

Enterprise Resource Planning



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INTRODUCTION:

Enterprise Resource Planning is Software for running a business. ERP was coined as an extension of the concept of manufacturing resource-planning (MRP) software, which automated the process of keeping a manufacturing line supplied with materials to meet incoming orders. ERP is a suite of applications including financials, manufacturing, human resources and other modules, that together automate the back-office business administration functions of an enterprise. Leading ERP vendors include SAP, Oracle, People soft and JD Edwards. Enterprise Resource Planning refers to the integration and extension of a business's operational IT systems, with the end goals of making information flow within (and beyond) a company more immediate and dynamic; increasing the usefulness and shelf life of information; eliminating redundancy and automating routine processes; and making information system components more flexible. Departmental boundaries generally become softer, accessibility of data is increased for partner companies and customers, and the company's ability to respond to the marketplace is generally enhanced.

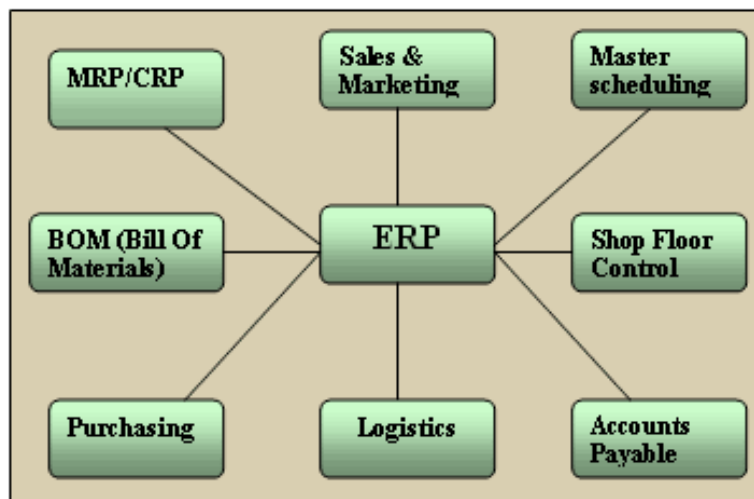
Enterprise Resource Planning is the latest high-end solution information technology has lent to business application. The ERP solutions seek to streamline and integrate operation processes and information flows in the company to synergies the resources of an organization namely men, material, money and machine through information. Initially implementation of an ERP package was possible only for very large Multi National Companies and Infrastructure Companies due to high cost involved.

Today many companies in India have gone in for implementation of ERP and it is expected in the near future that 60% of the companies will be implementing one or the other ERP packages since this will become a must for gaining competitive advantage.

DEFINITION:

ERP (Enterprise resource planning) can be defined as a software solution that addresses the enterprise needs taking the process view of the organization, to meet the organizational goals tightly integrating all functions of an enterprise. It is an industry term for the broad set of activities supported by multi-module application software that help a manufacturer or other business manage all the parts of its business. ERP facilitates integration of company-wide information systems with the potential to go across companies.

Components of ERP



NECESSITY OF ERP:

- Inaccurate Data.
- Untimely information.
- Improper interface of complex business functions
- Difficulties in approaching these demands

APPLICATIONS DEVELOPED IN PAST TO HANDLE THESE DIFFICULTIES.:

- Management Information System (MIS)
- Integrated Information System (IIS)
- Executive Information System (EIS)
- Corporate Information System (CIS)
- Enterprise Wide System (EWS)

- Material Requirement Planning (MRP)
- Manufacturing Resource Planning (MRP II)

The latest development in the IT industry in this background is **Enterprise Resource Planning (ERP)**.

Most organizations across the world have realized that in a rapidly changing environment it is impossible to create and maintain the custom designed software that would cater to all their requirements and be up-to-date.

Realizing *the requirement of user organizations*, some of the leading software companies have *designed ERP software*, which will offer an integrated software solution to all the functions of an organization.

CHARACTERISTICS OF ERP

- ERP facilitates company wide integrated Information System covering all functional areas like Manufacturing, Sales and Distribution, Payables, Receivables, Inventory, Accounts Human Resources etc.
- ERP performs core activities and increases customer service thereby augmenting the corporate image.
- ERP bridges the information gap across organization.
- ERP provides complete integration of the system not only across the departments but also across the companies under the same management.
- ERP is the solution for better project management.
- ERP allows automatic introduction of latest technology like Electronic Fund Transfer (EFT), Electronic Data Interchange (EDI), Internet, Intranet, Video Conferencing, E-Commerce etc.
- ERP not only addresses the current requirements of the company but also provides the opportunity of continually improving and refining business processes.
- ERP provides business intelligence tools like Decision Support Systems, Executive Information System, Reporting, Data Mining and Easy Warning Systems for enabling people to make better decision and thus improve their business processes.

Benefits:

ERP software attempts to integrate business processes across departments into a single enterprise-wide information system. The major benefits of ERP are improved coordination across functional departments and increased efficiencies of doing business. The implementations of ERP systems help to facilitate day-to-day management as well. ERP software systems are originally and ambitiously designed to support resource-planning portion of strategic planning. In reality, resource planning has been the weakest link in ERP practice due to the complexity of strategic planning and lack of adequate integration of ERP with Decision Support Systems. Some of the benefits of ERP are:

- Single Point of Entry - Data only entered at the source of that data
- Everyone has the same data - Single source of truth
- Historical and authoritative data
- Immediate information
- Improved Visibility into all areas of the company

Evolution of ERP

ERP (Enterprise Resource Planning) is the evolution of Manufacturing Requirements Planning (MRP) II. From business perspective, ERP has expanded from coordination of manufacturing processes to the integration of enterprise-wide backend processes. From technological aspect, ERP has evolved from legacy implementation to more flexible tiered client-server architecture

The Evolution of ERP from 1960s To 1990s

Timeline	System	Description
1960s	Inventory Management & Control	Inventory Management and control is the combination of information technology and business processes of maintaining the appropriate level of stock in a warehouse. The activities of inventory management include identifying inventory requirements, setting targets, providing replenishment techniques and options, monitoring item usages, reconciling the inventory balances,

		and reporting inventory status.
1970s	Material Requirement Planning (MRP)	Materials Requirement Planning (MRP) utilizes software applications for scheduling production processes. MRP generates schedules for the operations and raw material purchases based on the production requirements of finished goods, the structure of the production system, the current inventories levels and the lot sizing procedure for each operation.
1980s	Manufacturing Requirements Planning (MRP II)	Manufacturing Requirements Planning or MRP utilizes software applications for coordinating manufacturing processes, from product planning, parts purchasing, inventory control to product distribution.
2000s	Enterprise Resource Planning (ERP)	Enterprise Resource Planning or ERP uses multi-module application software for improving the performance of the internal business processes. ERP systems often integrates business activities across functional departments, from product planning, parts purchasing, inventory control, product distribution, fulfillment, to order tracking. ERP software systems may include application modules for supporting marketing, finance, accounting and human resources

TYPES OF SOFTWARES FOR TEXTILE INDUSTRIES:

ERP Software

Software Name	Website
ACS Optima	www.cgsinc.com/software/solutions/index.html
Bann	www.bann.com
BPCS	www.ssagt.com
Datatex	www.datatex-tim.com
Intenia MovexFashion	www.intenia.com/w2000.nsf/index
JD Edwards	www.jdedwards.com

Pointman	www.pivotpoint.co.uk
SAP	www.sap.com
Style Fashion	NA
Abas	NA

ROLE OF AUTOMATION IN TEXTILE

In today's scenario production cost is increasing rapidly. The labour cost, raw material cost, power cost, etc. are not in our control. Hence to increase the productivity and reduce the production cost we can only have controls on:

- Manpower cost – by reducing manpower
- Utility cost – by power saving
- Quality improvement – Through good control
- High production – Through state of art machine
- Keeping proper record – Through systems

What is Automation?

Monitoring and controlling of any process with the help of latest technologies like software, ladder and logic controls, Robotics, ERP system and incorporating central computer is called Automation.

WHY AUTOMATION

- Achieve more with less.
- Elimination of human error
- Cleaner Technology
- Consistency of product
- Minimize Energy consumption
- Easy diagnosis of fault
- Reduction in Resources (Chemicals, water, energy etc.)
- Reduce manpower.
- Data collection and consolidation.
- Effective application for Complex tasks
- Trending and Report generation.
- Reduction of Peak Loads
- Reduction in Effluent
- Environment Protection.

- Improve Safety and Health.
- Reduce Maintenance.

EFFECT ON PRODUCTIVITY:

Automation affects the productivity in following aspects

- a) Increasing production by avoiding manual delays.
- b) Improving productivity by achieving the optimum efficiency of the machine.
- c) Avoiding reprocessing and improving the productivity.
- d) Automation improves the power saving possibilities and hence the cost of product goes down.
- e) By avoiding manual error it improves the quality of product and hence productivity.
- f) Automation can give useful data of the machines which increases the possibility of analyzing the cause of low or poor productivity.

SCENARIO OF INDIAN TEXTILE INDUSTRY

Most of the textile plant in India are still having old technologies and running their plants in very low efficiency.

Automation can improve the productivity of even old machinery and enhance the quality of the product. For example-

- a) Ring frame automation can improve the doffing time, reduce unnecessary breakdowns because of power fluctuation and record the exact running procedure by avoiding manual interference. It can reduce the production cost by reducing manpower.
- b) Automation of weaving machineries can improve to analyze the reason of breakdowns, improves the life of the machine by controlling all critical mechanical settings and provide accurate data of the machine.

- c) The very important area for Automation is the dyeing process, because it involves lot of minute parameters which are very critical. Even in milligrams variation of recipe can change the shade of the fabric. All the parameters for dyeing like temperature, pressure, water level, water flow, circulation and time of treatment are most important.

Automation of the dyeing process can improve the productivity by controlling the above parameters very accurately.

- d) The finishing process is very critical and all the parameters of the machine need to control preciously. Chemical dozing should also need accurate measurement. Automation helps to improve all these parameters and improves the productivity and quality in a great extent.
- e) Even the folding and warehouse operation can improve by Automation of the process.

How do you proceed for automation:

- **Do you know where you are?**
- **Do you know where you want to be one years from Now?**
- **Do you know where you want to be five years from Now?**
- It is very important to identify the need and the feasibility of the system to be automated.

How to proceed for automation:

The production cost, the complicity of the machines, the utility requirement of the machines, quality parameters of the products are most important factors to consider while planning for Automation

How do we start

It is very important to identify the need and the feasibility of the system to be automated

The production cost, the complicity of the machines, the utility requirement of the machines, quality parameters of the products are most important factors to consider while planning for Automation.

Select The System which has Flexibility

- Ease of Programming
- Adaptability to change
- Expandability
- Enhancibility of function.
- Ruggedness in system.
- Service Back up

PERFORMANCE FACTOR

- Response Time
- Reliability
- Maintainability
- Availability
- Capability

Automation In Textile Industry

The textile manufacturers were having problems with the controls on Textile Machinery as they were having proprietary communication and programming standards. Therefore the American Textile Manufacturing Institution along with the Computer Instruments Manufacturing sub-committee has designed an open communication standard. Use of this will help significantly in implementing Integration and Automation strategies.

CASE STUDIES

I will show you some case studies where Raymond Limited has improved their productivity in a great extend by Automate their existing machines and process.

ROPE SCOURING AUTOMATION APPLICATION

We have Rope Scouring m/c for secondary washing & softening of fabric. The fabric gets stiffed after the process of singeing and heat setting. This

fabric is treated with chemical in the rope scouring machine to remove stiffness as well as stains.

NEED

Earlier Operation of machine was manual. There were lot of problems/negligence during operation of the machine and it is not traceable easily. The whole system was studied by group of engineers. The study reveled that the inconsistency in fabric was due to the following points

- Cycle Time.
- Quantity of chemical added
- Quantity of water taken.
- Speed of machine.
- Temperature of m/c.

SOLUTION

- To automate the m/c it was decided to use distributed control system, and then all the m/c were connected to central SCADA system. Individual m/c is automated and connected through Ethernet link. For automation the hardware used were DP transmitter, Temperature sensor and transmitter, Level switch etc. The electrical panel for this automation was Designed and built in house.
- Total 50 numbers of programs are made to fulfill the requirement of process according to quality of fabric. According to lot data and program number the m/c runs in auto mode and the chemical request is send to dispenser accordingly.
- Consistent quality is maintained.
- The water consumption is reduced by 2 lakhs lit/day.
- Manpower is reduced by 27 workmen out of 38 workmen
- Chemical saving is achieved up to 12%.
- The track of process and record keeping is easier.
- The energy consumption is reduced.
- The fault finding is easier due to which less downtime is observed.
- The manual error is avoided.

AUTOMATION OF DYEING PROCESS

Dyeing process whether it is piece dyeing, top dyeing or cheese dyeing the time factor, the cooling - heating cycle and correct quantity of chemicals and dyes is very important. Dyeing process consists of many different steps. The process also differs from lot to lot. As the system was totally manual the rate of human error and wastage is very high leading to variation in shed.

To avoid these all it is decided to have automatic color and chemical dispensing system. In the first phase all the machines were automated in-house by multiprogramming. For the automation, we have changed the internal piping system and the safety requirement. The complete process is studied for the programming.

After completion of all machine automation, the color service system is installed. Color Service system handles the chemical & dyes and dispenses as per the exact requirement of machine. All the machines were connected with color service through pipe line.

ADVANTAGES

- Reduction in water consumption.
- Consistency in quality.
- Saving in chemical & dyes consumption.
- Manpower reduction.
- Elimination of reprocessing.
- Recording is easier.

CONCLUSION

Automation is a need for today's competitive market where quality, cost and availability is playing major role.

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