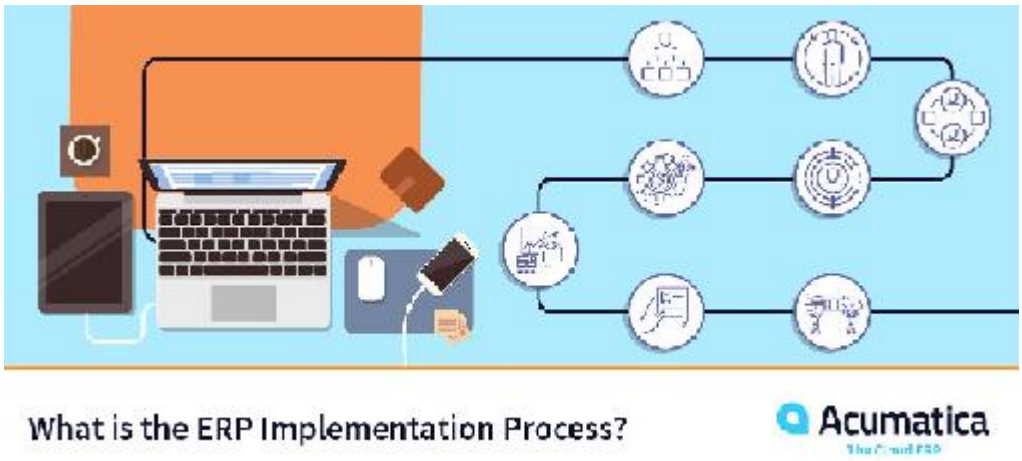
UNIT II

ERP Implementation

An ERP implementation involves installing the software, moving your financial data over to the new system, configuring your users and processes, and training your users on the software. Choosing the right partner for implementing your ERP system is almost as important as selecting the right software in the first place.

As with any large project, it's imperative that you to take things one step at a time. Thankfully, successful and calm ERP implementations are not only feasible, but actually quite common.



When it comes to ERP Implementation

I am sure most organizations spend most of their initial time only on the following three domains:

- Projected Cost of Implementations.
- Functional Capabilities of the ERP system selected.
- Future Benefits the system will bring in on successful implementation.

Whether you are a Multi-National or an SME, with the growing advancements in technology there is no doubt that your competition is getting tougher each day.

There is therefore a growing need to better organize your business processes, keep your customers satisfied and improve on your profit making skills.

ERP Implementation is therefore the best investment you can make to your help your business pace up your customer service deliveries, to keep your data organized and to keep your growth systematized.

Every ERP project is unique and thus requires a pre-planned detailed approach but this do not look relevant until much later in the project.

Here's a step by step high level process to ensure that your time and resources are invested only in a successful ERP Implementation.

ERP Implementation: The 12 Step Process

1. Define Scope of Implementation and End Objectives

2. Select an ERP System.

3. Create the Project plan.

4. Define phases of Implementation.

5. Make urgent but achievable Schedule.

6. Make a Communication Plan.

7. Arrange mid-way Approvals.

8. Plan your Testing.

9. Migrate Business Data

10. Prepare for the change

11. Plan your Go-Live

12. Support and Maintenance

Product Lifecycle

Product Lifecycle Management (PLM) is a systematic approach to managing a product's lifecycle from inception to disposal. PLM serves as a product backbone by integrating human skills, data and business processes, e.g., enterprise resource planning (ERP) and manufacturing execution

systems (MES).

PLM is linked with the manufacturing industry but is also applied to software development and services.

Product Lifecycle Management (PLM)

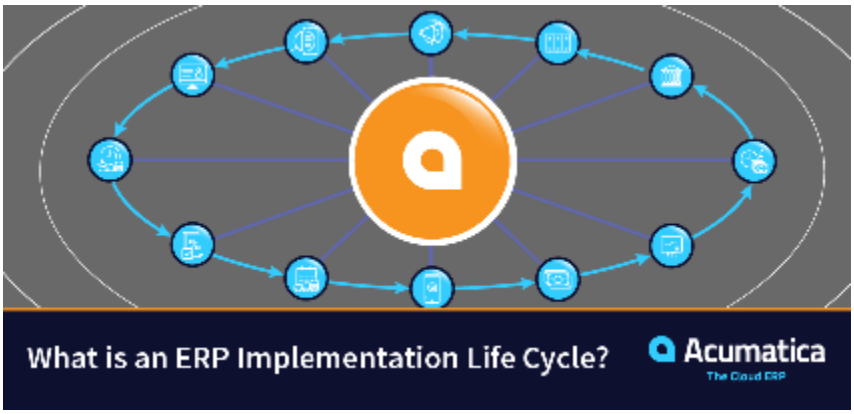
PLM differs from product life cycle management (marketing) (PLCM), which approaches products in terms of costs and sales. PLM servers as a product's engineering system framework, i.e., specifications and attributes are managed throughout a product's lifecycle.

PLM is one of five information technology (IT) structural elements, which are the foundation for organizational data and communication systems, as follows:

- Product Lifecycle Management (PLM)
- Customer Relationship Management (CRM)
- Supply Chain Management (SCM)
- Enterprise Resource Planning (ERP)
- System Development Life Cycle (SDLC)

The five stages in the product life cycle are product **development**, **introduction**, **growth**, **maturity**, and **decline**. The product **development** phase is the phase in which a company has a new idea for a product.

ERP implementation life cycle *is the process of deploying enterprise resource planning software—from planning through go-live and beyond. The typical implementation cycle is six to 12 months. But don't think it's all about software. Make sure you're prepared for these eight stages of ERP implementation.*
One question that always comes up very early in the process when considering an ERP implementation is "How long will it take?" While there is no general answer to that question – ERP implementations proceed at their own pace – the process can be outlined by way of a timeline or life cycle. Just for perspective, an ERP implementation can take anywhere from a few months to several years, with the majority ranging from six-to-12 months from kick-off (project planned and funded, team organized and ready to go, ERP technology and ERP system software delivered – if appropriate – and installed) to a live system in full operation.



The 8 of the ERP implementation life cycle

- Planning and organization – In this commentary, we're not counting this phase as part of the time it takes to implement the system as it all occurs before the start of spending money or real physical activity. Nevertheless, a team can be assembled and a decent plan developed in a matter of a few weeks, for a motivated company. More typically, the planning stage might last up to six months or more.
- System selection and installation – Selecting the ERP system software and ERP technology can be a challenging endeavor, given its importance to the project and the vast array of choices. From requirements definition and early market surveys through determining the "short list", gathering proposals, holding demonstrations, final selection and negotiation, this phase typically consumes anywhere from 3-to-6 months.
- Installation – Sometimes there is a lead time for delivery of hardware and software, installation of infrastructure components like networking facilities and data collection / display devices, and installation of software that could be anywhere from several days to several weeks or more. Cloud-based ERP may have little or no installation lead time and no software installation requirements.
- Data conversion and loading – Once the ERP technology and ERP system software is ready, data must be entered and/or moved into the system's database. This includes "basic records" like customer, vendor and item master files, bills of material, production facilities and routings, general ledger chart of accounts, and the like. Just before going live, active transactional data is converted or transactional activity is transitioned into the new ERP system software. Some of this activity can be completed in parallel with other tasks like training and validation. IT resources and consultants/contractors can primarily accomplish some of this activity, as well. While a significant amount of time and effort is required, this requirement will not add significantly to the implementation timeline.
- User training and procedure development – This is arguably the most important part of ERP implementations; procedure development (and documentation) and user training should take up the majority of the timeline. These requirements consume considerable time and effort from operational employees (actual future users of the system) who are also expected to do their existing jobs at the same time. The duration of this phase

depends on the size and complexity of the ERP system software being implemented (number of modules or functional areas involved, number of users, how different the new procedures will be from existing procedures), and how much time users can dedicate to the implementation each day or week. Some companies bring in temporary help but these outside resources should be devoted to maintaining old procedures rather than working on the implementation per se.

- Testing and validation – IT resources will be heavily involved in this task, working with the users to compare and examine both basic records and transactional data to verify that the data is exactly as it should be (and at least as accurate as in the incumbent system) and that the new ERP system software is producing the expected results. Testing and validation occurs over an extended period as each functional area loads data and starts processing (test) transactions by the users during training and procedure development. This is not necessarily parallel operation; in most cases, it is more of a "pilot" testing situation. Testing and validation do not add much to the timeline explicitly but must be considered in planning the duration of the training and procedure development process.
- Cut-over and "go live" – This can be instantaneous (sometimes called a 'big bang' approach), phased in piece-by-piece, or parallel operation where users are expected to keep the old system and the new system in operation simultaneously for a specified period of time (typically one or two accounting periods). You will find a discussion of these alternative strategies here .
- Follow-through and project completion – Implementation is not complete once the new system is 'live' and the old system is turned off. Users and technical support resources must continue to validate and verify proper operation; user training should continue to enable a more extensive use of what the ERP system software has to offer and expand the benefits of the system.

Implementation methodology of ERP:

ERP Implementation Methodology: The Traditional Method

The first methodology is the Traditional methodology, since it has been around since the early 1980's. This methodology uses the following phases:

- **Planning:** The project managers (customer and vendor) work together to form the ERP implementation team, and plan the project based on the right ERP implementation methodology for the project scope and available resources. A kickoff meeting involves the entire team to review the project plan and communicate the company objectives for the project.
- **Education:** The vendor consultants educate the implementation team. In this methodology, this is a very important step. Most advocates of this methodology believe the education of the core team is the key to the customer's self-sufficiency and a successful project.

- **Design/Configuration:** The consultants assist the implementation team in designing, configuring and setting up the new system and business processes. The vendor consultants support the implementation team, and the team does the work.
- **Conference Room Pilot:** The implementation team tests the system in multiple Conference Room Pilots (CRP). The final CRP becomes a simulated "go-live." At the end of the phase, the system is accepted by the team as ready to go live. The vendor consultants support the team's effort. By the end of this phase, the customer team has established a complete understanding of the new system.
- **Cutover Activities:** The implementation team plans the cutover process and trains the rest of the end-users on the new system. The implementation team performs the training, and the vendor consultants support the team.
- **Go-Live Support:** The implementation team supports the end-user in the use of the new system. The implementation team provides real-time support. The vendor consultants are also on-site during the first month to support the quick resolution of new problems as they arise.

ERP Implementation Methodology: The Turnkey Method

The second methodology is the Turnkey methodology because it is clearly a vendor-led method. This methodology uses the following phases:

- **Planning:** The activities are the same in this phase as the traditional methodology, with the vendor consultant taking a bigger role in the construction of the plan. Also, the vendor project manager is planning the vendor consultants' time since they are involved full-time in the next four phases of the project.
- **Discovery/Setup/Configuration:** Here we see the major difference between the two methodologies. In this phase, the vendor consultants review the current process, design/configure/setup new processes, and perform an initial test with minimal involvement of the customer team. The customer implementation team is only involved in discovery by providing input on current processes. In essence, the vendor team is providing a "turnkey" approach to system design and the setup of the new system.
- **Prototype Review/Education:** In this phase, the vendor team delivers the new system to the customer implementation team and begins to educate the customer team through prototype demonstration workshops. In these reviews, the customer team is getting educated on the new system and the capabilities of the product. The vendor team identifies issues and adjusts the new system as needed. At the end of this phase, the customer team accepts the design of the new system.
- **Conference Room Pilot:** In this phase, the vendor team leads the customer team through several phases of a conference room pilot (CRP). The last CRP becomes a simulated "go-live". When this CRP is completed, the customer team accepts the new system and is ready to go live.

- **Cutover Activities:** The implementation team plans the cutover process, and trains the rest of the end-users on the new system. The implementation team performs the training and the vendor consultants support the team.
- **Go-Live Support:** The implementation team supports the end-user in the use of the new system. The implementation team provides real-time support. The vendor consultants are also on-site during the first month to support the quick resolution of new problems as they arise.

Planning Evaluation and selection of ERP systems:

A successful ERP project requires selecting an ERP solution, implement the solution, manage changes and examine the practicality of the system, Wei and Wang, (2004). Wrong ERP solution choice would either fail the implementation or weaken the system to a greater impact on the enterprise, Hicks, (1995); Wilson, (1994).

Most enterprises often jump into looking at ERP functions and features rather than examining the strategy and business processes. It is important for management to know the current strategy, processes and supporting systems compared to what they could be with the new systems, Donovan, (2001).

For most enterprises, the decision to implement ERP functionalities will require buying a software package from one of the more popular vendors on ERP market like SAP and Oracle. But the selection process is not a straightforward task, hence thorough understanding of what ERP packages are to offer, differences in each of them and what might be at stake in selecting one package over the other should be well examined.

Evaluating and selecting an ERP system can be a very complex process on the other hand, but it should be a 'fact-based' process that will bring the enterprise to the point where comfortable & well-informed decisions can be made.

Therefore, a research carried out by Management Agility Inc, (2005), revealed that it is imperative to adopt a thorough evaluation and evaluation process before adopting any ERP solution in SMEs.

- Planning
- RFP
- Solution Evaluation
- Negotiation
- Selection and Agreement

ERP Software & Hardware (Solution) Evaluation and Selection Steps

- Define Requirements
- Shop Round for Product
- Clarify Requirements
- Evaluation Vendor Inquiry
- Interact with Vendors
- Negotiate Agreement
- Action Agreement

Define business case/need and spell-out required values. Be specific. Ensure the business sponsor is willing to push through business case for change.

Look round the market for what product is available. Identify vendors that operates and their general approaches to technologies the take. Discuss with others in the same industry as you are etc.

Clarify your requirements and be sure of what you are looking for in line with you business case. Refine requirements if possible and be specific too.

Find out what product is looking promising in line with the business need and from which vendor. Identify which vendor and their products and invite interesting ones for demo etc. Request for proposal (RFP).

Invite each shortlisted vendor over for a chat and find out more about the product. List out expectations based heavily on business requirements.

At this point evaluate this approach. Can you afford to change your current process? Can you afford the change the new product will bring and many more?

Initiate Negotiation for the selected product with the selected vendor. Agree on who does what, when are they to be done. Negotiate deliverables, timelines, cost & payments schedules and terms, support inclusive.

Review all legal terms, finalise the contract and select product for onward implementation.

Alignment of business requirement to what the software/hardware can provide. This is the core of the whole exercise else stop the evaluation.

Evaluate the product capabilities in line with the business requirement. Evaluate the impact of this product on the business requirement.

Stage 1 - Plan Requirement

Business need is defined, along with areas in business that required technical approach. Develop a specific business case with business value for a solution. Ensure that the project sponsor is willing to articulate the business case for change. Indentify vendors that operate in

the line of products you are looking for. Get familiar with the software and hardware infrastructure presence for the solution seeking. Get general view of investment needed, considering software, hardware, other related infrastructure and ongoing support. Based on the survey, evaluate the organization readiness for the investment and decide whether to continue or not. Now define priorities under "must-have" and "nice-to-have" accordingly.

Stage 2 - Request for Proposals (RFP)

Shortlist interesting vendor based on the outcome of market survey for products. Invite interesting vendors for interaction/demonstration of their products. Collects facts/functionalities in line with the business need from various products demonstrations for the developments of unbiased RFP for vendors. Set-up a neutral body to develop RFP using all facts gathered during products demonstration aligned to the business requirements. Distribute out RFP that addresses the vendor as a company and the products they offer. Generate basic expectations from an ideal proposal in line with the business need for onward selection of the ideal software vendor.

Stage 3 - Solution Evaluation

Identify and priorities remaining gaps between software capabilities as demonstrated and business requirements. Identify how the gaps will be bridge in terms of configuration, configuration, process change or combination of all these. If the gaps can be bridge consider reengineering of those affected business processes affected and continue with the evaluation.

Stage 4 - Contract Negotiation

Negotiate with each vendor. Establish software, hardware and other infrastructure agreement requirements, which include version, components, maintenance and support. Also negotiate participation in user groups, license costs, maintenance fees and many others. Establish service provider agreement which also include deliverables, timelines, resources, costs and payment schedules. Establish other legal requirements.

Stage 5 - Selection and Agreement

Upon successful negotiation with the right vendor; Review all legal terms on privacy protection, operation guidance and data manipulation etc. Approve agreements with the selected vendors. Agree on implementation plan.

Organizing the Project Management and Monitoring:

Anyone who has worked on any type of project in the past knows projects can be delayed for many reasons. The reality is projects rarely go as planned. When this happens, it is time to tap into strategy for ERP project management methodology, and specifically the Monitoring and Controlling process group, as this is the group used to trigger the change requests necessary to get a project back on track.

The PMBOK, "Project Management Body of Knowledge" is a solid resource in ERP project management methodology and describes this process group in the following: "The Monitoring and Controlling Process Group consists of those processes required to track, review, and orchestrate the progress and performance of a project; identify any areas in which changes to the plan are required; and initiate the corresponding changes."

Keeping an eye on project performance and reacting quickly and appropriately to issues is key to successfully pushing your project forward. Tasks in this process group includes the following:

- Monitor and Control Project Work
  - This includes tracking, reviewing, and reporting progress to meet the performance objectives defined in your ERP project management methodology.
  - Regularly assessing progress related to scope, benchmark goals, timeline, and budget, which will help ensure there are no unpleasant surprises as the project unfolds.

- Perform Integrated Change Control
  - Even well-planned projects are going to require change from time to time. Therefore the following processes are essential: reviewing all change requests, approving changes, managing changes to the deliverables, and organizing process assets, project documents and the project management plan.

- Verify Scope
  - Verifying the scope includes monitoring the status of the project and managing changes to the scope baseline.
  - This phase also requires a re-visiting to other process groups to be sure all objectives have been met. If this is not the case, reflecting any changes is part of the follow-through needed as the project continues toward completion.

- Control Scope
  - If there have been adjustments to budget, timeline, or the desired end-product, it is important to re-visit the documentation related to scope and mitigate any unresolved challenges.
  - Controlling the scope also entails maintaining effective communication with stakeholders and related stakeholders, which will keep everyone updated and engaged in the project's success.

- Control Schedule
  - Schedule control involves controlling project progress adjustments and addressing any unforeseen circumstances in relation to the project schedule baseline.
  - Monitoring the project properly to decrease the chances of schedule issues becoming major setbacks.

- Control Costs
  - Since there is the potential for many factors to affect cost throughout the project timeline, this group must keep track of any changes in budget so communication around cost control is clear and accurate.

- Perform Quality Control
  - This group must quantify and report any and all quality control issues. This action is necessary and ongoing to support the accuracy and responsiveness of the project.
  - Make process adjustments based on findings during monitoring.

- Report Performance
  - It is imperative this group collect and report performance data in order to complete proper forecasting with regard to timeline and phasing.
  - To support positive relations, it is necessary this project group keep stakeholders aware of team progress toward benchmark goals.

- Monitor and Control Risks
  - Tracking risk, responding to documented risk, and evaluating response to risk is all part of ensuring the project progresses effectively through each phase of the timeline.

- Administer Procurements
  - Because team needs will change throughout the project, additional items may be required while other items and services may not be needed at all.
  - In order to deliver the project within or as close to budget as possible, it is necessary to keep track of all paperwork that documents any changes in contracts.

ERP Case Study | Manufacturing

Client Problem

A large, multi-national consumer products company had a fragmented and inefficient operating model. With operations in more than 30 countries, the company was not leveraging its size to achieve process efficiencies or economies of scale. In essence, it was operating as 30 different companies. To address these operational inefficiencies and to build an operating infrastructure that would support very aggressive growth objectives, the CIO decided that the company needed to implement a new business and technology infrastructure.

Panorama Solution

Not knowing which ERP system to choose, the CIO turned to the Panorama team to facilitate a technology-independent evaluation and selection of ERP software and implementation vendors. Panorama managed a six-month evaluation and selection process to identify the ERP software that would best enable its future business requirements and corporate growth objectives.

Solution Highlights

- Defined and documented global operating business requirements
- Researched ERP market for organizations of similar size and industry
- Developed software vendor evaluation criteria and priorities
- Facilitated vendor software demonstrations and user evaluations
- Applied quantitative assessment models to evaluate ERP research and demonstration results
- Developed detailed business case to assess feasibility of ERP investment, including detailed project costs and tangible business cost and revenue improvements
- Reached final decision on ERP software and implementation partners
- Developed high-level, 2-year global implementation strategy in conjunction with selected ERP vendors
- Assisted client with vendor contract negotiations to secure favorable terms and costs for client
- Developed organizational change management, communications and training strategy for implementation
- Created resource plan for internal and external resources to support global implementation
- Established key performance measures and target performance levels to support client's future growth targets and overall business strategy
- Developed ERP Benefits Realization plan to enable achievement of projected costs and business benefits
- Conducted knowledge transfer to key client project team members to empower them to execute against defined implementation and organizational change management strategy

Measurable Business Results

Panorama delivered significant and measurable results to the client to enable a high return on investment.

Highlights of Results

- Identified ERP software capable of delivering 96% of the functionality required by client, higher than any other evaluated vendor
- Secured fixed-costs for client's software licenses and implementation services at 40-percent less cost than benchmark implementation costs for companies of similar size and geographic reach
- Identified more than $7 million in annual cost savings at full system implementation, resulting in a 20-percent internal rate of return on investment

UNIT II Important question:

QNO	Imp Questions
1.	Discuss in Detail about ERP implementation
2.	What is ERP Product life Cycle
3.	Discuss in detail about ERP Implementation methodologies
4.	How does an Organisation plan and evaluate a ERP system in them firm?
5.	How to select a ERP System for an organisation
6.	What is project management and monitoring?
7.	Discuss about Case Study on manufacturing in ERP

TB-Textbook, "ERP Demystified" By **Alexis leon** Second editionTata McGraw Hill, New Delhi, 2000

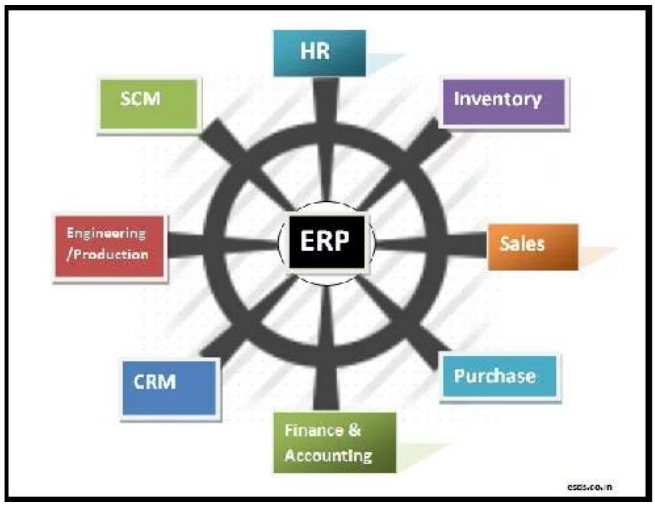
UNIT III ERP MODULES

Basic Modules of ERP System – ESDS

Enterprise Resource Planning System (ERP), just by considering name we can simply define ERP as System or software that used to manage all the resources of the whole enterprise. Right from employee payments to a single screw coming into the enterprise, everything can be managed & tracked by using ERP Systems. ERP is cross-functional software that supports all the business processes within the organization.
In an organization, ERP helps to manage business processes of various departments & functions through the centralized application. We can make all the major decisions by screening the information provided by ERP.

There are many vendors in the market which are providing traditional ERP solutions or Cloud-based ERP solutions. Though implementation platforms or technologies are different, there are common & basic modules of ERP which can be found in any ERP System. Depending on organizations need required components are integrated & customized ERP system is formed. All the below-mentioned modules can be found in an ERP system:

- Manufacturing
- Human Resource
- Inventory
- Sales & Marketing
- Purchase
- Finance & Accounting
- Customer Relationship Management(CRM)
- Engineering/ Production
- Supply Chain Management (SCM)



Each component mentioned above is specialized to handle the defined business processes of the organization. Let us go through the introduction of the various modules.

Human Resource Module(HR):
Human Resource module helps to HR team for efficient management of human resources. HR module helps to manage employee information, track employee records like performance reviews, designations, job descriptions, skill matrix, time & attendance tracking. One of the important submodules in the HR module is Payroll System which helps to manage salaries, payment reports etc. It can also include Travel Expenses & Reimbursement tracking. Employee Training tracking can also be managed by ERP.

Inventory Module:
Inventory module can be used to track the stock of items. Items can be identified by unique serial numbers. Using that unique numbers inventory system can keep track of item and trace its current location in the organization.

e.g. you have purchased 100 hard disks, so using inventory system you can track how many hard disks are installed, where they are installed, how many hard disks are remaining etc.

Inventory module includes functionalities like inventory control, master units, stock utilization reporting etc.

There may be an integration of the inventory module with the purchase module of ERP.

Sales Module :
Typical sales process includes processes like Sales queries & inquiry analysis & handling, quotation drafting, accepting sales orders, drafting sales invoices with proper taxation, dispatch/Shipment of material or service, tracking pending sales order. All these sales transactions are managed by the sales module of ERP. CRM module can take the help of the Sales module for future opportunity creation & lead generation.

Purchase Module:
As the name indicates, purchase modules take care of all the processes that are part of the procurement of items or raw materials that are required for the organization. Purchase module consists of functionalities like supplier/vendor listing, supplier & item linking, sending quotation request to vendors, receiving & recording quotations, analysis of quotations, preparing purchase orders, tracking the purchase items, preparing GRNs(Good Receipt Notes) & updating stocks & various reports. Purchase module is integrated with Inventory module & Engineering/production module for updating of stocks.

Finance & Accounting module:
Whole inflow & outflow of money/capital is managed by the finance module. This module keeps track of all account-related transactions like expenditures, Balance sheet, account ledgers, budgeting, bank statements, payment receipts, tax management etc. Financial

reporting is an easy task for this module of ERP. Any Financial data that is required for running the business is available on one click in Finance module.

Customer Relationship Management (CRM) module:
CRM department is helping to boost the sales performance through better customer service & establishing a healthy relationship with customers. All the stored details of the customer are available in the CRM module.

CRM module helps to manage & track detailed information of the customer like communication history, calls, meetings, details of purchases made by the customer, contract duration etc. CRM module can be integrated with the Sales module to enhance sales opportunities.

Engineering / Production module:
Production module is a great help for the manufacturing industry for delivering the product.

This module consists of functionalities like production planning, machine scheduling, raw material usage,(Bill of material)preparation, track daily production progress production forecasting & actual production reporting.

Supply Chain Management (SCM):
SCM module manages the flow of product items from manufacturer to consumer & consumer to manufacturer.

Common roles involved are a manufacturer, Super Stockiest, Stockiest, distributors, retailers etc. SCM involves demand & supply management, sales returns & replacing process, shipping & transportation tracking etc.

Today many SMBs face challenges in their process automation. ERP is a great help for such organizations. ERP can efficiently streamline the business operations of the organization. Above introduction of modules can help you to choose & customize the ERP modules depending on your organization’s requirements.

ERP: Manufacturing Module

Manufacturing is the process by which raw materials are transformed into finished products. The role of the ERP manufacturing module is to complete the inventory management by implementing the operations specific to a streamlined manufacturing process.Manufacturing recipes management in ERP

The first phase of the process is represented by the entry of a project into manufacturing process and it involves the generation of recipes, based on which the final product will be

created. In the ERP system it is named composed product and it can have one or more attached recipes. The recipe types are: promotion, manufacturing, composition, decomposition.

• A promotional recipe is used if there is no manual labor involved. Eg: if you buy 10 pencils you get a free sharpener. When such a promotional product is selected, the system automatically discharges the components.
• Composition, decomposition or manufacturing recipes are used in specific processes.

Human resources Module in ERP

People produce the products all manufacturers sell. The human resources module in ERP supports those people. ERP helps by controlling the payrollrates and benefit packages each employee earns. Management knows when an employee is due for an appraisal or raise, and the new pay rate can be immediately used to calculate payroll costs. The HR module works with the quality module tracking what training and certifications an employee needs to perform their current work or to become eligible for a promotion. Workers who fall behind in their certifications cannot be scheduled for work in the production scheduling module.

HR modules are where management uses future employee characteristics as a model helping locate and hire employees with the skills that will be required tomorrow.

Plant Maintenance ERP: A module to support operational needs

ERP Software Finance Module the Plant and Machine Maintenance module in resource ERP provides an integrated solution for supporting the operational needs of an enterprise-wide system. The module includes an entire family of products covering all aspects of plant/machine maintenance and becomes integral to the achievement of process improvement.

Resource ERP Plant & Machine Maintenance module supports various options for structuring technical systems with its object, type and function-related views, and enables flexible navigation. Data concerning the planning processing and history of maintenance tasks is documented in the system and complies with business verification requirements.

All maintenance tasks such as inspection, servicing and repair activities are saved in a historical database. In addition to standard indicators, diverse analysis options are also available in the system for evaluating this data.

Plant and Machine Maintenance module provides you with technical and business reports and various presentation options, according to the criteria used: for example organizational unit, location, execution period for tasks, or system manufacturer. This information helps you to reduce the duration and costs of plant down times as a result of damage and to recognize possible weak points within your technical system in good time.

It also forms the basis for defining an optimum maintenance strategy in the sense of 'Total Productive Maintenance (TPM) or risk-optimized maintenance.

The major sub-systems of e resource ERP Plant & Machine Maintenance module are:

- Breakdown Repair Log
- Equipment Master Register
- Machine Breakdown Log
- Maintenance Type1
- Man Power for Machine Details
- Preventive Maintenance Record
- Spare Part Installation Log

Materials Management module in ERP:

(RHR MM) consists of all master data, system configuration, and transactions to complete the Procure to Pay process.

ERP - MM Module

- Vendor Master and Material Master Data.
- Consumption Based Planning.
- Purchasing.
- Inventory Management.
- Evaluation of Materials.
- Invoice Verification.

ERP Materials Management is a part of SAP Logistics functionality. ...Materials Management contains many aspects of SAP functionality, including purchasing, goods receiving, material storage, inventory, and invoicing. Disclaimer: Content Accuracy is assured as much as possible. Discretion advised. Materials handling, packaging, warehouse planning, accounting, scrap, surplus and obsolete materials disposal, finished goods safety and care are the activities managed by the materials management department

Data Warehousing:

Enterprise resource planning (ERP) systems integrate and automate internal and external management of information. They allow for basic financial planning primarily by aggregating departmental budgets. They tend to provide static reporting rather than analysis, which often involves transforming the data to answer the question.

Data warehouses are required because ERP systems don't store the data in a manner that supports analysis and reporting. They also do not always gather all available data because of system incompatibilities and increasing amounts of information from systems external to the enterprise.

The purpose of data warehouses is to extract data from disparate sources, cleanse it, and align it so that it can be aggregated, compared, and analyzed to enable business decisions. Then, it is stored in a single common platform optimized to support enterprise-wide data analysis.

Data Mining:

Data mining is the computational process that involves a wide variety techniques in statistics being applied to big data sets usually to discover patterns. It is normally applied to predict events or end results and also detect trends by making use of methods that involve artificial intelligence, database systems, machine learning, and statistics.

This is often done with the general goal of extracting information from a set of data to transform it into a structure that is understandable for further use. The concise and valuable knowledge of interest that has been discovered can be incorporated into a decision support system and the results are used to make informed business decisions by firm owners.

Data Mining ERP software is what results. This is an integration of specific applications meant to ease the input of data and the output of sensible information for business owners.

This software has become a great industry, producing components that flourish a variety of business functions. Such software is now considered a key organizational tool because of its ability to put together diverse organizational systems and facilitate transactions and production free from error.

The ERP software runs on several networks and computer hardware configurations, usually making use of a database as an information source.

Quality Management:

Quality management includes customer-driven quality, top management leadership and commitment, continuous improvement, fast response, actions based on facts, employee participation and above all a quality management culture. Each part of the company is involved in total quality, operating as a customer or supplier to one another.

Ultimately whatever be the industry in which you're present or the size, to survive and succeed in the present scenario, it is imperative that you maintain a very high quality at all stages of manufacturing and distribution

Quality Management module in Ramco ERP on Cloud addresses:

- **Procurement & Subcontract process (for Goods or Services):** During the Goods receipt or on completion of Services, the quality parameters and attributes can be captured. This serves as the basis for clearance, usage and supplier payment
- **Inventory & Storage:** During the storage of materials, a periodic quality check can be done to assess the quality
- **Production:** During the start of a batch or a new product, or periodically – it would be required to check and record the Quality at different stages based on which action pertaining to re-work, recalibration, tool setting, etc would be undertaken
- **Sales & Dispatch:** Quality inspection can also be carried out before dispatch of goods
- **Project Tasks:** Quality check could be done for tasks being executed as part of a project

Some of the specific features pertaining to quality include:

- Facility for In-process Inspection and Quality Clearance
- Ability to define control points based on control factors like Warehouse, Master Recipe, Supplier, Customer, etc
- Ability to define inspection plan for each control point
- Ability to have attribute / non-attribute based (check list) inspection plan
- Facility to define standard operating procedures
- Ability to capture Analysis methods for attributes
- Ability to specify attribute values for each inspection plan
- Ability to override sample result status
- Ability to suggest lot change / item change based on Quality Clearance Feedback

Sales and Distribution:

Sales and Distribution Module to keep pace with rapid changes in the business world, companies need an integrated and flexible enterprise system that supports all aspects of their business with state-of-the-art functionality. This innovative solution should upgrade effortlessly and interface easily with third-party applications as well as have the ability to incorporate existing systems while extending its reach to the Internet and e-commerce.

In today's competitive business environment, companies are increasingly being forced to streamline business processes. In a world where it is no longer enough to simply have the best product; companies are focusing on core competencies and closer partnerships over the whole supply chain.

Here, increased efficiency in sales and distribution is a key factor to ensure that companies retain a competitive edge and improve both profit margins and customer service. In helping business to 'beat them on delivery', the Sales and Distribution module of resource ERP systems offers a comprehensive set of best-of-bred component for both order and logistics management.

Resource ERP system is tightly integrated with the Sales and Distribution module. This integration enables the mapping and supply of single-site or multi-site organizations. Developing precise logistics planning for just-in-time deliveries, this system can also generate replenishment orders by using defined warehouse requirements.

The following are the sales related business transactions:

- Sales queries, such as inquiries and quotations
- Sales orders
- Outline agreements, such as contracts and scheduling agreements
- Delivery/Shipment
- Invoicing/billing
- After sales support

During sales order-processing the following basic functions are carried out:

- Inquiry handling
- Quotation preparation and processing
- Contracts and contact management (order management)
- Monitoring the sales transaction
- Checking for availability
- Transferring requirements to materials planning (MRP)
- Scheduling the delivery
- Calculating pricing and taxes
- Checking credit limits
- Invoicing/billing
- Creating printed or electronically transmitted documents

Depending on how your particular system is configured, these functions may be completely automated. The data that results from these basic functions is stored in the system where it can be displayed. Resource ERP's Sales and Distribution module very actively interacts with the material management and financial accounting module for delivery and billing.

Case Study in Banking Sector in ERP:

Enterprise resource planning (ERP) systems integrate the organizations business functions allowing efficient information sharing across all business divisions. Through the information

sharing is achieved not only better coordination but also faster and more efficient adjustment to the potential risks and business opportunities alike. This paper examines the particularities of ERP systems implementation and operation for the banking sector by considering a wide range of sources such as journal and conference papers, empirical studies and reports. Finally, through the thorough examination of the available literature, we draw conclusions about the effect by the implementation of ERP systems in the banking sector

CURRENT STATE OF ERP SYSTEMS IN BANKING SECTOR

On a daily basis the banks fulfil several obligations towards their customers. ERP systems with their capabilities can provide useful aid towards that direction. A financial institution as part of its typical responsibilities needs to receive a customer's money and cheques as collection and to credit his account with them. It also needs to provide a statement of account and a statement of the balance on request. Banks are supposed to honour their cheque up to the credit balance or overdraft limit, provided they are in order and there is no stop [14]. Needless to say, that all the aforementioned processes must be executed with strict secrecy about customer affairs. The banking industry is highly data-oriented and offers enormous potential for ERP applications. An ERP system offers wide-ranging integration between different banking system modules. ERP integrates users, information, processes, and applications for higher productivity. It facilitates decision making with simulations for enhanced responsiveness and change. It uses portal technology, business intelligence, knowledge management, and mobile technologies that save time and reduce costs. It enables banking employees interact with bank's top management for reduced time and effort and reverses the usual communication 'top-down' to 'bottom-up' ERP system provides complete end-to-end solution covering payment processing, cash accounting, cash management, technical analysis, index tracking and portfolio optimization

Revamping payment processing needs a high quality understanding on how banks make payments. This may be clear cut for one branch at particular location but may become more complex while dealing with multiple branches in different countries and operating under country specific legislations. Similarly, cash accounting complexity increases with multiple locations and currencies. As for cash management, there is a need to administer available account on regular basis so that investments of funding decisions can be made in an appropriate manner. Loans, advances and bills discounted or purchased are the principal components of bank assets and main source of income of banks. Collectively they represent total bank credit to the commercial sector. While advances are in the form of cash credits and overdrafts, loans may be demand loans or term loans. Demand loans are more or less temporary financial arrangement granted to customers to meet unforeseen situation but customers are required to pay heavy rate of interest. On the other hand, term loans are extended for longer time period such as 2 to 30 years. Term loans are usually secured and granted for a variety of purposes such as renovation, expansion and modernization of industrial units, meeting requirements of core working capital, and for repayments of bonds preference shares, etc. Term loans have a fixed or floating charge against the assets of a company.

They are granted on the basis of a formal agreement, which contains the terms and conditions of providing loans. Modern ERP systems include modules for efficient portfolio management. Fundamental analysis tools focus exclusively on the company's performance in order to determine whether or not the stock should be bought or sold. On the other hand, technical analysis disregards completely the value of financial statements analysis and focuses exclusively on the movement of the stock prices in order to determine whether to buy or sell a particular stock. While techniques for selecting stocks can be traced back to the 19th century, it was not until the 1952, when Markowitz introduced his pioneering Mean - Variance (MV) portfolio selection model, that the field attracted considerable attention. Markowitz's theory suggests maximizing portfolio expected return for a given amount of portfolio risk or solving its dual problem minimizing portfolio risk for a given level of expected return Modern ERP systems make use of a plethora of tools for efficient portfolio management.

Unit III Important questions:

QNO	Imp Questions	Page No of Text Book
1.	What are the various ERP Modules	TB-387
2	What is manufacturing and materials management module in ERP how it works?	TB-403,421
3	What is Human Resources and Plant maintenance	TB-412,418
4.	What is Data warehousing and data mining	TB-112,123
5.	What is Quality management and Sales and distribution	TB-426.432
6	Discuss about the case study in Banking sector	MT-

TB-Textbook, "ERP Demystified" By **Alexis leon** Second editionTata McGraw Hill, New Delhi, 2000