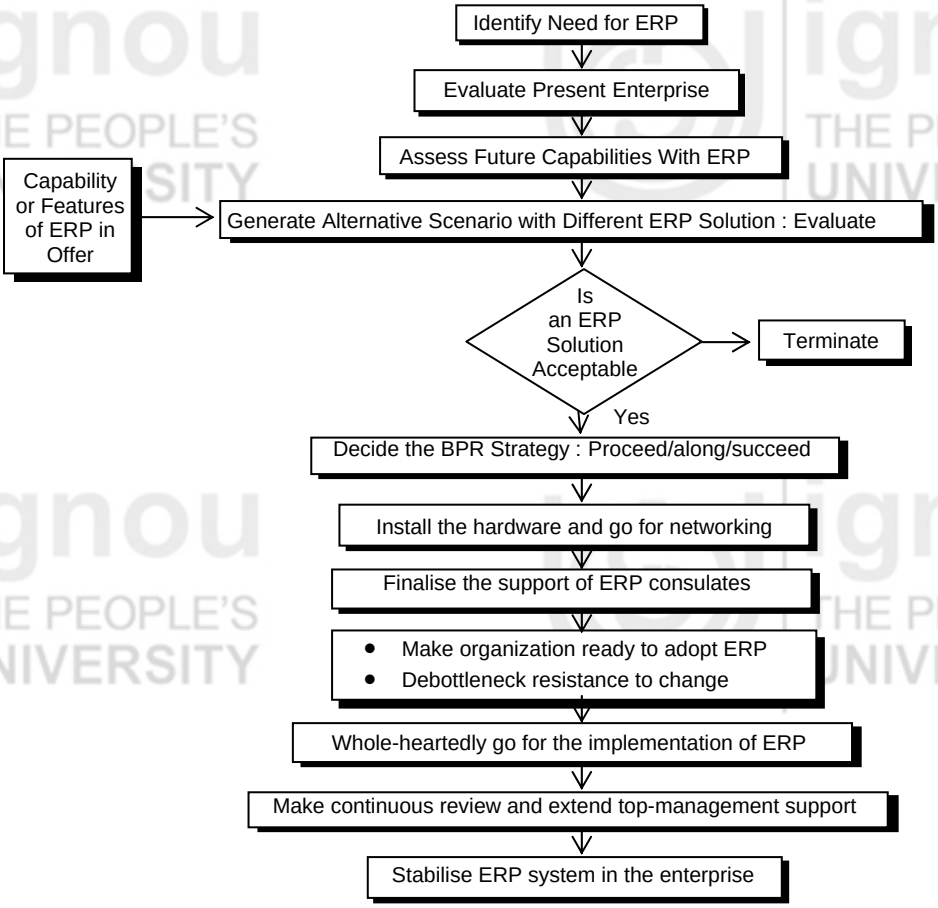

Figure 8.6 : Methodology for ERP Implementation

A general methodology for the implementation of ERP is presented in Figure 8.6 as a flow chart. The identification of the need for ERP should be developed through a feasibility-report. In this report, the present enterprise should also be evaluated along with much needed future capabilities. Then comes the stage of selection and evaluation of ERP. We have seen this aspect in the previous sections. If the ERP solution is acceptable, then the strategy for business process re-engineering (BPR) is decided.

8.13.1 USA Principles for the Implementation

Some of the typical failures of ERP implementation have revealed that most of these companies have started the ERP implementation process by first focusing on automation – effort. Studies have also revealed that automation, in an enterprise for productivity improvement without understanding and simplifying the process, is one of the major reasons for the failure of the ERP implementation. This leads to the USA principle for the implementation of the ERP system.

USA stands for a sequential approach : Understand-Simplify-Automate as shown in Figure 8.7. The USA approach calls for dedicated effort towards understanding the business process. Without this, any effort for implementation of ERP is likely to fail. Second step is to go for simplification of the process. Last step is to go for the automation of the procedure.

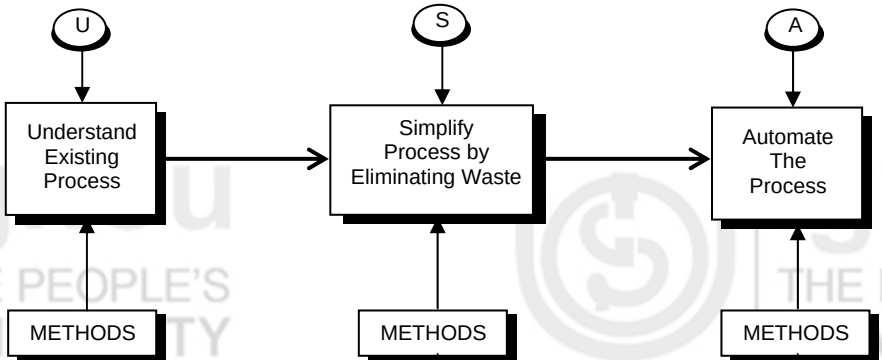

Figure 8.7 : The USA Principle : Implementation Flow

8.13.2 Factors Involved in Successful Implementation

Setting the Priorities Right

The necessity of ERP project must be well established. It must start with a well judged feasibility report. Many consultants often jump into conclusion without properly going into the feasibility study. There is a great excitement about ERP throughout the world. In this situation, it is easy to get caught into the euphoria and enthusiasm and rely too much because many of the world's major companies are using it. However, blind copy of trend may lead the organisation into an unpleasant situation.

Business Process Re-engineering (BPR)

Business Process Re-engineering (BPR) means redesigning a company's process to increase efficiency, improve quality and reduce costs.

The re-engineering of the business should be continuous rather than a single re-engineering process. Business process re-engineering (BPR) is closely associated with the implementation of ERP.

Downsizing

On many occasions, trimming the workforce is essential. By reducing head count, one can streamline organisation and make systems more efficient.

Workforce reduction and intensive training to the remaining employees should go hand-in-hand. An automation, at a later stage, would compensate the losses due to reduction.

Organisational Transformation

Organisational change is often a pre-requisite for the transformation. A very good knowledge of software, organisation and business needs is necessary to predict future organisation at the post implementation stage. This would also reduce resistance to change.

Integration Within

System integration is key to the success of enterprise planning. A well integrated enterprise would be a great aid in helping the company to run efficiently. Modular nature of the software has distinct advantages. One can purchase the modules to meet the present business requirement. With add-on modules, new modules may be integrated with the existing modules at a later stage as per the requirements.

Integration Outside

Software should have flexibility in terms of hardware, operating systems, databases and GUI (graphical user interface). In this context, client server technology is reliable, efficient, flexible and cost effective.

Standardisation in Enterprise Operation

For improving the efficiency and for increasing the flexibility of the system, it is necessary that enterprise should standardize its business operation. Due to globalisation of enterprise activities, the importance of standardization is much more relevant.

High Capacity to Handle Large Volumes Data

The ability of the ERP systems to handle the large volumes of data processing is an important consideration. This should be looked into from the point of view of future expandability of the business.

8.13.3 Some Useful Guidelines for ERP Implementation

Based on experiences from the successful ERP projects, useful guidelines are suggested. You must understand the needs of the enterprise and feeling for corporate culture in the context of readiness for change.:

(a) The message should come from the top management regarding adoption of the project.

(b) Continuous and frequent communication from top management regarding usefulness and mindset for the project should be made.

(c) One should initiate the process with a feasibility report.

(d) Changes in the business processes should be started in the early stages of the project. Everybody should be made aware of these changes. Resistance to change will reduce if employees are well informed about changes.

(e) Phases of project implementation should be decided. One should hold consultative meetings for consensus.

(f) Top executive should play the role of champion and set the project as the ultimate goal in all efforts.

(g) One should hire consultants having experience in ERP project implementation.

(h) Task force team should visit sites of vendors and see how the ERP solution is functioning. Useful tips from the already existing users should be extracted.

(i) The documentation of the vendor should be carefully studied.

(j) One should make a balanced implementation team, which include IT, HRD, Works, Financial and top executives. Other experienced functional managers should also be included.

(k) There should be regular training and appraisal sessions in the organisation.

(l) One must ensure that the problems arising out of changes are handled carefully. As such problems are inevitable.

(m) One must ensure good feedback mechanism to evaluate the results due to implementation.

(n) Taskforce team should decide whether to go for modular or complete ERP solution.

(o) One must look into the future capabilities of the enterprise when it is armed with ERP. One may take radical decisions for transformation, if need arises.

8.13.4 Reasons for ERP Implementation Failure

The ERP implementation fails due to the following reasons :

(a) Absence of an executive sponsor : Since ERP crosses functions within a company, the implementation needs someone with an authority to bring

various functional executives together. There should be people, directed and devoted towards the project.

(b) When the project is viewed as an IT effort or as an effort towards automating finance/manufacturing supply-chain, etc.

(c) When there is no full-time project manager for ERP implementation.

(d) When the IT people start taking decisions in ERP implementation due to dominant role in handling hardware/software/communication, etc. : As a matter of fact, they generally lack understanding of the function requirements.

(e) Lack of documentation of implementation procedure.

(f) Lack of internal communication by top executive regarding project implications.

(g) Lack of vendor support and team work.

(h) Massive change and unmanageable transformation without proper grasping by employees.

(i) Lack of re-engineering effort and insistence on continuation of current practices.

SAQ 8

(a) List the steps for ERP implementation.

(b) What are the factors involved in the successful implementation of ERP?

(c) What are the reasons for ERP implementation failure?

8.14 SUMMARY

ERP systems work from a common, central database. ERP integrates all compnay's information systems so that each functional area is using the same information. Sales and marketing, service, finance, human resource management, operations and inventory planning all use the same database. ERP goes even further than MRP II. ERP typically allows external customers or suppliers to access company's information system.

Hence, ERP is the software architecture that facilitates the flow of information among different functions of an enterprise. This is achieved through common database information and enterprise linkages, powerful GUI, client-server network of communication, uniform system environment, etc. ERP implementation strategy normally goes along with BPR efforts. Selection of an appropriate ERP package is a very challenging task. The difficulties are due to comparison of different features of each alternative possessing a multi-criteria decision problem. Two approaches for initial weeding out of alternatives are : request for proposal (RFP) and proof of concept (POC).

8.15 KEY WORDS

ERP **:** Aims to integrate business processes through the support of an integrated computer information system.

BPR	**:**	Business process re-engineering means redesigning a company's process to increase efficiency, improve quality and reduce costs.
Understand-Simplify-Automate (USA)	**:**	USA approach calls for dedicated effort towards understanding the business process.
Request for Proposed (RFP) Approach	**:**	RFP approach begins with the preliminary analysis, which is meant to prepare the organisation for ERP selection project.
Proof of Concept (POC) Approach	:	In this approach, the organisation is provided with the ERP software for few months to get confidence on the software before final selection.

8.16 ANSWERS TO SAQs

Refer the relevant text in this unit for answers to SAQs.