ERP Implementation in SMEs: Pre-ROI Calculations

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Pre-RoI Calculations

Enterprise Resource Planning (ERP) system is a business management software, which is used to integrate and manage business functions within an organization. This article highlights the growth of ERP industry in India with significant market share coming from Small and Medium Enterprises (SMEs). It explains the ERP deployment issues in SMEs, the growth drivers of ERP and the cost benefits of implementing ERP.

Enterprise Resource Planning (ERP) consists of Human Resource (HR), finance, material management, sales, production planning and control. Many vendors in the market are providing such softwares. For instance, SAP-AG in Germany is the market leader with a market share of around 35%. Other vendors include Oracle, (including People soft and JD Edwards) and a few local players.

ERP is moving beyond the boundaries of the enterprise to form Extended ERP (EERP). The concept of ERP has been popular since the last decade; as a result, 70 to 80% of the large firms are already on the ERP system. Now, many of the multinational firms are restricting their business to partners who have the same ERP. For example, a firm in Small and Medium Enterprises (SMEs) sector, with an annual turnover of Rs. 120 mn and was planning to implement an ERP system, where they had to spend Rs. 12.5 mn, i.e., more than 10% of the annual turnover. The reason being one of the partners had the ERP package and was asking the other to implement the same.

SMEs: Future Growth Drivers of ERP

Now, with the bigger firms in their net, the future growth of ERP vendors will depend on the SMEs. In any country, SMEs are the largest contributors to the economy. This year, if we see in India, the SMEs have made a huge contribution to the IT industry. The Business Process Outsourcing (BPO) industry is a classic example of the success of SMEs. It is now that the bigger firms are thinking of moving into this industry since the
capabilities of SMEs are limited. When we say capabilities, we mean capabilities in terms of financial resources, skilled labor with knowledge of processes. The vendors understand these and are trying to come out with new strategies such as the ownership of the system to be shared by a group, providing web-based applications, providing scalable models, etc. These will help to bring down the total cost of ownership. In addition, the implementation will take place in steps. So, it would mean deployment of resources in phases and this will give a chance to correct any problem detected during the initial stages.

**ERP Deployment: Major Issues**

The present process of implementation involves the vendor, a consultant and the firm itself. The consultants will help you to map the processes to the actual application. If the process does not exist in the system then the process is re-engineered. The consultants claim to be having the knowledge of the best practices. Nevertheless, the success of a process cannot just be industry-specific but will depend on the kind of environment and culture that the company operates in. For a successful ERP implementation, it is important that the implementation should not be either vendor-driven or consultant-driven; there should be an in-house understanding of all the processes and issues. In addition, many firms believe that the investment is done to fix some problems. There is a belief that IT can fix some of the issues, but one should understand that this is a strategic investment. The ERP systems have few drawbacks, such as:

- Lack of integration with non-ERP systems.
- System inputs lack logic and are complex at times.
- After the project is over the vendor is no more associated with the project and there is very less or limited help available in case the client needs any.
- The reporting systems are not adequate. It is very difficult to extract data from the sources and there is a requirement of additional tools in the form of Business Intelligence Software.

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The Need to Quantify ERP Benefits

The cost of ERP is 3 to 7 times more than that of purchasing the software license, which is already very high. License cost of a System Analysis and Program development (SAP) R/3 is between $1-5 mn. The total cost required to implement ERP can be as high as $14.5 mn. Due to this, there is a lot of customer dissatisfaction. There is a need to clearly quantify and work out a Return on Investment (RoI) in the beginning of the installation itself. Many of the companies have reported dissatisfaction about the performance of the ERP system after its implementation. To avoid this, it is necessary to identify and quantify the benefits of the ERP implementation right in the beginning. This can be carried out by setting the required objectives and goals. It is equally essential to ask questions related to those objectives and goals. Table 1 lists out these questions.

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<tr>
<th>Objective</th>
<th>Questions to Be Asked</th>
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<td>Improve customer satisfaction.</td>
<td>How, how much and when?</td>
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<tr>
<td>Decrease inventory.</td>
<td>How, how much and when?</td>
</tr>
<tr>
<td>Shorten order-to-delivery cycle time.</td>
<td>How, how much and when?</td>
</tr>
<tr>
<td>Reduce material cost through improved vendor management.</td>
<td>How, how much and when?</td>
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ERP Growth Drivers

ERP was implemented, especially in the 1990s, due to the reasons relevant at that point of time, for example, the Y2K factor. Most of the companies showed urgency to replace their legacy or outdated systems in order to keep their systems working. Such companies did not think about understanding the benefits to be drawn from the investments, or did not try to understand the functionalities of the systems. The companies, which belonged to the second group, were those which saw a sudden rise in the revenues and had problems in managing them; they implemented ERP as a measure to manage demand and supply.

Major Issues in Post-ERP Investment

Subsequently, there were many changes that took place in the IT environment, government regulations and market conditions. For instance, Value Added Tax (VAT) was introduced in India and there was a gradual process of phasing out the Central Sales Tax (CST). So, now, there is a need to extend the functionalities of the ERP. The ERP vendors have come out with upgraded versions that require investments. The benefits on earlier investments are yet to be realized and there is a need for fresh investments. Many companies, which had not planned for such upgradations, lack necessary funds and are unable to upgrade themselves. In addition, the business environment is such that there is a need to invest in other areas such as better training for employees, outsourcing process and offshore partner development. Then the budget available for the ERP investment becomes very limited. However, the new ERP versions may be more efficient, but now what happens to the earlier implementation? There are many
failed implementations and the only viable solution may be to go for new implementations. Moreover, because of the earlier experiences, it is very important to evaluate RoI.

**ERP Cost Benefit Analysis**

To zero in on a particular strategy, it is very important to conduct a pre-implementation RoI analysis. Many people are of the view that RoI on ERP is very difficult to calculate. RoI calculations may not be science, but in the end, we need to know the benefits accrued that outweighs the cost involved. The benefits might be tangible and intangible. A rough estimation shows that the percentage of tangible and non-tangible benefits could be 50:50%. To measure the intangible part there are measures available, but there should not be speculative measures to measure the same.

Companies that actually measure RoI report a significant performance improvement. Majority of the customers believe that RoI is difficult to measure. Now what is very hard to measure? The intangible part of returns and cost seems to be too hard to measure. On the investment side, the cost of the software, maintenance, upgradations, customizations can be measured. The intangibles on the cost side could be the actual cost of the work force that can be taken as weighted cost of labor needed to install and customize the system.

Nucleus, a leading research company, found that the companies interviewed had achieved a number of benefits from their SAP solutions. Nevertheless, the issue has been a positive RoI that would mean the benefits are more than the costs. There are many areas where the cost is sunk in. To make cost benefit analysis of an ERP system, there is a need to study the areas (of costs and benefits). The following are the major costs of ERP systems.

**Implementation Cost**

This would include items such as software licenses and hardwares such as servers, network upgrades, support and maintenance contracts, training personnel, ongoing support and administration costs, customization and development costs.

**Personnel Cost**

The cost attached to personnel is almost as high as the license costs. There is a lot of internal human resource attached to ERP. As there is a shortage of trained labor for such specialized application, firm employees, who gain experience in such an implementation, are in great demand. Consequently, there is an increased chance of employee turn over. Considering the fact, the company has to assign employees to represent different functional group and, these are the people who understand the processes deeply. On the other hand, people handling some or the other functions are now dedicated completely for ERP implementation; it puts pressure on the remaining employees also. This is
particularly important if we understand that typical ERP implementations range from one to two years. The implementation team can be anywhere ranging from 50 to 150 people, depending on the size of the firm, number of locations and the number of functions.

The other aspect is that a large amount of resources is spent on employee training and this, in turn, may call for change management and Business Process Reengineering (BPR). The consultant fees paid for them are huge. If the BPR does not work, then resources are to be allocated for customization of the application itself.

To avoid such costs, it is very important to have a clear understanding of the functionalities, a quick move to exploit the complete functionalities and to add as many users as possible. This will bring down per user cost and the benefits can be achieved fast. Costs, such as user training, change management, etc., can be measured by using surrogate measures. The other costs could be budget overruns, functionality shortcomings, etc.

Savings can be categorized under four different headings. They are IT staffing, productivity, operational efficiencies and revenue improvements. The overall benefit side includes operating efficiencies that help the company improve productivity, redeployment of manpower, better capital utilization, reduction in inventory levels, improved order to delivery cycle time, better control and increased certainty in decision-making. Intangible benefits would mean greater reliability of the firm; these benefits would be difficult to quantify but surrogate measures can be used. Some of the surrogate measures could mean process time savings; talk with different users and find out what amount of time is saved now, because not all time saved will be used productively. There will be a reduction in people required to monitor systems, operation related savings such as time saved on e-mails and phones, saving in travel costs for meetings.

**ERP Deployment Plan: Key Steps for Positive RoI**

To ensure positive returns on RoI, the following factors should be taken care of during the initial stages of the ERP deployment:

- Companies have to document the clear picture of the current and future vision of the organization.
- Have a clear understanding of the RoI of the ERP system, because as a project it should have justifications and should be comparable to other projects. It should be a voluntary exercise and a not a mandatory investment in any case.
- It is very important to involve the users from the very beginning and avoid excessive customization. There is a debate going on these days whether to have an ERP or to implement best of the breed kind of implementations. Therefore, we have to think
about heterogeneous kind of applications. The advantages cited in favor of such application are that the version upgradations and release will be incremental, the only disadvantage would be integration of different applications, but with the kind of technologies available, there can be third party solution to this aspect. One such example of a best of breed software is T.E.A.M for textile industries.

- Select a platform that can cover the entire enterprise, takes not a longer time say, six months, and deliver paybacks after six months of deployment.

- Focus on a small set of specific and critical business process and Key Performance Indicators (KPIs).

**Limitations of Calculating RoI for ERP**

All capital intensive projects require capital budgeting decision to justify the investment itself. There are many traditional capital budgeting tools available to make acceptance/non-acceptance decisions for new investment in projects. The tangible costs and benefits can be analyzed using five key financial calculations: RoI, NPV (Net Present Value), IRR (Internal Rate of Return), Payback, Accounting Rate of Return (ARR), etc.

For ERP investment evaluation, the most widely used concept is RoI. In general, ERP implementation can expect an adjusted RoI risk of 100-400%. The concept of RoI is easy to calculate, simple to communicate. It is widely used by ERP vendors (also considered as industry standard) aligned with firm’s objective of valuing annual gain over initial investment. Although RoI is straightforward and simple, it lacks the concept of time, value of money and also neglects risk factors in project outcome.

Basic RoI calculation for ERP favors short-term savings and overlooks long-term costs such as training cost, employee attrition cost, customization cost, conversion and development cost, maintenance and support cost, license cost and cost of upgrades. In short, cost should reflect Total Cost of Ownership (TCO) in an RoI calculation. It is difficult to identify the whole savings in one-year after installation. As ERP project gives incremental benefits over a period of time, it’s very difficult to identify gain in the beginning. Another approach is to calculate cumulative RoI over an economic life of ERP. Main limitations for computing cumulative benefits are given below:

<table>
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<th>Basic Formulas</th>
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<td>ROI = (Benefit – Cost)/Cost</td>
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<tr>
<td>ROI = Net benefit/Cost.</td>
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<tr>
<td>Risk adjusted ROI = Net Present Value (NPV) of net benefits/NPV costs.</td>
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<td>NPV = Net cash flow of the project translated into today’s value using an adjusted discount rate.</td>
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<tr>
<td>IRR = The effective project return, calculated as the discount rate for this project which brings the net present value equation to zero.</td>
</tr>
<tr>
<td>Pay back period = The period of time taken for the project to reach a positive cash flows.</td>
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• Lack of groundwork before implementation would deter the focus on the key beneficial areas. Hence, increased savings and reduced cost are not properly linked with ERP.

• In the absence of key beneficial areas, it’s very difficult to match key performance indicators with prior data, resulting in performance gap between the actual and expected results.

• For projected and actual savings, it is hard to link benefits with cause, i.e., inability in establishing a causal relationship.

• Strategic and intangible benefits are difficult to categorize and calculate.

**ERP Evaluation: An Alternate Approach**

ERP offers many opportunities for RoI calculations. The problem is that only a few companies actually do an RoI study for purchase, upgradation or customization. In addition, there is a limitation to the traditional tools being used for the RoI calculations. The methods used to calculate RoI for information systems/software systems do not suffice. Therefore, there is a need to find out different tools and techniques.

There were some methods that were proposed by different people. One of the methods being Assessing the value provided by ERP applications through organizational activities by Arik Ragowsky, Toni M Somers and Denis A Adams through their paper in Communication of the Association for Information Systems. They selected companies that have all the five Porter’s value chain elements. They have devised a research design where in they have asked for the impact of information systems such as inventory management, project management and customer orders budgeting on different aspects such as:

• Inventory holding costs.
• Retention of customers.
• Reduction in cost of after sales services.

The methodology used has been conducting personal interviews with senior managers of each organization. The study is more focused on the value provided in terms of subject perception and the benefits that the organization derived out of the use of specific individual IT applications related to ERP. This is based on perceptions and assessing RoI based on perceptive benefit model would be very difficult. There is always a benefit in moving for some kind of IT system rather than having no system.

Other forms of study are comparative studies. The study includes those firms which adopt ERP and those which do not, using cross-section and time series. The longitudinal
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dimension is used to study the relative performance of firms before, during and after implementation to examine how the effects of ERP implementation appear over time. These studies will always indicate a positive outcome, but initial questions like how much, when, are not answered. If we are to conduct a pre-deployment RoI analysis (to be more realistic probability of achieving those returns and payback period can also be taken into account) to evaluate expected returns and costs then comparison studies will not suffice.

A suitable strategy would be to pick up few companies from different industry verticals and conduct interviews with actual users across different functions. The drawback with the questioner method is that such studies will have very low feedback and a single form would be filled by one person, so it is very unlikely that he has in depth knowledge of the impact of ERP on all functions. We feel that the balance scorecard approach would be the best approach. The benefits and costs can be monetized, using surrogate measures, wherever necessary.

Conclusion

The ERP is not a total solution to operational and strategic concerns. It is meant for optimal utilization of organizational resources from man to machine, finance and materials. It is not the ultimate solution to all the problems. It is meant to accurately track the processes for disciplined usage of the resources. It cannot be a solution to the customer service problems, quality problems. For such issues, ERP provides a basis for implementation of specific solutions such as supply chain management, product life cycle management and customer relationship management. That is why it is very important for SMEs to understand the RoI of ERP, because that will give them the power to take decisions on ERP, either single vendor or best of the breed kind of applications and to what extent. The best method for calculating an RoI could be the balance scorecard system. The reason for implementation for ERP is that a firm would like to consider the four perspectives:

- Financial Perspective.
- Customer Perspective.
- Internal Perspective.
- Innovation and Learning Perspective.

This can be translated to ERP effectiveness parameters that can be measured through KPI's always answering the basic question When? How? How much?

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