



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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UNIT I

Introduction : ERP - Definition – Concept – Fundamentals – Need for ERP -Advantages of ERP – Implementation of ERP – Key issues and Characteristics of ERP Typical architecture components of ERP – ERP system Architecture. ERP and related technologies: Business Process RE-engineering – Management Information System– Decision Support System - Executive Support System – On-Line Analytical Processing, Supply Chain Management, Customer Relationship Management.

2 MARKS

1. Define ERP?

Enterprise Resource Planning (ERP) is business management software. It typically a suite of integrated applications that a company can use to collect, store, manage and interpret data from many business activities, including product planning, cost, Manufacturing or service delivery, Marketing and sales, Inventory.

2. What are the fundamental components of ERP?

The following are the fundamental components of the ERP.

- Financial Management
- Business Intelligence
- Supply Chain Management
- Human Resource Management
- Manufacturing Operations
- Integration

3. What are the elements of ERP?

- production planning
- Integrated logistics
- Human resources
- Accounting and financials
- Sales , distribution(order entry)

4. Why companies are forced to have ERP suites?

The forces driving ERP are;

- The need to create a framework that will, improve customer order processing.
- The need to consolidate and unify business functions such as manufacturing finance distributions/logistics, & human resources.
- The need to integrate a broad range of desperate technologies, along with the processes they support.
- The need to create a new foundations an which next-generation applications can be developed.

5. In what way ERP is used in real world?

- Microsoft in the s/w industry
- Owens-Corning in the building supplies industry.
- Colgate-Palmolive in the consumer products industry.

6. What are the implementation methodology phases of accelerated ERP approach?

The Project Preparation Phase

- The Blueprint Phase
- The Pilot Phase
- The Assessment Phase
- The Final Phase

7. What are the capabilities of effective co-ordination management?

- Strategic Thinking
- Process Reengineering
- Managing Implementation Complexity
- Transition Management

8. What are the elements required in ERP to achieve flexibility?

Four crucial elements are required to achieve flexibility:

1.) Components, not modules:

2.) Incremental migration, rather than massive reengineering

- 3.) Dynamic, rather than static, configuration of ERP systems.
- 4.) Management of multiple strategic sourcing and partnership relationships.

9. What are the advantages of ERP?

- Sales order processing lead time was reduced from 1hour to 10 minutes.
- Purchase order lead time was reduced from1 to 4 hours to less than 5 minutes.
- Production scheduling run time was reduced from 18 hours to 30 minutes
- Ninety-eight percent of orders are now delivered on time.

10. What is BPR (Business Process Reengineering)?

Business process re-engineering: Business process re-engineering (BPR) is the analysis and redesign of workflows within and between enterprises in order to optimize end-to-end processes and automate non-value-added tasks. Business Process Reengineering (BPR) is the practice of rethinking and redesigning the way work is done to better support an organization's mission and reduce costs. Reengineering starts with a high-level assessment of the organization's mission, strategic goals, and customer needs.

11. Define Management Information System.

A management information system (MIS) is a computerized database of financial information organized and programmed in such a way that it produces regular reports on operations for every level of management in a company.

12. Define Decision Support System.

Decision support system (DSS) is a computer-based information system that supports business or organizational decision-making activities. DSSs serve the management, operations, and planning levels of an organization (usually mid and higher management) and help people make decisions about problems that may be rapidly changing and not easily specified in advance—i.e. Unstructured and Semi-Structured decision problems. Decision support systems can be either fully computerized, human-powered or a combination of both.

13. Define Executive Support System?

An executive information system (EIS), also known as an executive support system (ESS), is a type of management information system that facilitates and supports senior executive information and decision-making needs. It provides easy access to internal and external information relevant to organizational goals. It is commonly considered a specialized form of decision support system (DSS). EIS emphasizes graphical displays and easy-to-use user interfaces.

14. What is On-Line Analytical Processing?

OLAP (Online Analytical Processing) is the technology behind many Business Intelligence (BI) applications. OLAP is a powerful technology for data discovery, including capabilities for limitless report viewing, complex analytical calculations, and predictive "what if" scenario (budget, forecast) planning.

15. Define Supply Chain Management

Supply chain management (SCM) is the management of the flow of goods and services.

It includes the movement and storage of raw materials, work-in-process inventory, and finished goods from point of origin to point of consumption.

16.Define Customer Relationship Management

Customer relationship management (CRM) is an approach to managing a company's interaction with current and future customers. It often involves using technology to organize, automate, and synchronize sales, marketing, customer service, and technical support.

ELEVEN MARK QUESTIONS:

1. Explain in detail about ERP and its Functional Components.

DEFINITION OF ERP: Enterprise Resource Planning (**ERP**) is business management software. It typically a suite of integrated applications that a company can use to collect, store, manage and interpret data from many business activities, including product planning, cost , Manufacturing or service delivery, Marketing and sales, Inventory .

An important goal of ERP is to facilitate the flow of information so business decisions can be data-driven. ERP software suites are built to collect and organize data from various levels of an organization to provide management with insight into key performance indicators (KPIs) in real time.

ERP is the backbone of e-business. ERP integrates application suites. ERP is not a single system, but a framework that includes administrative apps (finance, accounting), human resource apps (payroll, benefits), and manufacturing resource planning (MRP) apps (procurement, production planning). ERP unites major business processes – order processing, general ledger, payroll, and production within a single family of software modules.

Fundamental Components of ERP: The following are the fundamental components of the ERP.

- Financial Management
- Business Intelligence
- Supply Chain Management

- Human Resource Management
- Manufacturing Operations
- Integration

Financial Management: At the core of ERP are the financial modules, including general ledger, accounts receivable, accounts payable, billing and fixed asset management. If your organization is considering the move to an ERP system to support expansion into global markets, make sure that multiple currencies and languages are supported, as well as regulatory compliance in the U.S. and in foreign countries. Other functionality in the financial management modules will include budgets, cashflow, expense and tax reporting. The evaluation team should focus on areas that are most important to support the strategic plans for your organization.

Business Intelligence: Business Intelligence (BI) has become a standard component of most ERP packages. In general, BI tools allow users to share and analyze the data collected across the enterprise and centralized in the ERP database. BI can come in the form of dashboards, automated reporting and analysis tools used to monitor the organization business performance. BI supports informed decision making by everyone, from executives to line managers and accountants.

Supply Chain Management: Supply Chain Management (SCM), sometimes referred to as logistics, improves the flow of materials through an organization by managing planning, scheduling, procurement, and fulfillment, to maximize customer satisfaction and profitability. Sub modules in SCM often include production scheduling, demand management, distribution management, inventory management, warehouse management, procurement and order management. Any company dealing with products, from manufacturers to distributors, needs to clearly define their SCM requirements to properly evaluate an ERP solution. It easy for a vendor to focus on their applications strengths and not address the full needs of the company.

Human Resource Management: Human resource management ERP modules should enhance the employee experience – from initial recruitment to time tracking. A Sub module can include payroll, performance management, time tracking, benefits, compensation and workforce planning. Self-service tools that allow managers and employees to enter time and attendance, choose benefits and manage PTO are available in many ERP solutions.

Manufacturing Operations: Manufacturing modules make manufacturing operations more efficient through product configuration, job costing and bill of materials management. ERP manufacturing modules often include Capacity Requirements Planning, Materials Requirements Planning, forecasting, Master Production Scheduling, work-order management and shop-floor control.

Integration: Key to the value of an ERP package is the integration between modules, so that all of the core business functions are connected. Information should flow across the organization so that BI reports on organization-wide results.

ERP can be easier than you imagine – Microsoft Dynamics ERP is cost effective and familiar to your users. If you are thinking about upgrading your systems to a fully integrated ERP system, give us a call.

NEED FOR ERP:

- Real-time information for decisions
- Best practice procedures
- Improved visibility
- Faster month-end close
- Increased customer satisfaction
- Managed and controlled costs
- Better operational efficiency
- Accurate records
- Balance of supply and demand
- Reduced lead times and increased throughput

Real-time information for decisions: Without an ERP system, your team is flying blind. They make decisions based on guesswork and rules of thumb because they don't have the data they need. Sometimes they are the right decisions, but more often, they are sub-optimum decisions that can cost you money and customer goodwill.

Best practice procedures: Software companies often design their ERP systems to support specific industries or verticals. As they add customers, they learn industry best practices and incorporate them into the software. By implementing an ERP system designed for your industry, you automatically make your business processes more efficient.

Improved visibility: If customers want to know when their order will ship or if you need to know whether you have enough of a critical component to accept a rush order, an ERP system gives you instant visibility into your operations and your supply chain.

Faster month-end close: ERP systems automatically process transactions and generate audit trails and financial reports that can simplify period-end closings. They flag anomalies so you can investigate quickly, and they simplify repetitive journal

entries and other activities that make closing so complex and time consuming. Faster closes mean you know the health of your business sooner.

Increased customer satisfaction: Customers like accurate delivery dates, and ERP can help you provide them with improved inventory and shop floor visibility. In addition, the increased visibility and accuracy will help you improve your DIFOT rate (delivery in full on time), which helps keep customers happy.

Managed and controlled costs: ERP systems calculate and collect costs so you always have an accurate picture of your product cost and margins.

Better operational efficiency: By helping you to plan production more effectively, your operational efficiency will improve as you reduce setups and teardowns or unnecessary downtime.

Accurate records: The uniformity of record data that an ERP system instills will help ensure that your records are more accurate, which will increase process accuracy across the board.

Balance of supply and demand: MRP, a component of ERP systems, will help you balance supply and demand so you can reduce inventory while keeping customers happy.

Reduced lead times and increased throughput: Better scheduling and accurate records ensure that your schedules focus on priorities, leading to shorter lead times. Since you won't have as many orders waiting for tooling or parts, your throughput will increase.

Advantages of ERP

1. Complete **visibility** into all the important processes, across various departments of an organization.

2. Automatic and coherent **workflow** from one department/function to another, to ensure a smooth transition and quicker completion of processes.

3. A unified and single **reporting** system to analyze the statistics/status etc. in realtime, across all functions/departments.

4. There are **various modules** in an ERP system like Finance/Accounts, Human Resource Management, Manufacturing, Marketing/Sales, Supply Chain/Warehouse Management, CRM, Project Management, etc.

5. ERP systems make it **easier** for order tracking, inventory tracking, revenue tracking, sales forecasting and related activities.

Disadvantages of ERP

1. The **cost** of ERP Software, planning, customization, configuration, testing, implementation, etc. is too high.

2. ERP deployments are highly time-consuming – projects may take **1-3 years** (or more) to get completed and fully functional.

3. Too little **customization** may not integrate the ERP system with the business process & too much customization may slow down the project and make it difficult to upgrade.

4. The **cost savings/payback** may not be realized immediately after the ERP implementation & it is quite difficult to measure the same.

2. Explain in detail about Implementation of ERP and its Functional characteristics

Implementation of ERP

Challenges in implementing ERP solutions are quite normal. Though it is not completely a technical job, a lot of planning and proper communication is very much essential to implement ERP across the organization. Below are the 7 common challenges we have noticed companies experience, when ERP is implemented.

- It is very important, that **implementation is done in stages**. Trying to implement everything at once will lead to a lot of confusion and chaos.
- **Appropriate training is very essential** during and after the implementation. The staff should be comfortable in using the application or else, it will backfire, with redundant work and functional inefficiencies.
- Lack of proper analysis of requirements will lead to non-availability of certain essential functionalities. This might affect the operations in the long run and reduce the productivity and profitability.
- Lack of Support from Senior Management will lead to unnecessary frustrations in work place. Also, it will cause delay in operations and ineffective decisions. So, it is essential to ensure that the Senior Management supports the transformation.
- **Compatibility Issues with ERP Modules** lead to issues in integration of modules. Companies associate different vendors to implement different ERP modules, based on their competency. It is very essential that there is a way to handle compatibility issues.
- **Cost Overheads** will result, if requirements are not properly discussed and decided during the planning phase. So, before execution, a detailed plan with a complete breakdown of requirements should be worked out.
- **Investment in Infrastructure** is very essential. ERP applications modules will require good processing speed and adequate storage. Not allocating suitable

budget for infrastructure will result in reduced application speed and other software issues. Hardware and Software Security is also equally important.

Characteristics of ERP

ERP (Enterprise Resource Planning) systems typically include the following characteristics:

- An integrated system that operates in (or near) real time without relying on periodic updates
- A common database that supports all applications
- A consistent look and feel across modules
- Installation of the system with elaborate application/data integration by the Information Technology department provided the implementation is not done in small steps.
- Flexible
- Modular and Open
- Comprehensive
- Online-Connection with Other ERP System
- Best Business Practices
- Multi-Facilities
- Strategic planning
- Optimize the data
- Project Management
- Automatic Functions

Flexible: Currently way of doing business is changing fast due to changing in law and amendments in the standards. So, management of business process which is done through ERP should be flexible. If ERP system will be flexible, we can change processing system as per our requirement.



Modular and Open: One of the great characteristics of any good ERP system that it has open module architecture. It means, if there is error in any module, we can correct

it by opening it instead affecting all other modules. For example, Open ERP has following module which can be open separately.

- Sales Management
- Purchase Management
- Customer Relationship Management
- Project Management
- Accounting & Finance
- Human Resource Management
- Knowledge and Document Management
- Time Tracking
- Manufacturing Resource Planning
- Portal
- Employee Directory
- Address Book
- Recruitment Process



Comprehensive: ERP system should be advance and it should use comprehensive way. It means all most all the functions of business should be done through ERP System. If we will get only small number of activities through ERP and other will be done through manual, then, this ERP system is not ok. Its capacity should to cover all the functions of business.

Online-Connection with Other ERP System: Today, in the market, there are lots of ERP solutions but which is the best, it will tell its features? Check whether it has capacity to connect other ERP system online or not. Because, today business has started to interact with millions of other business. So, it is necessary to connect them online through our ERP.



Best Business Practices: Each business activities have lots of standards. For example, accounting follows IFRS, quality management follows ISO 9000 and marketing follows the standard of MASB. So, your ERP system will updated regarding all standards.

Multi-Facilities: A good ERP System should have multi-facilities. It means, it can work in multi-currencies, multi-mode manufacturing and multi-platform.

Strategic planning:Strategic Planning is the main and top function of business. Itshould be done through ERP. ERP should integrate all its sub-part systems for makingbetterstrategicplanning.

Optimize the data: A good ERP system optimize the data for effective utilization of limited business resources. It also optimizes the data for reducing cost and risk. **Project Management:** A good ERP System collaborate the team in real time for working together on a project. Everything about the project process can be tracked through this.

Automatic Functions: We can measure the quality of ERP from its advance automatic functions. With these automatic functions, organization saves his lots of time. This automatic function may be in electronic fund transfer, electronic data interchange and ecommerce.

FUNCTIONAL AREAS OF ERP

An ERP system covers the following common functional areas. In many ERP systems these are called and grouped together as ERP modules:

- Financial accounting: General ledger, fixed asset, payables including vouchering, matching and payment, receivables cash application and collections, cash management, financial consolidation.
- Management accounting: Budgeting, costing, cost management, activity based costing.

- Human resources: Recruiting, training, rostering, payroll, benefits, 401K, diversity management, retirement, separation.
- Manufacturing: Engineering, bill of materials, work orders, scheduling, capacity, workflow management, quality control, manufacturing process, manufacturing projects, manufacturing flow, product life cycle management.
- Order Processing: Order to cash, order entry, credit checking, pricing, available to promise, inventory, shipping, sales analysis and reporting, sales commissioning.
- Supply chain management: Supply chain planning, supplier scheduling, product configurator, order to cash, purchasing, inventory, claim processing, warehousing (receiving, putaway, picking and packing).
- Project management: Project planning, resource planning, project costing, work breakdown structure, billing, time and expense, performance units, activity management.
- Customer relationship management: Sales and marketing, commissions, service, customer contact, call center support — CRM systems are not always considered part of ERP systems but rather Business Support systems (BSS).
- Data Services: Various "self-service" interfaces for customers, suppliers and/or employees.

3. Explain in detail about ERP System Architecture

ERP SYSTEM ARCHITECTURE: Enterprise resource planning (ERP) is businessmanagement software typically a suite of integrated applications that an organization can use to collect, store, manage and interpret data from many business activities, including:

- Product planning, cost
- Manufacturing or service delivery
- Marketing and sales
- Inventory management
- Shipping and payment

ERP provides an integrated view of core business processes, often in real-time, using common databases maintained by a database management system. ERP systems track business resources such as cash, raw materials, production capacity and the status of business commitments: orders, purchase orders, and payroll. The applications that make up the system share data across various departments (manufacturing, purchasing, sales, accounting, etc.) that provide the data. ERP facilitates information flow between all business functions, and manages connections to outside stakeholders.

The ERP system is considered a vital organizational tool because it integrates varied organizational systems and facilitates error-free transactions and production. However, developing an ERP system differs from traditional system development. ERP systems run on a variety of computer hardware and network configurations, typically using a database as an information repository.

ERP modules:

The key role of an ERP system is to provide support for such business functions as accounting, sales, inventory control, and production.

ERP vendors, including SAP, Oracle, and Microsoft, etc. provide modules that support the major functional areas of a business.

The ERP software embeds best business practices that implement the organization's policy and procedure via business rules.

Typical ERP Modules:





ERP applications are most commonly deployed in a distributed and often widely dispersed manner. While the servers may be centralized, the clients are usually spread to multiple locations throughout the enterprise.

Generally there are three functional areas of responsibility that is distributed among the servers and the clients. First, there is the database component - the central repository for all of the data that is transferred to and from the clients. Then, of course, the clients - here raw data gets inputted, requests for information are submitted, and the data satisfying these requests is presented. Lastly, we have the application component that acts as the intermediary between the client and the database. Where these components physically reside and how the processes get distributed will vary somewhat from one implementation to the next. The two most commonly implemented architectures are outlined below.

Two-tier Implementations

In typical two-tier architecture, the server handles both application and database duties. The clients are responsible for presenting the data and passing user input back to the server. While there may be multiple servers and the clients may be distributed across several types of local and wide area links, this distribution of processing responsibilities remains the same.

Three-tier Client/Server Implementations

In three-tier architectures, the database and application functions are separated. This is very typical of large production ERP deployments. In this scenario, satisfying client requests requires two or more network connections. Initially, the client establishes communications with the application server. The application server then creates a second connection to the database server.



ERP System Configurations: Client-Server Network Topology

Two-tier:

- It common server handles both application and database duties.
- It is used especially in LANs.



Three-tier:

- The client links to the application server which then initiates a second connection to the database server.
- It is used especially in WANs.



4. Write Short notes on advantages and disadvantages of ERP.

Benefits of ERP:

- ERP can improve quality and efficiency of the business. By keeping a company's internal business processes running smoothly, ERP can lead to better outputs that may benefit the company, such as in customer service and manufacturing.
- ERP supports upper level management by providing information for decision making.
- ERP creates a more agile company that adapts better to change. ERP makes a company more flexible and less rigidly structured so organization components operate more cohesively, enhancing the business—internally and externally.
- ERP can improve data security. A common control system, such as the kind offered by ERP systems, allows organizations the ability to more easily ensure key company data is not compromised.

- ERP provides increased opportunities for collaboration. Data takes many forms in the modern enterprise. Documents, files, forms, audio and video, emails. Ofter, each data medium has its own mechanism for allowing collaboration. ERP provides a collaborative platform that lets employees spend more time collaborating on content rather than mastering the learning curve of communicating in various formats across distributed systems.
- Large numbers of end-users have access to ERP applications over the Web.
- Easily integrate ERP applications with existing systems.
- Server-centric—No complex, expensive client software installation.
- The server-centric architecture enables secure end-user access to ERP application.
- Client-centric—Architecture has better response time because user requests are mostly processed on the client's computer.
- Web-based architectures also allow better system-to-system integration.

Disadvantages of ERP:

- Customization can be problematic.
- Re-engineering business processes to fit the ERP system may damage competitiveness or divert focus from other critical activities.
- ERP can cost more than less integrated or less comprehensive solutions.
- High ERP switching costs can increase the ERP vendor's negotiating power, which can increase support, maintenance, and upgrade expenses.
- Overcoming resistance to sharing sensitive information between departments can divert management attention.
- Integration of truly independent businesses can create unnecessary dependencies.
- Extensive training requirements take resources from daily operations.
- Due to ERP's architecture (OLTP, On-Line Transaction Processing) ERP systems are not well suited for production planning and supply chain management (SCM).
- Harmonization of ERP systems can be a mammoth task (especially for big companies) and requires a lot of time, planning, and money.

5. Explain in Detail about Business Process Re-engineering.

Business process re-engineering: Business process re-engineering (BPR) is the analysis and redesign of workflows within and between enterprises in order to optimize end-to-end processes and automate non-value-added tasks. Business Process Reengineering (BPR) is the practice of rethinking and redesigning the way work is done to better support an organization's mission and reduce costs. Reengineering starts with a high-level assessment of the organization's mission, strategic goals, and customer needs.

Within the framework of this basic assessment of mission and goals, re-engineering focuses on the organization's business processes—the steps and procedures that govern how resources are used to create products and services that meet the needs of particular customers or markets. As a structured ordering of work steps across time and place, a business process can be decomposed into specific activities, measured, modeled, and improved. It can also be completely redesigned or eliminated altogether. Re-engineering identifies, analyzes, and re-designs an organization's core business processes with the aim of achieving dramatic improvements in critical performance measures, such as cost, quality, service, and speed.

Re-engineering recognizes that an organization's business processes are usually fragmented into sub processes and tasks that are carried out by several specialized functional areas within the organization. Re-engineering maintains that optimizing the performance of sub processes can result in some benefits, but cannot yield dramatic improvements if the process itself is fundamentally inefficient and outmoded.

For that reason, re-engineering focuses on re-designing the process as a whole in order to achieve the greatest possible benefits to the organization and their customers. This drive for realizing dramatic improvements by fundamentally re-thinking how the organization's work should be done distinguishes the re-engineering from process improvement efforts that focus on functional or incremental improvement. Fig Shows business process reengineering cycle.





Reengineering guidance and relationship of Mission and Work Processes to Information Technology.

The most notable definitions of reengineering are:

• The fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary modern measures of performance, such as cost, quality, service, and speed.

• Encompasses the envisioning of new work strategies, the actual process design activity, and the implementation of the change in all its complex technological, human, and organizational dimensions."

Research and methodology:



Model based on PRLC approach:

Although the labels and steps differ slightly, the early methodologies that were rooted in IT-centric BPR solutions share many of the same basic principles and elements. The following outline is one such model, based on the PRLC (Process Reengineering Life Cycle) Simplified schematic outline of using a business process approach, exemplified for pharmaceutical R&D.

- Structural organization with functional units
- Introduction of New Product Development as cross-functional process
- Re-structuring and streamlining activities, removal of non-value adding tasks

BPR Success & Failure Factors

Factors that are important to BPR success include:

- 1. BPR team composition.
- 2. Business needs analysis.
- 3. Adequate IT infrastructure.
- 4. Effective change management.
- 5. Ongoing continuous improvement

There are many reasons for sub-optimal business processes which include:

- 1. One department may be optimized at the expense of another
- 2. Lack of time to focus on improving business process
- 3. Lack of recognition of the extent of the problem
- 4. Lack of training
- 5. People involved use the best tool they have at their disposal which is usually Excel to fix problems
- 6. Inadequate infrastructure
- 7. Overly bureaucratic processes
- 8. Lack of motivation

Organization wide commitment:

Major changes to business processes have a direct impact on processes, technology, job roles, and workplace culture. Significant changes to even one of those areas require resources, money, and leadership. Changing them simultaneously is an extraordinary task. Like any large and complex undertaking, implementing reengineering requires the talents and energies of a broad spectrum of experts. Since BPR can involve multiple areas within the organization, it is important to get support from all affected departments. Through the involvement of selected department members, the organization can gain valuable input before a process is implemented; a step which promotes both the cooperation and the vital acceptance of the reengineered process by all segments of the organization.

Getting enterprise wide commitment involves the following: top management sponsorship, bottom-up buy-in from process users, dedicated BPR team, and budget allocation for the total solution with measures to demonstrate value. Before any BPR project can be implemented successfully, there must be a commitment to the project by the management of the organization, and strong leadership must be provided. Reengineering efforts can by no means be exercised without a companywide commitment to the goals. However, top management commitment is imperative for success. Top management must recognize the need for change, develop a complete understanding of what BPR is, and plan how to achieve it.

Leadership has to be effective, strong, visible, and creative in thinking and understanding in order to provide a clear vision. Convincing every affected group within the organization of the need for BPR is a key step in successfully implementing a process. By informing all affected groups at every stage, and emphasizing the positive end results of the reengineering process, it is possible to minimize resistance to change and increase the odds for success.

The ultimate success of BPR depends on the strong, consistent, and continuous involvement of all departmental levels within the organization.

It also depends on the people who do it and how well they can be motivated to be creative and to apply their detailed knowledge to the redesign of business processes.

BPR team composition:

Once organization-wide commitment has been secured from all departments involved in the reengineering effort and at different levels, the critical step of selecting a BPR team must be taken.

This team will form the nucleus of the BPR effort, make key decisions and recommendations, and help communicate the details and benefits of the BPR program to the entire organization. The determinants of an effective BPR team may be summarized as follows:

- competency of the members of the team, their motivation,
- their credibility within the organization and their creativity,
- team empowerment, training of members in process mapping and brainstorming techniques,
- effective team leadership,
- Proper organization of the team,
- Complementary skills among team members, adequate size, interchangeable accountability, clarity of work approach, and
- Specificity of goals.

The most effective BPR teams include active representatives from the following work groups: top management, business area responsible for the process being addressed, technology groups, finance, and members of all ultimate process users' groups. Team members who are selected from each work group within the organization will have an impact on the outcome of the reengineered process according to their desired requirements. The BPR team should be mixed in depth and knowledge. For example, it may include members with the following characteristics:

- Members who do not know the process at all.
- Members who know the process inside-out.
- Customers, if possible.
- Members representing impacted departments.
- One or two members of the best, brightest, passionate, and committed technology experts.
- Members from outside of the organization

Business needs analysis:

This plan includes the following:

- Identifying specific problem areas,
- Solidifying particular goals, and
- Defining business objectives.

The business needs analysis contributes tremendously to the re-engineering effort by helping the BPR team to prioritize and determine where it should focus its improvements efforts.

The business needs analysis also helps in relating the BPR project goals back to key business objectives and the overall strategic direction for the organization. This linkage should show the thread from the top to the bottom of the organization, so each person can easily connect the overall business direction with the re-engineering effort.

This alignment must be demonstrated from the perspective of financial performance, customer service, associate value, and the vision for the organization.

Developing a business vision and process objectives relies, on the one hand, on a clear understanding of organizational strengths, weaknesses, and market structure, and on the other, on awareness and knowledge about innovative activities undertaken by competitors and other organizations.

6. Explain in Detail about Management Information System (MIS) Management Information System (MIS):

- A management information system (MIS) is a computerized database of financial information organized and programmed in such a way that it produces regular reports on operations for every level of **management** in a company.
- It is usually also possible to obtain special reports from the **system** easily.

Types and terminology:

The terms management information system (MIS), information enterprise resource planning (ERP), and information technology system, management are often confused. Information systems and MIS are broader categories that include ERP. Information technology management concerns the operation and organization of information technology resources independent of their purpose. Management information systems, produce fixed, regularly scheduled reports based on data extracted and summarized from the firm's underlying transaction processing systems to middle and operational level managers to identify and inform structured and semi-structured decision problems.

Decision support systems (DSS) are computer program applications used by middle and higher management to compile information from a wide range of sources to support problem solving and decision making. A DSS is used mostly for semistructured and unstructured decision problems.

Executive information systems (EIS) is a reporting tool that provides quick access to summarized reports coming from all company levels and departments such as accounting, human resources and operations.

Marketing Information Systems are Management Information Systems designed specifically for managing the marketing aspects of the business

Accounting information systems are focused accounting functions.

Human resource management systems are used for personnel aspects.

Office automation systems (OAS) support communication and productivity in the enterprise by automating workflow and eliminating bottlenecks. OAS may be implemented at any and all levels of management.

School Information Management Systems (SIMS) cover school administration and often including teaching and learning materials.

Enterprise resource planning facilitates the flow of information between all business functions inside the boundaries of the organization and manage the connections to outside stakeholders.

Advantages:

The following are some of the benefits that can be attained using MISs.

Companies are able to identify their strengths and weaknesses due to the presence of revenue reports, employees' performance record etc. Identifying these aspects can help a company improve its business processes and operations.

Giving an overall picture of the company.

Acting as a communication and planning tool.

The availability of customer data and feedback can help the company to align its business processes according to the needs of its customers. The effective management of customer data can help the company to perform direct marketing and promotion activities.

MISs can help a company gain a competitive advantage. Competitive advantage is a firm's ability to do something better, faster, cheaper, or uniquely, when compared with rival firms in the market.

Enterprise applications:

Enterprise systems—also known as enterprise resource planning (ERP) systems provide integrated software modules and a unified database that personnel use to plan, manage, and control core business processes across multiple locations. Modules of ERP systems may include finance, accounting, marketing, human resources, production, inventory management, and distribution.

Supply chain management (SCM) systems enable more efficient management of the supply chain by integrating the links in a supply chain. This may include suppliers, manufacturers, wholesalers, retailers, and final customers.

Customer relationship management (CRM) systems help businesses manage relationships with potential and current customers and business partners across marketing, sales, and service.

Knowledge management system (KMS) helps organizations facilitate the collection, recording, organization, retrieval, and dissemination of knowledge. This may include documents, accounting records, unrecorded procedures, practices, and skills.

Knowledge management (KM) as a system covers the process of knowledge creation and acquisition from internal processes and the external world. The collected knowledge is incorporated in organizational policies and procedures, and then disseminated to the stakeholders.

7.Explain in Detail about Decision support system (DSS)

Decision support system (**DSS**) is a computer-based information system that supports business or organizational decision-making activities. DSSs serve the management, operations, and planning levels of an organization (usually mid and higher management) and help people make decisions about problems that may be rapidly changing and not easily specified in advance—i.e. Unstructured and Semi-Structured decision problems. Decision support systems can be either fully computerized, human-powered or a combination of both.

Typical information that a decision support application might gather and present includes:

- Inventories of information assets (including legacy and relational data sources, cubes, data warehouses, and data marts),
- Comparative sales figures between one period and the next,
- Projected revenue figures based on product sales assumptions.

DSSs are often contrasted with more automated decision-making systems known as Decision Management Systems.

Classification:DSS components may be classified as:

- Inputs: Factors, numbers, and characteristics to analyze
- User Knowledge and Expertise: Inputs requiring manual analysis by the user
- **Outputs:** Transformed data from which DSS "decisions" are generated
- **Decisions:** Results generated by the DSS based on user criteria

Development frameworks:

DSS systems are not entirely different from other systems and require a structured approach. Such a framework includes people, technology, and the development approach. The Early Framework of Decision Support System consists of four phases:

- **Intelligence** Searching for conditions that call for decision.
- **Design** Developing and analyzing possible alternative actions of solution.
- **Choice** Selecting a course of action among those.
- **Implementation** Adopting the selected course of action in decision situation.

DSS technology levels (of hardware and software) may include:

- The actual application that will be used by the user. This is the part of the application that allows the decision maker to make decisions in a particular problem area. The user can act upon that particular problem.
- Generator contains Hardware/software environment that allows people to easily develop specific DSS applications. This level makes use of case tools or systems such as Crystal, Analytica and iThink.
- Tools include lower level hardware/software. DSS generators including special languages, function libraries and linking modules
- An iterative developmental approach allows for the DSS to be changed and redesigned at various intervals. Once the system is designed, it will need to be tested and revised where necessary for the desired outcome.

8. Explain in Detail about Executive Information System/Executive Support Systems EXECUTIVE INFORMATION SYSTEM/EXECUTIVE SUPPORT SYSTEMS

An executive information system (EIS), also known as an executive support system (ESS), is a type of management information system that facilitates and supports senior executive information and decision-making needs. It provides easy access to internal and external information relevant to organizational goals. It is commonly considered a specialized form of decision support system (DSS). EIS emphasizes graphical displays and easy-to-use user interfaces.

Components: EIS components can typically be classified as:

- Hardware
- Software
- User interface
- Telecommunications

Hardware:

The basic hardware needed for a typical EIS includes four components:

- 1. Input data-entry devices. These devices allow the executive to enter, verify, and update data immediately
- 2. The central processing unit (CPU), which is the important because it controls the other computer system components
- 3. Data storage files. The executive can use this part to save useful business information, and this part also help the executive to search historical business information easily
- 4. Output devices, which provide a visual or permanent record for the executive to save or read. This device refers to the visual output device such as monitor or printer

Software:

Choosing the appropriate software is vital to an effective therefore, the software components and how they integrate the data into one system are important. A typical EIS includes four software components:

- 1. Text-handling software—documents are typically text-based
- 2. Database—heterogeneous databases on a range of vendor-specific and open computer platforms help executives access both internal and external data
- 3. Graphic base—graphics can turn volumes of text and statistics into visual information for executives. Typical graphic types are: time series charts, scatter diagrams, maps, motion graphics, sequence charts, and comparison-oriented graphs (i.e., bar charts)
- 4. Model base—EIS models contain routine and special statistical, financial, and other quantitative analysis

User interface:

An EIS must be efficient to retrieve relevant data for decision makers, so the user interface is very important. Several types of interfaces can be available to the EIS structure, such as scheduled reports, questions/answers, menu driven, command language, natural language, and input/output.

Telecommunication:

As decentralizing is becoming the current trend in companies, telecommunications will play a pivotal role in networked information systems.

Transmitting data from one place to another has become crucial for establishing a reliable network. In addition, telecommunications within an EIS can accelerate the need for access to distributed data.

Applications:

- Manufacturing
- Marketing
- Financial

Advantages of EIS:

- Easy for upper-level executives to use, extensive computer experience is not required in operations.
- Provides timely delivery of company summary information
- Information that is provided is better understood
- EIS provides timely delivery of information. Management can make decisions promptly.
- Improves tracking information
- Offers efficiency to decision makers

Disadvantages of EIS:

- System dependent
- Limited functionality, by design
- Information overload for some managers
- Benefits hard to quantify
- High implementation costs
- System may become slow, large, and hard to manage
- Need good internal processes for data management
- May lead to less reliable and less secure data

9. Explain in Detail about OLAP (Online Analytical Processing).

ON -LINE ANALYTICAL PROCESSING:

• **OLAP (Online Analytical Processing)** is the technology behind many Business Intelligence (BI) applications. OLAP is a powerful technology for data discovery, including capabilities for limitless report viewing, complex analytical calculations, and predictive "what if" scenario (budget, forecast) planning.

Multidimensional:

MOLAP (multi-dimensional online analytical processing) is the classic form of OLAP and is sometimes referred to as just OLAP. MOLAP stores this data in an optimized multi-dimensional array storage, rather than in a relational database.

Some MOLAP tools require the pre-computation and storage of derived data, such as consolidations - the operation known as processing. Such MOLAP tools generally utilize a pre-calculated data set referred to as a data cube. The data cube contains all the possible answers to a given range of questions. As a result, they have a very fast response to queries.

On the other hand, updating can take a long time depending on the degree of precomputation. Pre-computation can also lead to what is known as data explosion. Other MOLAP tools, particularly those that implement the functional database model do not pre-compute derived data but make all calculations on demand other than those that were previously requested and stored in a cache.

Advantages of MOLAP

- Fast query performance due to optimized storage, multidimensional indexing and caching.
- Smaller on-disk size of data compared to data stored in relational database due to compression techniques.
- Automated computation of higher level aggregates of the data.
- It is very compact for low dimension data sets.
- Array models provide natural indexing.
- Effective data extraction achieved through the pre-structuring of aggregated data.

Disadvantages of MOLAP

- Within some MOLAP Solutions the processing step (data load) can be quite lengthy, especially on large data volumes. This is usually remedied by doing only incremental processing, i.e., processing only the data which have changed (usually new data) instead of reprocessing the entire data set.
- Some MOLAP methodologies introduce data redundancy.

Relational:

ROLAP works directly with relational databases. The base data and the dimension tables are stored as relational tables and new tables are created to hold the aggregated information. It depends on a specialized schema design. This methodology relies on manipulating the data stored in the relational database to give the appearance of traditional OLAP's slicing and dicing functionality. In essence, each action of slicing and dicing is equivalent to adding a "WHERE" clause in the SQL statement. ROLAP tools do not use pre-calculated data cubes but instead pose the query to the standard relational database and its tables in order to bring back the data required to answer the question.

ROLAP tools feature the ability to ask any question because the methodology does not limit to the contents of a cube. ROLAP also has the ability to drill down to the lowest level of detail in the database.

10. Explain in Detail about Supply chain management (SCM). **SUPPLY CHAIN MANAGEMENT (SCM):**

Supply chain management (SCM) is the **management** of the flow of goods and services.

It includes the movement and storage of raw materials, work-in-process inventory, and finished goods from point of origin to point of consumption.

Business process integration:

Successful SCM requires a change from managing individual functions to integrating activities into key supply chain processes. In an example scenario, a purchasing department places orders as its requirements become known. The marketing department, responding to customer demand, communicates with several distributors and retailers as it attempts to determine ways to satisfy this demand. Information shared between supply chain partners can only be fully leveraged through process integration.

Supply chain business process integration involves collaborative work between buyers and suppliers, joint product development, common systems, and shared information. According to Lambert and Cooper (2000), operating an integrated supply chain requires a continuous information flow. However, in many companies, management has concluded that optimizing product flows cannot be accomplished without implementing a process approach. The key supply chain processes stated by Lambert are:

- Customer relationship management
- Customer service management

- Demand management style
- Order fulfillment
- Manufacturing flow management
- Supplier relationship management
- Product development and commercialization
- Returns management

Customer service management process:

Customer relationship management concerns the relationship between an organization and its customers. Customer service is the source of customer information. It also provides the customer with real-time information on scheduling and product availability through interfaces with the company's production and distribution operations. Successful organizations use the following steps to build customer relationships:

- Determine mutually satisfying goals for organization and customers
- Establish and maintain customer rapport
- Induce positive feelings in the organization and the customer

Procurement process:

Strategic plans are drawn up with suppliers to support the manufacturing flow management process and the development of new products. In firms whose operations extend globally, sourcing may be managed on a global basis.

The desired outcome is a relationship where both parties benefit and a reduction in the time required for the product's design and development. The purchasing function may also develop rapid communication systems, such as electronic data interchange (EDI) and Internet linkage, to convey possible requirements more rapidly.

Product development and commercialization:

Here, customers and suppliers must be integrated into the product development process in order to reduce the time to market.

As product life cycles shorten, the appropriate products must be developed and successfully launched with ever-shorter time schedules in order for firms to remain competitive.

According to Lambert and Cooper (2000), managers of the product development and commercialization process must:

1. Coordinate with customer relationship management to identify customerarticulated needs;

2. Select materials and suppliers in conjunction with procurement; and

3. Develop production technology in manufacturing flow to manufacture and integrate into the best supply chain flow for the given combination of product and markets.

Manufacturing flow management process:

The manufacturing process produces and supplies products to the distribution channels based on past forecasts.

Manufacturing processes must be flexible in order to respond to market changes and must accommodate mass customization.

Orders are processes operating on a just-in-time (JIT) basis in minimum lot sizes.

Changes in the manufacturing flow process lead to shorter cycle times, meaning improved responsiveness and efficiency in meeting customer demand.

Physical distribution:

This concerns the movement of a finished product or service to customers.

In physical distribution, the customer is the final destination of a marketing channel, and the availability of the product or service is a vital part of each channel participant's marketing effort.

It is also through the physical distribution process that the time and space of customer service become an integral part of marketing.

Thus it links a marketing channel with its customers (i.e., it links manufacturers, wholesalers, and retailers).

Performance measurement:

Experts found a strong relationship from the largest arcs of supplier and customer integration to market share and profitability.

Taking advantage of supplier capabilities and emphasizing a long-term supply chain perspective in customer relationships can both be correlated with a firm's performance.

As logistics competency becomes a critical factor in creating and maintaining competitive advantage, measuring logistics performance becomes increasingly important, because the difference between profitable and unprofitable operations becomes narrower.

Warehousing management:

To reduce a company's cost and expenses, warehousing management is concerned with storage, reducing manpower cost, dispatching authority with on time delivery, loading & unloading facilities with proper area, stock management system etc.

Workflow management:

Integrating suppliers and customers tightly into a workflow (or business process) and thereby achieving an efficient and effective supply chain is a key goal of workflow management.

11. Explain in Detail about Customer relationship management (CRM) CUSTOMER RELATIONSHIP MANAGEMENT (CRM):

Customer relationship management (CRM) is an approach to managing a company's interaction with current and future customers. It often involves using technology to organize, automate, and synchronize sales, marketing, customer service, and technical support.



Characteristics

- Sales force automation, which implements sales promotion analysis, automates the tracking of a client's account history for repeated sales or future sales, and coordinates sales, marketing, call centers, and retail outlets.
- Data warehouse technology, used to aggregate transaction information, to merge the information with CRM products, and to provide key performance indicators.
- Opportunity management which helps the company to manage unpredictable growth and demand, and implement a good forecasting model to integrate sales history with sales.
- CRM systems that track and measure marketing campaigns over multiple networks, tracking customer analysis by customer clicks and sales.

Types:

Call centers

As well as tracking, recording and storing customer information, CRM systems in call centers codify the interactions between company and customers by using analytics and key performance indicators to give the users information on where to focus their marketing and customer service.

The intention is to maximize average revenue per user, decrease churn rate and decrease idle and unproductive contact with the customers. CRM software can also be used to identify and reward loyal customers over a period of time.

Growing in popularity is the idea of gamifying customer service environments. The repetitive and tedious act of answering support calls all day can be draining, even for

the most enthusiastic customer service representative. When agents are bored with their work, they become less engaged and less motivated to do their jobs well. They are also prone to making mistakes. Gamification tools can motivate agents by tapping into their visceral need for reward, status, achievement, and competition.

Business-to-business

According to a Sweeney Group definition, CRM is "all the tools, technologies and procedures to manage, improve, or facilitate sales, support and related interactions with customers, prospects, and business partners throughout the enterprise". It assumes that CRM is involved in every B2B transaction. Despite the general notion that CRM systems were created for the customer-centric businesses, they can also be applied to B2B environments to streamline and improve customer management conditions.

For the best level of CRM operation in a B2B environment, the software must be personalized and delivered at individual levels.

The main differences between B2C and B2B CRM systems are as follows

- B2B companies have smaller contact databases than B2C.
- The volume of sales in B2B is relatively small.
- In B2B there are less figure propositions, but in some cases they cost a lot more than B2C items.
- Relationships in B2B environment are built over a longer period of time.
- B2B CRM must be easily integrated with products from other companies. Such integration enables the creation of forecasts about customer behavior based on their buying history, bills, business success, etc.
- An application for a B2B company must have a function to connect all the contacts, processes and deals among the customers segment and then prepare a paper.
- Automation of sales process is an important requirement for B2B products. It should effectively manage the deal and progress it through all the phases towards signing.
- A crucial point is personalization. It helps the B2B Company to create and maintain strong and long-lasting relationship with the customer.