Enterprise resource planning

Enterprise resource planning system attempts to integrate all departments and functions across a company onto a single integrated multi-module software program that can serve the needs of the whole organization using single database.

Following **matters** should be considered while **evaluating and selecting an ERP package:**
- All functional aspects of the business are duly covered.
- Whether it would be technically viable to purchase the intended ERP.
- Whether vendor has customization and implementation capabilities.
- Feedback form existing users of the intended ERP.
- Comparison of costs and benefits associated with ERP implementation.

Following **steps** are generally **involved** in **implementation of an ERP solution**:

- ❖ Project planning
- ❖ Business and operational analysis including Gap analysis.
- ❖ Business requirement mapping
- ❖ Business process re-engineering
- ❖ Installation and configuration
- ❖ Project team training
- ❖ Module configuration
- ❖ System interfaces
- ❖ Data conversion
- ❖ Custom documentation
- ❖ End user training
- ❖ Acceptance testing
- ❖ Post implementation/ Audit support

Factors that may provoke **user resistance** and **measures** to **overcome them** are described below:

Reluctance to change: Most users are reluctant to change as they get used to particular style of working and feel uncomfortable when they are required to learn new methods and procedures.

This problem can be overcome by:
- ☐ User involvement in the implementation phase
- ☐ Persuasion
- ☐ By providing incentives
- ☐ Follow modular or phased approach for change over

Change in user interface: Change in user interface may generate user resistance.

It can be controlled by:
- ☐ Improving user interface as far as possible
- ☐ User training and education
- ☐ Explaining the finer points of the system which facilitates the user.

Organizational changes: Implementation of the system often results in organizational changes that users resist e.g., reduced chance of bonuses, redundancies, monotonous work.

It can be controlled by:
- ☐ Redesigning any affected incentive schemes, to incorporate the new system.
- ☐ Giving confidence to the employees as regards continuity of their employment.

Following **factors** may result in **failure** of the company to achieve the **objectives** of ERP implementation.
- ➢ Poor or non-existent planning is a recipe for disaster. Unrealistic deadlines would be identified much earlier if a proper planning process is undertaken.
- ➢ Poor supervision and control of progress of implementation.

- ➢ Frequent changes demanded by the users result in excessive cost to the system which is being developed.
- ➢ Lack of management commitment.
- ➢ Improper management of resistance of users.
- ➢ Failure to modify or change some of the existing procedures according to the ERP requirements.

The key **objectives of Business Process Reengineering (BPR)** are as follows:
- ▪ Identify deficiencies/inefficiencies and
- ▪ maximize productivity of the existing system.

Important **steps** that form part of a **BPR exercise** are as follows:
- Study the current system.
- Design and develop new systems.
- Define Processes, Organization Structure and Procedures.
- Develop/customize the software.
- Train people.
- Implement the reengineered system.

Case Study: The management of Utmost Textiles (UT) has decided to acquire an ERP solution. The ERP consultant hired by the management is of the view that UT must conduct a business process reengineering (BPR) exercise before acquiring the ERP solution. However, in order to save time, the management wants to conduct the BPR exercise concurrently with the implementation of the ERP solution.

Benefits of carrying out BPR exercise:
An in depth BPR study:
- brings out deficiencies of the existing systems;
- attempts to maximize productivity through restructuring and
- identifies measures to improve the systems and procedures.

The BPR exercise may be **conducted concurrently** with the implementation of the ERP solution, however, this could lead to:
- selection of an inappropriate ERP;
- additional cost on customization of the selected solution;
- incompatibility with technical infrastructure;
- unfamiliarity with new processes introduced by the BPR may, in turn, lead to inadequate process description and suboptimal(less than optimal)configuration of the ERP; and
- overburdening the users which may lead to increased resistance from users.

Case Study: Sultan Textile Mills Limited (STML) is a leading manufacturer and exporter of textiles and garments and has several manufacturing units located in Pakistan and Bangladesh. The units are currently using different platforms (Operating Systems) and collating the information using different software which disallow communication among the different units.

The company intends to centralize and consolidate the information flowing from the units to ensure timely availability of data for generation of MIS reports and financial statements. The management of STML has recently appointed your firm as a Consultant to offer recommendations for development of a new system to achieve this objective.

Presently, STML is facing the following **problems:**

- o STML is using different types of software on varied platforms (operating systems) that are not able to share information with each other. Because of this reason, there is a huge inflow of data which cannot be consolidated for analysis.
- o Data redundancy: Lack of direct communication among units has resulted into duplication of the data entry, which is very costly.
- o Timely availability of necessary and relevant data required for the preparation of MIS Reports, budget, profit/loss account etc. is another important concern in the present system.
- o The information sent by different units is not standardized and may lack uniformity and consistency.
- o Maintaining different systems leads to high cost.

The following are the **major areas**, which should be studied in depth in order to understand the present system:

- ✓ Review historical aspects: A brief history of the organization is a logical starting point for an analysis of the present system. A review of annual reports and organization charts can identify the growth of management levels as well as the development of various functional areas and departments. This would help in assessing the needs on account of which different systems were adopted at different units.
- ✓ Analyze inputs: A detailed analysis of the present inputs and the source of input is important since they are basic to the processing of data.
- ✓ Review data files: Investigate the data files maintained by each department, noting their number and size, where they are located, who uses them and the number of times these are used during a certain time period.
- ✓ Review data communication set-up: Review and understand the present data communication methods used by the organization. Review the types of data communication equipment, including data interface, data links, modems, dial-up and leased lines and multiplexers.
- ✓ Analyze outputs: The outputs or reports should be scrutinized carefully and assess whether this serves the organization's actual needs'.
- ✓ Review internal controls: Locate the controls points to visualize the essential parts and framework of STML's system.
- ✓ Undertake overall analysis of present system: This includes analysis of the present work volume, the current personnel requirements, the competence level of IT personnel and the present benefits and costs etc.

STML should **implement ERP system** to overcome the above mentioned problems. Our recommendation is based on the following **reasons:**
- ➢ It provides multi-platform, multi-facility, multi-mode manufacturing, multi-currency and multi-lingual facilities.
- ➢ (ii)It facilitates company-wide Integrated Information System covering all functional areas like manufacturing, selling and distribution, payables, receivables, inventory, accounts, human resources, purchases etc.
- ➢ It supports strategic and business planning activities, operational planning and execution activities etc. All these functions are effectively integrated for flow and update of information immediately upon entry of any information.
- ➢ It allows automatic introduction of the latest technologies like Electronic Fund Transfer (EFT), Internet, Intranet, Video conferencing, E-Commerce etc.
- ➢ It has the capability to resolve business problems like material shortages, productivity enhancements, customer service, cash management, inventory problems, quality problems, prompt delivery etc.
- ➢ The system will enable the company to operate more efficiently than it did before.

Case study: Elite Textiles Limited (ETL) was established in 1995 as a spinning unit. Over the years, it has diversified into other related businesses and has established various units across the country. Meanwhile, the company has developed software for various areas of its operations. However, it is felt that there is lot of duplication of work and complex reports have to be prepared by using spreadsheets. The management has now decided to switch to an ERP System. To ensure the success of the project, the management has formed an ERP Steering Committee, headed by the CFO.

Role and responsibilities of ERP Steering Committee:

Following are the roles and responsibilities of ERP Steering Committee:
- Set Vision of the project
- Set Project Goals
- Defining Priorities of the project
- Defining objectives (measurable and intangible)
- Defining scope and ensuring that the scope is aligned with the requirements of stakeholders
- Planning of financial resources

- Allocation of resources
- Approving budgets
- Approving changes in the scope of work
- Change Management
- Approving contracts and change orders
- Post implementation review.
- Communicate support for the project throughout the organization
- Reviewing progress
- Resolving escalated issues

Three commonly used **ways of implementing an ERP** are explained as follows:

The Big Bang: In this approach companies cast off all their legacy systems and install a single ERP system across the entire company at once.
Franchising Strategy: In this strategy, independent ERP systems are installed in different units, while linking common processes, such as bookkeeping, across the enterprise.
Slam dunk: This strategy is for small companies expecting to grow into ERP. In this methodology, ERP system dictates the process design, where the focus is on just a few key processes, such as those contained in an ERP system's financial module.

Franchising strategy seems appropriate for ETL because it is suitable for large or diversified companies like ETL.

Case Study: Healthy Foods Limited (HFL) is a medium-sized company involved in manufacture of various processed food items. Each department of HFL has its separate information system. The recently appointed CTO of HFL has proposed the development of an integrated information system. To deliberate his suggestion a meeting was convened where the following views were expressed:

Chief Operating Officer	**The introduction of this system is essential and it must be implemented within three months.**
Manager Production	Information system in my department is working perfectly and the new system should be developed for and implemented in only those departments where the existing system is not working properly.
Chief Financial Officer	In view of the present liquidity crisis, the maximum cost to be incurred on such system should not exceed Rs. 5.0 million.
Internal Auditor	Instead of going for development, we may buy an off-the-shelf system to meet our needs.

Comments on above statements:

Comments on the views of Chief Operating Officer (COO): COO's view is correct to the extent that the integrated system is essential for HFL; however, implementing it within the period of three months seems unrealistic. The project would require proper planning for its various stages, need analysis, system design and development, testing, documentation, training and implementation. An unreasonably short implementation time may result in compromise on these activities and may affect the quality of the system.

Comments on the views of Production Manager: The Production Manager's views are incorrect as without integrating all functions, it would not be possible to achieve the key benefits of an integrated system which include eliminating data redundancy, updating data in real time and on time availability of reports at all management levels.

Comments on the views of Chief Financial Officer (CFO): CFO's comments are not inclusive of all relevant aspects. Although developing an appropriate budget for the project is obviously important; however, it should be based on realistic estimates. Any abrupt limit without due consideration of the entire situation would be counter-productive and lead to either quality issues or compromise in meeting the entire requirement.

Comments on the views of Internal Auditor: His suggestion carries weight and need to be explored before making a decision about development; however, an off-the-shelf package may not meet all requirements of HFL. Sometimes, customization in such packages is either difficult or costly and even in certain cases not possible. If HFL goes for such an option, it may need to revisit and redesign some of its processes or procedures to make use of such a package. Further, for all future changes, HFL will be dependent on the software provider.

Case study: Xcelent Drinks (XD) is a large sized soft drink manufacturing company with operations and facilities across the country. Its IT department was performing well; however the information systems used in various departments were not integrated. In order to improve the operational efficiency, the company acquired an ERP system which was customized according to XD's needs. However, soon after implementation, help desk of the company was flooded with complaints and productivity of staff declined sharply.

Consequently, you were hired as a consultant to review the situation. Your observations include the following:

❖   Before system acquisition, a business case of the project was not prepared.
❖   A committee constituting of CEO, CFO and Director IT was farmed to strictly ensure that project is implemented within the allowed budget and time.
❖   The software was acquired by floating an open tender. The vendor who quoted the lowest price was selected.
❖   12 graduates with adequate experience of working on computerized systems were hired in different departments. A Deputy Manager was also hired to support the IT manager in System implementation.
❖   Major re-engineering exercise was carried out soon after the implementation.
❖   The new and old systems are operating in parallel and the Board has decided that the parallel running should continue for at least 2 years.

Reasons for problems faced by management after ERP implementation:

Keeping the consultant's observation in view, probable causes of the problems faced by XD are as follows:

(i) Absence of business case: A business case captures the reasoning for initiating a project or task to ensure obtaining value for money. The absence of business case implies that important issues may not have been considered before acquiring the ERP.

(ii) Formation of a high profile committee for implementation of the ERP within time and cost constraints: The committee lacks user representation which could lead to compromise on users' requirements. This shows that prime concern of management was just to get the ERP implemented. In order to save cost and time, the CFO and Director IT might have put undue pressure on the users and as a result important provisions such as users testing and training might not have been adequately performed.

(iii) Vendor selection procedure: Selection of the lowest bidder in terms of cost implies that technical evaluation of the ERP and/or the vendor might not have been done. In the absence of technical evaluation, XD might have chosen an ERP that does not meet its user requirements or may require major changes in existing systems and procedures. There is a probability that the vendor might have insufficient technical expertise to train and support XD users.

(iv) Hiring of new staff: Hiring of new staff could cause two types of problems:

o   the additional staff could affect the existing organizational set-up and
o   redundancy of existing staff.

In both cases existing staff could be demotivated resulting in decline in their operating efficiency. The new Deputy Manager would not have in-depth knowledge of XD business environment. Hence he might have not provided the desired support to the IT Manager during system implementation.

(v) Major reengineering exercise: For effective business process reengineering, simplification and standardization of processes should be performed before integration of the system. Performing this exercise after the implementation of the ERP implies that XD had acquired an integrated system without fully assessing its needs. Conducting this exercise soon after the implementation might have caused more confusion among users.

(vi) Extended parallel run: Continuation of parallel run of both new and old system for two years means that besides learning the new system, each user has to perform double work every day, resulting in decline in performance. Moreover, the knowledge that entire work would continue for two years may have further aggravated the situation.

Case study: In 2011, Moin Textile (MT) developed an integrated application system. Various other functionalities/applications were added to the system on the initiative of the IT department. These include an application for recording and tracking all incoming emails. For this purpose, a user interface was developed on the website. The stakeholders were advised to send their queries through the interface. These are then diverted to the relevant departments. Emails received directly to the official email IDs of employees are recorded into the system by employees by entering the reference IDs of such emails into the system. Emails received from both the channels are responded from official email IDs and their status is recorded as closed in the tracking system manually.

Recently, a new MD has been appointed. He has termed the integrated system as inefficient because of its slow processing. His views are also supported by some of the executives who have made some adverse comments about the integrated system, particularly the changes introduced after the initial implementation. According to them the email tracking application has increased unnecessary work.

Reasons for problems faced by management after ERP implementation:

MT's executives have shown their dissatisfaction over the integrated system, particularly on the changes introduced after the initial implementation. This may be due to following reasons:
  ➢ Such changes were on the initiative of the IT department and some of these may not be needed by the users departments at all. Some of these may even have increased users' work.
  ➢ Users have been burdened with applications without any awareness and training of the developed applications.
  ➢ The developed applications are not user friendly and are never tested for user friendliness.
  ➢ Lack of documentation and user manuals.
  ➢ Changes may have been introduced without evaluating their cost benefit or impact analysis.
  ➢ Users' approval has not been taken on the changes made/applications added later on.
  ➢ The IT department may not have tested the changes properly and consequently after addition of new functionalities, some essential applications/functionalities might have been affected.
  ➢ IT department may have made undocumented/uncontrolled changes which may have made it difficult or too much time consuming to troubleshoot the problems.