# ERP: Implementation Procedures and Critical Barriers

Vijay M Khaparde[1]
(Research Scholar-SPCE,
Mumbai Univ., Mumbai)
Faculty in K J Somaiya COE,
Mechanical Engineering Department.

Dr. S M Khot[2]
(BOS Chairman, Mumbai Univ.,
Mumbai & Principal (Fr. Agnel COE,Vashi).

**Abstract -** **ERP is nothing but Enterprise Resource Planning. It is a MIS (Management Information System) and is the backbone of IT (Information Technology). The purpose of the research paper is to implement the procedures and to find out the critical barriers of implementation of ERP system. The result of the paper lies in the effective implementation of ERP system with the identification of barriers and methods to be deployed to minimize those barriers.**
**Some of the critical barriers include Technology barriers, Change Management, Geographical Barriers, and Lack of Top Management Support etc. The conclusions of this paper states that ERP is an integrated system which combines all the departments of an organization and is used to reduce the cycle time operation and to increase the effectiveness of an organization.**

*Keywords: ERP (Enterprise Resource Planning), MIS (Management Information System), Backbone, IT (Information Technology), Barriers.*

## INTRODUCTION

### 1. WHY ERP?

As everybody knows ERP (Enterprise Resource Planning) is integrated software which is used for business management system. Among the most important attributes of ERP are its abilities to automate and integrate business processes, enable the implementation of best business practices, share common data and

practices across the entire industry and produce and access information in real time (Soh et al., 2000; Nah and Lau, 2001), and often the implementation of ERP has been linked to business process re-engineering (BPR) (Koch, 2001a; Subramaniam et al., 2009). During the 1990s ERP systems became the de-facto standard for the replacement of legacy systems in large industries, particularly multinationals (Shanks, 2000).
ERP is necessary because it is an integrated system used in industries all over the world to reduce the cycle time of operation and increase the efficiency of an organization. It also improves the communication and information required.

### 2. THE EVOLUTION TOWARDS ERP

During the past decade, ERP has attracted attention from both academic and industrial communities (Shehab et al., 2004) and one feels that now is an opportune time to ask how the ERP has evolved and what its present state is (Chen and Hirschheim, 2004). However, several scholars have already argued that research on ERP has reached some maturity (Botta-Genoulaz et al., 2005; Moller, 2005) and others have argued that the studies in ERP systems constitute a separate research domain (Moller, 2005). None of these researchers seem to have statistical documentation for their statements, and one would like to investigate whether they are right. This will be accomplished through a exhaustive literature study of more than 100 peer-reviewed journal publications published from 2000 to 2015. We have chosen to analyze the papers published in various disciplines and journals, and have not limited ourselves to papers published "only" on, e.g. information systems, accounting and operation management.

An extensive number of papers have included literature studies focusing on specific aspects of ERP, e.g. business process re-engineering (BPR) (Subramaniam et al., 2009), critical success factors for the implementation of ERP (Al – Mashari, 2001; Nah and Lau, 2001, Al-Mashari et al. 2003), where papers are analyzed according to established frameworks. However, only a limited number of literature reviews have been carried out on the ERP research field (Esteves and Pastor, 2001; Cumbie et al.,2005; Esteves and Bohorquez, 2007), only included papers within limited and/or out-dated time frames (Botta-Genoulaz et al.,2005) or not made their method for collecting papers to be included in the review explicit to the reader (Shehab et al.,2004). Even though these reviews bring about some insight into the ERP field, none of the reviews focused on the entire ERP field until 2009.

The purpose of this paper is twofold. The first objective is to write about implementation procedures of the ERP system and second objective is to identify the critical barriers while implementing this ERP system in Indian Industries.

## 3. THE PROMISE AND PITFALLS OF ERP – WHY THE IMPLEMENTATION PROCEDURE (PROCESS) MATTERS:

Enterprise systems (ERP) appear to be a dream come true. The commercially available software packages promise seamless integration of all information flows in the company – financial and accounting information, human resource information, supply chain information and customer information.

A successful ERP project can cut the fat out of operating costs, generate more accurate demand forecasts, speed production cycles, and greatly enhance customer service – all of which can save a company millions of rupees over the long run. ERP systems reportedly also lead to improved cash management, reduction in personnel requirements, and a reduction in overall information technology costs by eliminating redundant information and computer systems. Therefore, the implementation process matters.

The pitfalls of the ERP are its high cost package or package cost which is sometimes not affordable to all the organizations particularly small industries. Another pitfall of the ERP system is lack of training to the users. The hands on training to the users are essential in effectively implementing this ERP system in Indian Industries. Poor integration planning and testing are the biggest pitfall in ERP system.

## 4. IDENTIFIED BARRIERS DURING THE ERP IMPLEMENTATION:

In doing so, following barriers have been identified during the ERP system implementation. They are listed as below.

4.1. Lack of Clear Understanding of strategic goals.
4.2. Lack of commitment by top management.
4.3. Lack of excellent project management.
4.4. Lack of organizational change management.
4.5. Lack of great implementation team.
4.6. Lack of data accuracy.
4.7. Lack of extensive education and training.
4.8. Lack of focused performance measures.
4.9. Lack of multi-site issues, and
4.10. Lack of technological resources.

Apart from the above barriers, some more barriers have been identified during the ERP system implementation which is as under.

1) Technological Barriers includes technology,
2) Geographical Barriers includes geography, location etc.
3) Knowledge Gap includes gap between present and future generation, and
4) General Barriers includes lack of training to the end users, lack of top management support, lack of appreciation / motivation / morale, lack of incentives, lack of belongingness, lack of preparedness, lack of financial resources, lack of MIS, lack of IT resources, lack of networking etc.

## 5. ERP SYSTEM SELECTION

ERP (Enterprise Resource Planning) system selection depends on the various factors or parameters of an organization.

i) Scope of work / Nature of work
ii) Financial resources availability
iii) Viability of the project / Feasibility of the project
iv) Management policy / guidelines
v) Technology
vi) Geographical factors and environmental conditions
vii) Change management
viii) Knowledge management
ix) General factors
x) Cost of the ERP software package
xi) User friendliness of the module / package
xii) Requirements of the module (in particular organization)
xiii) Flexibility
xiv) Govt. policy, regulation and control
xv) Usage and time required to run the system
xvi) Integrated software
xvii) Nature of demand
xviii) Local and Global competition in the market
xix) Market survey – research about the system & its report
xx) Authenticity of the software package, etc.

Thus, ERP system selection depends on the above mentioned factors. For healthy and effective implementation of ERP system in an industry, most of the above factors should be fulfilled and should be taken into account. Therefore, ERP system selection is very important in effective implementation of the system in Indian Industries.

## 6. IMPLEMENTATION STEPS

Overall, there are five stages or steps of ERP implementation.

i) Project Preparation Phase
ii) Requirement Gathering
iii) Business Blue Printing (Print)
iv) Realization Phase
v) Go-Live Preparation or Data Migration

*Description of ERP Project Implementation:*

*i) Project Preparation Phase*
This is initial phase of project where most of the planning work is happening from both side, e.g. from Business Company and from Implementation Company. E.g. Technical Scope, Geographical Scope, Detail of Functionality Implementation, Infrastructure Scope.

*ii)      Requirement Gathering*
During this phase, various requirements are collected from Business Stakeholder by Business Analyst and categorized as per domain.

*iii)      Business Blue Printing (Print)*
Here, requirements are mapped to ERP solution. Various solution options are discussed for their pros and cons.

*iv)      Realization Phase*
During this phase of ERP implementation, system built is being done, and actual solution is being implemented. Various Testing units like, Integration Testing and UAT done with reference to this business blue print.

*v)      Go-Live Preparation or Data Migration*
During this phase, data migration is done from legacy system to ERP system.

The main tasks that should be performed during implementation process / steps are as under-

- Assembling the participants – stakeholders
- Need analysis review
- Project mission and vision statements creation
- Determination of organizational structure
- Determination of the modules to be implemented
- Creating the core team
- Establishing the training needs
- Establishing the data conversion strategy
- Establishing the interfaces
- Determining the work estimates
- Cost of consultants
- Calculation of implementation time
- Identifying constraints, and
- Establishing the policies and guidelines.

Although training is present in all the phases (steps), the largest training investment is made during the implementation phase.

## 7. MANAGING THE IMPLEMENTATION

The nature of ERP implementation is such that it is best handled within a project management context. The implementation involves a series of activities that do not fit naturally into the normal business cycle of events. It also requires allocated resource and the development of specific skills. It is multidisciplinary and team oriented.

The implementation plan should identify the implementation strategy, that is, whether the incremental approach or the big bang approach will be used and whether ERP will be implemented in all the projects simultaneously or introduced in a pilot project.

When the incremental approach is used, all ERP modules are not implemented in one-step. The different modules are introduced one by one. The advantage of the incremental approach is that the company can get feedback on the implementation, it can spread the investment over a period of time.

The advantage of big bang approach is that the company can start reaping the full benefits of ERP immediately after implementation. This big bang approach is effective if the organization is mature and conducive to ERP and the people are ready for it. Here, there is no room for error; it is a "do-it-right-the-first time" proposition.

## 8. ERP IMPLEMENTATION PLAN

Before implementing an ERP system in an organization or project, it is very crucial that the implementation process be planned. Implementation planning includes developing the implementation strategy, schedule and organizing the implementation team.

The implementation plan documents the why, what, when, where, who and how of the project. The plan provides a guide to the project and is used to monitor the progress. It enables people to carry out a set of interconnected tasks in a coordinated manner.The implementation planshould address all concerns such as the existing procedures, the effect of the ERP The implementation plan on the procedures, how it will affect the employees, the work environment of the organization, the ERP awareness of the employees, creation of the ERP user manuals, and so on.

Following precautions to be taken in devising theimplementation plan for effective implementation of ERP system.

i)      Timescales should be realistic. If they are overly optimistic then the project will soon fall behind and is unlikely to catch up. This will have the effect of demoralizing the team. Likewise, if the timescales are too long, the momentum may never build-up and delays may result from inertia.

ii)      Having produced a plan, it is important to maintain that plan against progress, revising it as necessary. When problems arise, so do the potential for delays. It can be argued that it is better to push out dates rather than not get it right, since a sloppy solution may re-emerge at a later date with a magnified impact.

## 9. WHY IMPLEMENTATION FAIL

Following are critical failure factors because of which generally implementation (of ERP system) fails:

- Poor planning / poor project planning
- Lack of strategic decision
- Lack of user training
- Lack of top management commitment
- Lack of top management support
- Lack of technology resources / infrastructure
- Lack of finance / financial resources
- Lack of preparedness
- Lack of judgments

- Lack of ERP awareness (of ERP system)
- Lack of data migration
- Lack of system integration (test)
- Lack of conviction and perseverance
- Lack of skill / Lack of knowledge
- Lack of ERP package selection
- Lack of material master (data) and maintenance
- Lack of UOM (Unit of Measurement)
- Project overrun and project delay
- Lack of estimation of resources
- Lack of feasibility study (of the project)
- Lack of HR people(s)
- Lack of team work
- Lack of ERP solutions and understanding
- Lack of customization or lack of mapping of legacy system with ERP system
- Lack of business blue printing (print)
- Lack of go-live preparation
- Lack of consultants / consultancy work
- Lack of vendor relationship
- Lack of implementation steps / stages
- Lack of organizational factors such as behavior etc.

Because of the above factors, implementation of the ERP system is doomed to be failed.

## 10. CASESTUDY: ERP IMPLEMENTATION AT J. K. FILE (J K INDUSTRIES), THANE

### 11. Brief history

J. K. File belongs to J K Industries and is a Reymond's Group of Industries. This group started or run by J K Singhania, who was the founder of J K Industries. The group started its production in 1947. There are various products manufactured under this umbrella. One of the product for which this case study belongs is Files. Hence the name of the industry given is J K File. This J K File production started in 1949. There are various kinds of files manufactured in this industry viz. rough file, smooth file, coarse file.

### 10.2. A Clear Understanding of      Strategic Goals

A clear understanding of strategic goal envisages as to why ERP system implementation is done in J K File industry. The very reason of implementing ERP system in this industry is -

To reduce the operation process cycle time,

To minimize the idle time of operation,

To increase the efficiency of the processes/system, and for the ease of accessibility for integrated information on one platform. Therefore, the strategic goal of this organization was to effectively implement the ERP (SAP) system in their organization.

### 10.3. Commitment by Top Management

In J K Industries (J K File), there was definitely the commitment by top management. Top brass of this company took keen interest and initiative in implementing the ERP system effectively. They followed a teamwork heading General Manager (Systems)is the in-charge of effectively implementing the ERP system. This GM has the thorough knowledge about the system and he did co ordinate all the people who was working under him, and took the effort with the help of teamwork for effective implementation of ERP (SAP) system in his organization.

### 10.4. Project Management and multi-site issues

In J K Industries, there is very effective project management observed. Vis-à-vis various multi-site issues are also observed during the implementation of ERP system in this industry. These multi-site issues and project management go hand in hand. If there is any problem or difficulty found in multi-site (issues), it will directly affect on project management and vice-versa. Therefore, care has to be taken in handling all the multi-site issues in an industry.

There are various projects and various multiple sites of this company involved in manufacturing of fabric, cloths, files etc. at various locations. For this, there is great necessity of project management, and also simultaneously for these projects, multi-site issues are to be resolved and prioritized amicably.

### 10.5. Managing Change

As such, in this J K Industries, since inception there is no change management issue. Meaning, there is no managing change for the effective implementation of ERP system in Indian Industry. This group is owned by Singhania Group and since inception of this group, there is no change in management.

### 10.6. The implementation team

In this J K Industries (J K File), there is a great implementation team formed for the smooth working of ERP system (SAP implementation – system). The implementation team (for the system) comprises of the following organigram for the effective implementation of ERP system.
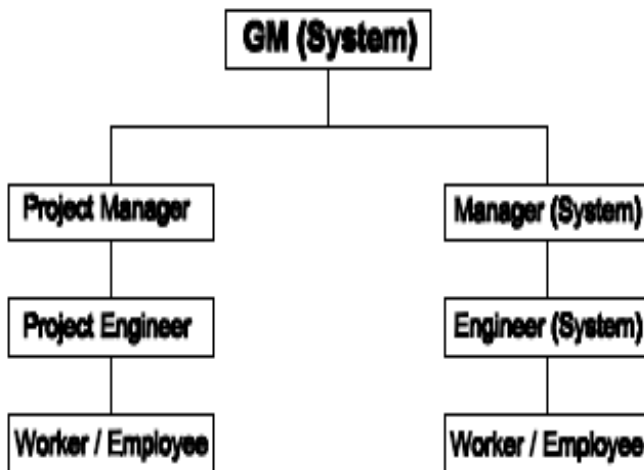
Figure 1: Organigram at J.K. File

This implementation team is a core team (members) who are exclusively looking after the ERP system (SAP) work in an organization. As and when situation demands, they work hard day and night for the effective implementation of ERP system. Thus, the implementation team play key role in effectively implementing the system in any industry.

## 10.7. Data accuracy

In J K Industries (J K File), there are various data which are monitored by Material Master Record, called as Material Master Data. In this material master data, there are total 23 fields which are to be filled separately. If all these fields are filled completely and correctly, then there is 100% data accuracy. In order to have effective implementation of ERP system, there should be data accuracy in an organization.

## 10.8. Education and Training

Education and Training are the two pillars of effective implementation of ERP system in any other organization. Here, in this J K Industries also, these two educations and training are given to the users about the ERP system implementation. Prior to implementing the ERP system in an organization, this education and training is must. With this, the hands on training / sessions are also conducted to have a practice or to get to know about the ERP system implementation.

## 10.9. Focused Performance Measures

In this company, there are already focused performance measures which are initiated as far as effective implementation of ERP system (SAP) is concerned. In fact, this is done during the implementation of ERP system only. The performance measures of an ERP system are effective when they are focused towards the aim and objective of vision and mission of an organization. This is what has been fulfilled in this very industry.

## 10.10. System selection process

The system selection process to implement the ERP system effectively in an organization depends on certain criteria. One of the main important criteria is the requirement. Another equally important criterion is mapping (with the legacy system). If these two criteria's are fulfilled completely in an organization, then the selection process begins. There are various modules of the ERP system. So, depending upon the requirement of the organization and mapping with the system, this system selection process can be initiated. Thus, requirement of the system (module) and the mapping with the system go hand in hand. If these two are selected properly (correctly), then definitely effective implementation of ERP system can be performed (done).

## 10.11. A post – implementation audit

Generally in an organization, after the successful implementation of ERP system, post implementation review is taken. This review is nothing but the ATR (Action Taken Report). In another term, this can be called post-implementation audit which is regarding the status, pros & cons of the system, feedback of the system, customer's responses, system's effectiveness, financial viability and above all the productivity of an organization is taken into account. All these parameters are through in this industry. Review was taken after the successful implementation of ERP system, and it was found that there was no any fault / error in the system. Thus, system was implemented effectively in J K Industry (J K File) at Thane, Mumbai. Therefore, a post-implementation audit is must to combat any barrier arising out of implementation of the system.

## 10.12. Implementation success?

The main objective of implementing the ERP system is to see whether the organization has attained any success or not, whether the system implemented is effective or not. On both these front, this industry achieved success. Generally, in other Indian Industries, this may not be the case. Most of the industries are failed in implementation. But this is not the case as far as this industry's implementation is concerned. They have very effectively implemented the ERP (SAP) system and still running smoothly without any difficulties.

## Results:

The results of this paper show that there are critical barriers found while implementing ERP system in any industry. Detailed implementation procedures for the process of ERP system is explained in the paper.

## CONCLUSIONS:

Enterprise Resource Planning (ERP) plan and its procedure are mentioned with its system selection and other factors. Critical barriers have been identified and are mentioned along with the implementation of ERP system procedures. Why implementation fails, is also mentioned along with various reasons. Finally, the topic is applicable to industry where in this has been explained through case study of 'J K

Industries,' Thane, Mumbai. The implementation procedures and critical barriers mentioned here is pertaining to this industry and clearly explained.

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