ERP Implementation - Do it Right the First Time

Kamal Khanna, Gazal Preet Arneja
1,2 Dept. of Mechanical Engineering, Shaheed Bhagat Singh College of Engineering & Technology, Poly Wing, Ferozepur, India

Abstract
The paper summarizes how effective ERP implementation help to foster the organizational culture and provides exceptional benefits to the business of manufacturing plants that mass-produce with little changes through better implementation plan. Industries have invested considerable resources in the implementation of Enterprise Resource Planning (ERP) systems. The results initially expected rarely have been reached. Information in large organizations is often spread across numerous home grown computer systems, housed in different functions or organizational units. While each ‘information islands’ can ably support a specific business activity, enterprise—wide performance is hampered by the lack of integrated information. Further the maintenance of these systems can result in substantial costs. Hence, this paper provides the complete roadmap of Enterprise Resource Planning implementation for Manufacturing Industries and helps in its successful implementation.

Keywords
ERP Implementation Methodology, ERP Phases, ERP Risks, Life Cycle

I. Introduction
Information technology is revolutionizing the way in which we live and work. To survive, thrive and beat the competition in today’s brutally competitive world one has to manage the future. Managing the future means managing the information. In order to manage the information, deliver high quality information to the decision-maker at the right time and automate the process of data collection, collation and refinement, organizations have to make information technology an ally, and harness its full potential and use it in the best way possible. Almost all organizations are turning to some sort of ERP systems as a solution to their information management problems [7]. ERP packages if chosen correctly, implemented judiciously and used efficiently, will raise the productivity and profits of industries dramatically. But many industries fail in this because of wrong product, incompetent and haphazard implementation and inefficient or ineffective usage [1]. To work successfully, ERP solutions need a lot of factors to click. There should be a group of proficient people who know the business, the vendor should be good, the implementation should be well planned and executed perfectly and end-user training should be done so that people understand the system and the effect of their efforts on the overall success of the ERP project [8]. ERP systems are capable of delivering dramatic productivity improvements and cost reduction. It can improve customer goodwill, because the company will be able to provide customers with better quality products and better technical and after sales support. There is misconception that ERP is only for large industries [2]. It is the experience of the consultants that with proper scientific methods for product development, automated software and toll packages for accounting, and inventory management the employees are willing things and adapt to changes and forget that ERP will make their job redundant. The purpose this paper is to explain the different phases that make up the life cycle (Implementation process) of an ERP system from conception to retirement and how these events may be sequenced. The organizational culture and the nature of the projects will be different from industry to industry. Hence, two ERP implementations can never be identical; they will vary depending on the size, nature of projects, complexity of ERP projects, development methodology and organizational culture etc [3]. The two different streams are observed from the literature, the first one focuses on the fundamental corporate capabilities driving ERP as a strategic concept, the second on the details associated with implementing information systems (ERP) and their relative costs and success [4]. The different phases, sequence of these phases and other details of the ERP implementation will vary greatly from industry to industry. It is important for the industry management, project leaders, consultants, employees, ERP implementation team members and other stakeholders to have a good understanding of the large scale conceptual picture of ERP and ERP implementation. Hence, like any other project the ERP implementation has to go through a proper channel or proper phases for its successful deployment [7].

II. Implementation of ERP systems
Selecting and implementing a new ERP system, and the process changes that go with it, is unquestionably a complex undertaking. Regardless of the size and perceived resources, an ERP implementation is not something that should be approached without a great deal of careful planning. Among industries that have been through a less-than-fully successful ERP implementation, five reasons for poor results show up consistently:
1. Operating strategy did not derive business process design and deployment.
2. The implementation took much longer than expected.
3. Pre-implementation screening activities were done poorly, if at all.
4. People were not well-prepared to accept and operate with the new system.
5. The cost to implement was much greater than anticipated.

To find out the answer to these questions one should know that ERP is a process and not a magic. Management is getting hoped-for results from ERP less often than not and this begs an explanation for ERP’s often-poor performance. ERP’s benefits are a direct result of effective preparation and implementation, and appropriate use. This seems obvious, but nine out of ten industries do not get it right the first time around. Expecting a quick fix silver bullet solution is a dangerous mindset [8]. No amount of advance information technology can offset the problem of a flawed business strategy and poorly performing business processes. This area, in particular, is something that ERP software implementers may not fully address because it can slow system deployment. The implementation should be led by a senior executive who has the authority to make changes happen and happen quickly. Make sure there is sense of urgency and true accountability for completing preparation and implementation activities on time [9].

III. ERP: Life-Cycle and its Phases
Implementing a good ERP system is not an easy job, but it is how the projects mesh with the ERP system that determines the value that is received from it. It is how the ERP system is used in the project that makes the difference. Many industries have
seen no alternative to terminate their ERP projects during the implementation phase once their resources have become depleted because of mismanagement [5]. Even a well-designed system can be failure if the people using it are not co-operative. ERP implementation comprises of different phases and there are no clear separating lines between these phases and in many cases one phase will start before the previous one is completed. But the logical order must be followed. Also all the phases that are discussed in this paper may not be applicable in all the cases. For example, in some cases, the industry may have already identified a particular package; then the pre-selection screening and package evaluation phases are not done. In many cases, industries go through many implementations- in different business units, different modules or manufacturing locations. So at any given time more than one of the phases may be operational. Some industries opt for the one while the other industries favor sequential rollouts- each industry has different needs. Therefore, the strategy (Big-Bang, Phased, Parallel, Project and Hybrid) of ERP implementation may be different but the life cycle phases are the same. The fig. 1 and table 1 show the flowchart and ERP implementation methodology respectively developed by the author that helps in successful ERP system in any industry.

Fig.1 : Flowchart for ERP Implementation

A. The first phase of ERP Implementation i.e. planning consists of further two steps
• Pre-evaluation Screening
• Package Evaluation

1. Pre-evaluation Screening
Once the industry has decided to go in for the ERP system, the search for the perfect package starts. But there are hundreds of ERP vendors- of all sizes and shapes – all claiming to have the solution that is ideal for industry. Analyzing all the packages before reaching a decision is not a viable solution. The pre-evaluation process should eliminate those packages that are not at all suitable for industry’s business processes. The system must have been thoroughly revamped and re-designed to cater to the needs of the diverse business sectors that it is catering to. But it should be remembered that many RP packages are still very good in some areas, even though they are capable of catering to the needs of other sectors. It is generally accepted that most ERP packages are stronger in certain areas than in others and each one is madly trying to add functionality in areas where they have been lacking. For example, PeopleSoft is strong in HR and so less in manufacturing; BAAN on the other hand, is historically stronger in manufacturing than in financial and so on.

2. Package Evaluation
It is most important part of ERP implementation process in an industry as it decides the success or failure of ERP project. Since ERP systems involve hug investments, once a package is purchased, it is not an easy task to switch to another one. So, it a ‘do it right the first time’ proposition and there is no room for error. To choose the best system, the industry should indentify the system that meets the business needs, matches the business profile and identifies with the business practices of the industry. It is impossible to get a system that will perform exactly as the industry does business, but the aim should be to get a system that has the least number of differences. The package that is selected should have the industry-wide acceptance. The package experts or the consultants can act as mediators or play the role of explaining the pros and cons of each package.

B. The Design Phase consists of the following steps:
• Gap Analysis
• Customization

1. Gap Analysis
This is arguably the most crucial phase in the success of the ERP implementation. This is the process through which industries create a complete model of where they are now and where they want-to-be-headed. The model should be such that it anticipates and covers any functional gaps. It has been estimated that even the best ERP package, custom tailored to an industry’s needs, meets only 80% to the industry’s functional requirements. The remaining 20% of these requirements present a problematic issue for the industry’s BPR.

2. Customization
In this step, the business processes are understood and mapped in such a way that the arrived-at solutions match up with the overall goals of the industry. But, industries cannot just shut down their operations while the mapping processes take place. Hence, the prototype- a simulation of the actual business processes the industry-will be used. The prototype allows for thorough testing of the “to-be” model in a controlled environment. As the ERP consultants configure and test the prototype, they attempt to solve any logistical problems inherent in the BPR before the actual go-live implementation.

C. The Transition phase consists of the following steps
• Reengineering
• Training

1. Reengineering
Reengineering in the ERP field refers to the implementation model initially designed and used with much success by the major ERP consulting firms. There have been occasions where high-level executives have invoked the reengineering slogans and purchased an ERP package with the aim of reducing significant number of employees. While every implementation is going to involve some change in job responsibilities, as process become more automated and efficient, it is best to treat ERP as an investment as well as cost cutting measure rather than a downsizing tool. ERP should engender business change but should not endanger the jobs of thousands of employees.
Table 1: ERP Implementation Methodology

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Phases of ERP Implementation</th>
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<tbody>
<tr>
<td>1.</td>
<td>Planning</td>
</tr>
<tr>
<td></td>
<td>a) Hold discussion with various personnel to establish the actual number of system operating at client’s site. This stage will be useful in eliminating those packages that are not suitable for the business process.</td>
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<td></td>
<td>b) The plan is developed, roles are identified and responsibilities are assigned. It will also decide when to begin the project, how to do it and its completion.</td>
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<td></td>
<td>c) Project scoping document for proposed solution &amp; budgeted time has been prepared in this phase.</td>
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<tr>
<td>2.</td>
<td>Design</td>
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<tr>
<td></td>
<td>a) In this phase the companies create a complete model of where they are now, and in which direction will they proceed in the future.</td>
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<td>b) Test scripts are made in this phase which is to be followed during testing of the system and interface paths of various modules are being prepared.</td>
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<td>c) Best people are chosen from the industry having good functional knowledge &amp; the system is tested to verify the accuracy.</td>
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<td>3.</td>
<td>Transition</td>
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<td></td>
<td>a) In this phase a significant change in number of employees and their job responsibilities are assigned according to specific areas as the process becomes more automated and efficient.</td>
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<td></td>
<td>b) In this phase the employees are given training according to their specific areas.</td>
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<td>4.</td>
<td>Testing</td>
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<td></td>
<td>a) In this phase the company tests the real case scenarios.</td>
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<td></td>
<td>b) The system is config.d and now everybody must come up with extreme cases like system overloads, multiple users logging on at the same time.</td>
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<td></td>
<td>c) This phase is performed to find out the weak link so that it can be rectified before its implementation.</td>
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<td>5.</td>
<td>Post Implementation Analysis</td>
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<td></td>
<td>a) Once the implementation is over, the hired consultants will go. It is the time to reap the fruit of the implementation it is very important that the system has wide acceptance.</td>
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<td></td>
<td>b) The system must be updated with the change in technology. The post implementation will need a different set of roles and skills than those with less integrated kind of systems.</td>
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2. Training
This is the phase where the actual users of the system will be given training on how to use the system. It starts much before the system goes live. The employees who are going to use the new system are identified. Their current skills are noted and they are divided into the groups, based on the current skill levels. Each group is given training on the new system. The training is must for the end users as the success of ERP system is in the hands of end-users. End-user training is much more important and much more difficult than the implementation team training. Industries are beginning to take this phase seriously as there is now statistical evidence, which shows that most implementations fail because of a lack of end-user training.

D. The Testing phase consists of
- Testing
- Go-Live

1. Testing
In this step of ERP implementation the industries test the real case scenario. The system is config.d and now they must come up with extreme case scenarios-system overloads, multiple users logging on the same time on same query, users entering invalid data, hackers trying to access restricted areas and so on. The test cases must be designed specifically to find the weak links in the system and these bugs should be fixed before going live.

2. Going-Live
This is the phase where ERP is made available in the entire organization. On the technical side the work is almost complete-data conversion is done, and databases are up and running; and on the functional side, the prototype is fully config.d and tested and ready to go operational. The system is officially proclaimed operational, even though the implementation team must have been testing it and running it successfully for the same time. But once the system is ‘live’, the old system is removed and the new system is used for doing business.

E. The Post-implantation phase (Operation and Maintenance)
One important point that should be kept in mind that post-implantation phase is very critical. Once the implementation is over the vendors and the hired consultant will go. To reap the fruit from the seed of ERP, the system should get enterprise wide-acceptance. There should be people in the industry that have the technical prowess to make the enhancements to the system, as and when required. The system must be upgraded as and when new versions or new technologies are introduced in the market. Here the industry should think in terms of the incremental benefits of the new enhancements. The post- ERP industry will need a different set of roles and skills than those with less integrated types of systems. At a minimum, everyone who uses these systems needs to-be trained on how they work, how they relate to the business process and how a transaction ripples through the entire industry whenever they press a key. The training will never end; it is an ongoing process; new people will always be coming in and new functionality will always be entering the industry. Projects for implementing the ERP systems get a lot of resources and attention,
but it is how the industry lives with ERPs, that has more to do with the value that one receives from them, rather than quick decision made during installation.

IV. Issues on ERP Implementation

ERP systems provide a mechanism for implementing it where a high degree of integration between applications is required. The Business Case or Value Proposition for implementation must be outlined. To successfully implement a proper mix of people processes and technology should be maintained [6]. ERP systems run off a single database and enable various departments to share information and communicate with each other. The knowledge required during enterprise system implementation includes a variety of expertise, experiences and skills and therefore cross-functional and cross-divisional transfer of knowledge is necessary to ensure that the requisite enterprise system knowledge is available for a successful implementation.

ERP implementation is so knowledge-intensive that the fate of the whole project is in hands of a group of knowledgeable employee from across the organization and success of the project relies heavily upon effective management of knowledge into, within, and out of this team during enterprise system life cycle. Employees need to know how their task fits into the overall process and how that process contributes to the achievement of organizational objectives. ERP experts need to know more about the business processes and business process experts need to leverage their knowledge about the IT systems in place in their organization. Eventually, the overlap between the knowledge of different divisions’ increases and the knowledge on the organizational scale follows a converging pattern.

A. People’s Risks

People- employees, management, implementation team, consultants and vendors- are the most crucial factor that decides the success or failure of an ERP system. Implementing an ERP system involves a change and it is human nature to resist change. So, every ERP implementation has to face some amount of resistance. Users are skeptical about the new system. But for an ERP implementation to succeed, the co-operation of everyone is an absolute necessity. If the employees are not convinced about the importance of ERP and the benefits of using an ERP system, they will not be fully co-operative, which can result in the failure of the system. Forcing the system on unwilling people will only harden their resolve to revolt. The main people issues are change management, project team, employee re-location and re-training, top management support, consultants, resistance to change etc.

1. Project Team

ERP implementation is a very complex and sophisticated project, involving technological as well as cultural changes. So the implementation team members should be people who have initiative, dedication, enthusiasm, team skills and excellent communication skills. It is not the place for the people whom the boss does not want. In fact, assigning some people just because they are only ones available is one of the crucial mistakes that management can make.

2. Employee Re-location and Re-training

The development of new processes will result in the emergence of new job descriptions. Automation of manual tasks and the creation of new tasks make this inevitable. The implications relating to changes in job descriptions need to-be handled in an agreeable and friendly manner. In industries where employees are reluctant to change, the re-location and re-training has the potential to become a big issue.

3. Top Management Support

The complex nature of ERP projects makes it necessary to have huge resources at the disposal of the implementation team. This requires the support and permission of the top management. If the ERP implementation does not have the full backing of the top management, it will definitely fail.

4. Consultants

Consultants are the experts in the implementation of ERP package. They might not be familiar with the internal workings and the industrial culture and might inadvertently create trouble by trying to implement the ERP system without taking into account the needs of the organization. This is a sure recipe for disaster. To minimize this risk, the consultants should be assigned a liaison office-a senior manager-who can act as guide and intermediary between the consultants and the implementation team, until the consultants are familiar with the industry and its people.

5. Resistance to Change

One main reason for resistance is ignorance. People always have a lot of misconceptions about ERP. The ERP implementation team backed by the management should spend time and effort educating users about ERP and how it helps the industry and the users; only then user resistance be reduced if not fully eliminated.

B. Process Risks

The ERP system will introduce hundreds of new business processes and eliminate a lot of existing processes. This is one main reason for the implementation of ERP system to improve, streamline and make the business process more efficient, productive and effective. Managing the implementation of the business processes is a factor that decides the success of the ERP implementation. The main areas of concern are Program management, business process reengineering and stage transition.

1. Program Management

ERP is heavily transaction focused and is used to manage essential and operational functions such as commercial, material management and procurement planning and order tracking. ERP applications are multi-module in nature and often include finance and human resource management as well. All the industries require up-to-date information about their programs and products. This translates into the common requirement of the information integrity and availability at the right time and in right manner. While some of this information is the domain of ERP systems, the rest is program management information that has no place in ERP, but user essential for program execution. In spite of this oft-noticed shortcoming, there are little or no program management links to traditional ERP.

2. Business Process Reengineering

Business process reengineering (BPR) means not just change- but dramatic change and dramatic improvements. This dramatic change is achieved by the overhaul of industrial structures, management systems, job descriptions, performance measurements, skill development, training, and the most importantly the use of information technology. BPR has impact on every aspect of how the organization runs its business. Change on this scale can cause results ranging from enviable success to complete breakdown and failure.
3. Stage Transition

Stage transition is a question that needs to be addressed very carefully and implemented very judiciously and diplomatically. There are a lot of people involved in the ERP implementation project. At go-live, once the program is operational, the ways roles change and the way such change is orchestrated can decide the success of the project.

C. Technological Risks

Technology is advancing at an astonishing pace. ERP vendors are bringing out products and features to keep pace with these technological advancements in order to remain competitive. Industries that have implemented ERP systems should keep abreast of the latest technological developments and implement what is required in order to survive and thrive. Some of the technological issues are software functionality, technological obsolescence, upgrades etc.

1. Software Functionality

ERP systems offer a myriad of features and functions that can overwhelm the users. Not all features are required by all the industries. So the management, in consultation with ERP experts and vendors should decide on what features are required by the industry and then install only the required functionality. Implementing all the functionality and features just because they are available can be a recipe for disaster.

2. Technological Obsolesce

Any technology that is modern today will become obsolete in a few years, as newer, faster and more efficient technologies are being developed everyday. The ERP systems are no exception; it will become obsolete as time goes on. But the industries should select the packages, vendors and technology that have the best chance of returning the investment or those that will not become obsolete in the near future. Here choice or technology, architecture of the product, ease of enhancements, ease of upgrading, quality of vendor support, etc. are critical.

3. Up gradation

The ERP systems need to be upgraded and kept up-to-date. The people who are maintaining the ERP systems should be in regular contact with vendors to see whether any upgrades or updates are available. Here the risk is one, of the vendor either closing shop or stopping support for the system. Care must therefore be taken while selecting the vendor and upgrades/support contracts should be signed to minimize the risks.

V. Conclusion and Future Scope

Today ERP is still evolving- adapting to developments in technology and the demands of the market. ERP trends reflect positive signals for the ERP vendors and industries availing their services. It is important to remember the fact that both the vendor and the industry will be able to make use of any advantage (including the modern facilities) only through proper coordination, teamwork and nurturing a cordial atmosphere. Implementing ERP can become a mind-alarming experience for those involved. The special guidelines of ERP practitioners emphasized that the selection of right consultant, support from top management at all levels and all times, dedicated and experienced project team, proper utilization of all resources, pre-screening of the ERP software and proper design of ERP methodology are the key elements for a successful ERP system. Keep in mind while implementing for ERP is that, it’s not for those industries who think to change their current system just for showing to the world. Also this is not for those who want more predictability and want to grow up in a few coming days. Pre-screening is very essential. Spend more time on Design and Transition phase. Utilize all the resources and manpower effectively in all the phases. Following a sound methodology will greatly increase the likelihood of success the first time. Yet, it will not guarantee the success of ERP projects. Only the industries have to do that. The future step could be to estimate the remedial action priorities depending upon the features of the particular problem or according to the situation. The next step can also be to find out the methods and means by developing a suitable model which can initially predict the compatibility of the selected ERP system with the current business processes and to bring more improvements in integration and flexibility of ERP systems while and after its implementation.

References

Kamal Khanna is currently working as Lecturer in the Mechanical Engineering Department of S.B.S.C.E.T (Polywing) Ferozepur. He has received his M-Tech. degree from SLIET, Longowal and B-Tech. degree from Punjab Technical University, Jalandhar. He has already published paper in International journal. His main interests are Supply chain Management, ERP and Project Planning.

Gazal Preet Arneja is currently working as Asst Prof in the Mechanical Engineering Department of S. B. S. C. E. T. Ferozepur. He has received his M-Tech. degree from PTU, Jalandhar and B-Tech. from NIT, Jalandhar. He has already published papers in various International conferences. His main interests are Six Sigma, Operations Management and Supply chain Management.