

Beginner's Guide to ERP



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Introduction

This beginner's guide is for companies considering enterprise resource planning (ERP). It describes what to look for, what benefits to expect, pitfalls to avoid, and other issues to consider, including a chart listing 15 leading vendors.

Why ERP?

Enterprise resource planning is an impressive concept. Just hearing the term conjures visions of a fully automated corporation, every process operating at maximum efficiency, all resource use fully planned, controlled and understood. In fact, the only thing more impressive than the idea of ERP is the amount of confusing and conflicting information you encounter when you try to turn the concept into reality.

On the positive side lie all the great things ERP's promoters claim it can do. These include streamlining and automating your business, and generally making it a model of efficiency and cost effectiveness. On the negative side lie the scare stories of failed ERP implementations. These range from total disasters

resulting in losses of millions of dollars and years of work to mere disappointing installations that provide little value for the money.

Any project with such dramatic upside or downside can make or break a career. That alone makes it hard to decide what to think, much less do, about ERP. At the same time, ERP is almost impossible to ignore.

The potential benefits are so large you have to at least consider it. And even if you ultimately decide against using it, you need good reasons for your rejection.

Moreover, deciding whether or not to implement ERP is not the beginning of the learning process. Rather, the decision comes sometime after you have begun analyzing what ERP can and can't do for you. Just getting to the go/no go point requires a lot of homework. If you decide it's a go, the next decision is how you're going to do it. And the key factor in both decisions — the whether and the how — will be why you want to do it.

Determining the best course requires sorting through a number of complex issues. Some have to do with your

business' processes and priorities. Others involve technical factors, especially the software capabilities of ERP vendors and software. Given such complexities, no simple checklist will resolve all the issues. But clarifying the following issues will point you in the right direction.

What You Want ERP to Do for You

The fundamental promise of ERP is that it makes your employees more productive and your business more efficient. It does so through two fundamental mechanisms. First, it automates various business processes, making them more individually efficient. Second, it integrates these automated processes so they can work together. The integration is crucial: it lets different departments, systems and functions within a company communicate and share information better. Combined, all this automation and integration bring a variety of specific benefits. Most commonly these have to do with cutting costs, increasing revenues, saving time and other such improvements. Some are easier to quantify than others, but even those that are hard to quantify can be valuable. The following list illustrates

the broad range of potential benefits you might look for in implementing ERP.

Better control of inventory such as parts, materials, supplies and equipment: ERP software lets you keep better track of which items you have in your warehouses and other locations. That means you no longer need keep excess parts, products or supplies on hand to avoid unexpected shortages. This is particularly attractive in manufacturing, service industries and retail, where lean operation is crucial. ERP can track the expiration dates on perishable items, for example. It helps you keep on top of factors such as warranties, depreciation and maintenance schedules for vehicles and equipment.

Reduced time spent on routine administrative tasks: Integrated apps that exchange data reduce the need for employees to manually enter, re-enter or forward information. The reduction cuts employee keyboard time, a big money-saver in itself. But it also reduces the opportunities for errors. This saves money by reducing financial, refund, reshipping and other costs and penalties. It also produces yet another

way of saving time: Employees spend fewer hours straightening out mistakes. The overall result is a general increase in productivity.

Better control of spending: Automating purchasing through integrated ERP software can save both money and time. It saves money by letting managers enforce company-wide policies to take advantage of discounts and other savings opportunities. It saves time by streamlining activities associated with selecting, ordering, approving and paying for purchases.

Shortened order-to-delivery time: Integrated automation applications reduce delays in making, selling and delivering products. This lets your company get paid sooner, and again cuts the cash value of parts or products in transit. Decreased delivery times can also contribute to another great benefit of ERP implementation: improved relations with customers. And while the bottom-line value of this improvement may be difficult to measure, there is little doubt that it is one of the more important benefits of the technology.

More efficient customer support: The integration of systems for automating business processes enhances customer support in several ways. It lets agents more easily track the location of products being repaired or replaced. It provides quicker, more accurate information about items needed for such repair or replacement, letting staff know whether the items are in stock and where they are. The measurable effect, in the form of reduced employee time spent handling customer support issues, can be significant. But here too, the potential payoff in customer satisfaction is both substantial and important.

Better visibility and control: With multiple apps providing data to core financial software, managers have a lot more information at their disposal. They can see where process bottlenecks are. They can determine which processes and operations are most efficient. They can get a better sense of how various technical, marketing or strategic initiatives are paying off. These insights help them improve productivity and create better long-range plans.

Increased accountability: With the increased visibility ERP provides, executives can not only see where improvements are necessary, they can also pin down just who needs to be responsible for the improvements. They can see which departments aren't handling spending correctly or responding to customers rapidly. They can see which pipelines are bloated with inventory, parts or supplies. This gives them the comprehensive information they need to assign responsibility based on evidence rather than instinct.

Enhanced competitive advantage: All of these results of ERP implementation enhance competitiveness in multiple ways. The evidence of this increased competitiveness may come indirectly. There may be a big customer win due to moving more quickly and/or bidding lower than a competitor. There may be a general trend toward increased market share. The proof may never be conclusive. But there is a substantial likelihood that ERP will make you more competitive. Your competitors are almost certainly implementing or at least considering ERP. For that reason alone, you should too.

What You Shouldn't Expect ERP to Do for You

ERP benefits companies by automating individual business processes and then integrating them to improve efficiency and control. But implementing ERP involves more than simply installing and integrating business process automation software. It also requires reorganizing your business structure and processes to make them more rational. Unfortunately, expectations of how much ERP software itself can contribute to the rationalization process often rise too high.

The first step in this rationalization is analyzing your business processes to clarify how they work. The second step is eliminating unnecessary steps and duplication, and otherwise making your processes as efficient as possible. Such rationalization is beneficial for its own sake. But it is also necessary if you want to realize the full benefits of ERP. If your processes are total chaos, implementing ERP will be difficult or impossible. At best, it will bring little or no benefit.

The excessive expectations result from the fact that ERP software, simply because it has a certain internal logic, provides some structure around which to reorganize business processes. So it's natural to assume you can rely on it to do the whole thing. There are two problems with acting on that assumption. First, it forces your processes to fit the requirements of the software, not vice versa. Second, the software is typically flexible enough to fit a broad variety of situations. As such, it usually offers too little structure to serve as a solid basis for reorganization.

The only approach that works is to think through your business processes before you invest in ERP. The software may provide greater or lesser guidance here, at least offering useful directions and hints. But it won't make your business a model of rationality. In short, it won't make your business make sense if it doesn't already. In fact, it may make things worse if you don't do it right.

Another reality is that ERP software may not be much help in automating your most important processes. That

is, it cannot help your processes that are so unique they give you your competitive advantage. Being unique, no commercial software can automate them. That would require custom software, written by you or an ERP vendor. If you already have custom applications, integrating them with other ERP applications may require significant new coding. In either case, it may or may not be worth the effort.

Similarly, automating what's easy to automate won't give you much competitive advantage. If commercial software is available that fits the process, the process is hardly unique. And if you can easily automate it, so can your competitors. That doesn't mean you shouldn't do so. In fact, it probably means you should. The reason: Everyone else probably has done so, or soon will.

How to Crunch the Numbers

Applying traditional financial analysis tools to determine the bottom-line value of ERP can be tricky. On the cost side, a lot of the spending is not immediately visible. On the return side, the payoff may be hard to quantify. Nonetheless, it's necessary to make a serious effort.

Without it, convincing anyone to invest in such a huge undertaking will be near impossible. So will determining later whether the investment of time, effort and money was worthwhile.

When calculating total cost of ownership (TCO), the price of ERP software is not the starting point. Just doing the research necessary to select the software requires a considerable amount of time, whether from your employees or outside experts. Either one can be expensive.

Implementing the software takes more time and money. Training employees will also require substantial time and effort. Ultimately, your outlay for ERP software itself will probably be a fairly small portion of the overall cost.

Costs continue to accrue even after implementation. Productivity may actually drop for a while after the cutover. In addition, to realize the full benefits of ERP, you have to keep training — even after employees have begun using the new system. The maximum productivity boost won't occur until they become highly skilled in

its use. Implementation itself will also likely take longer — and thus require more employee and/or consultant time — than expected, again raising cost. And even the most clear-cut financial benefits come at a price, such as severance expenses resulting from reduced head counts.

When figuring return on investment (ROI), you have to factor in benefits ranging from the directly measurable to the highly abstract. A lot of vendors and information sources offer ROI calculators, spreadsheets and guides. But most note the difficulty of quantifying many of the benefits of ERP. Also tricky — yet crucial — is deciding how long your payoff period will be. It could range from a year or two to 10 years or so, which will drastically affect the numbers you come up with.

However, none of this means that you should ignore benefits that are hard to quantify. But you do need to look at all the payoffs of ERP implementation from a broad perspective, taking both the measurable and the hard-to-measure into account.

One of the clearest and easiest-to-measure benefits is inventory reduction. More accurate tracking and use of parts, supplies and other items means you need less of them — there's no need to keep an excess on hand to avoid getting blindsided by shortages. The result is a direct reduction in the value of items you have in the pipeline, and a corresponding reduction in spending.

Many other benefits have to do with boosting employee productivity in general. These include the various ways to reduce time spent on such activities as:

- Entering, re-entering or forwarding data
- Finding out what items are in stock
- Communicating with other employees to get information from non-integrated systems
- Getting approvals for purchasing
- Waiting to do tasks, due to inefficient scheduling or insufficient information
- Waiting for deliveries
- Communicating with customers and suppliers about routine matters

The financial benefits of these reductions may prove fairly measurable. Employees may be spending the same number of hours on the job, though there may be some reduction in overtime. But they may be getting more done in the same amount of time. This will allow you to reduce head count or new hires. The reduction in call center agent numbers may be especially dramatic.

Lots of measurable benefits also accrue from simply avoiding bad results. There may be:

- Less time spent correcting errors
- Fewer write-offs of perishable or other time-sensitive stock
- Fewer costly rush orders
- Lower charges for late payments or shipments
- Less employee time spent dealing with foul-ups in general

Other positive benefits vary in how hard they are to quantify. Improved customer satisfaction is one previously noted example. It's fairly easy to measure increases in sales conversion or customer retention

rates, but calculating the word-of-mouth impact of happy customers on bringing in new sales, for example, is trickier. Similarly, better management visibility and control, as well as increased competitiveness as a whole, can be hard to quantify.

But again, even though quantifying some of these benefits to determine ROI may be hard, you should at least make the effort. Begin by pinning down what you want ERP to do for you, including benefits that are both easy and hard to measure. Then, because even hard-to-measure benefits have some value, try to assign some value to as many of them as possible.

What Kind of ERP Software You Will Need

The specific ERP software you select may be key in determining whether you get the results you want. ERP software comes in the form of applications or modules, ranging from the generic to the highly specific. The most generic ERP apps cover fundamental or core activities common to every company. Accounting and human resources (HR) are good examples. The most

highly specific modules, by contrast, may be applicable to only the narrow niche activities of a single industry. In between are applications that may be common to multiple industries. These often involve functions inherent in a certain type of business activity such as distribution or manufacturing.

There are also middle-range applications covering somewhat specialized services. These may be available as modules offered by core ERP providers, or they may be offered as standalone products by non-core vendors. In any case, ERP apps can meet virtually every common business need. You will likely find that at least some of the following apps will help you gain the kind of benefits you have decided you want from ERP implementation:

Procurement management software: This automates ongoing routine purchasing activities, plays a key role in spending control. It may let employees connect directly with suppliers' online catalogs and buy from those suppliers according to preset rules. It can automate the approval process and help manage purchases to save money via discounts. Integration with

invoice management software lets suppliers convert purchase orders into invoices tailored to the needs of the ERP system, which helps both suppliers and the accounts payable staff. Integration with supply chain management apps automates shipping.

Invoice management software: This tames the chaotic process of receiving and paying invoices, reducing the time spent on routine administrative tasks and the errors that occur during those tasks. It accepts invoices in a variety of forms, both physical and electronic, using various methods to extract the relevant information. It may provide a portal where suppliers can check on payment status, freeing accounts payable staff from having to field queries from them. Integration with core ERP financial modules provides data that lets management understand spending patterns. And integration with the procurement management software described above makes both ordering and paying for ordered goods go more smoothly.

Supply chain management applications: These automate the transportation and storage of purchased

items. These may be parts and components used for manufacturing, wholesale products for re-sale, or consumable supplies. Integration of related applications or modules such as transportation management, fleet management and warehouse management can be particularly effective in boosting efficiency. Such integration contributes to improvements in customer support, control of inventory and order-to-delivery time.

Asset management software: This monitors and manages both the physical and financial aspects of major purchases. It records when and where the assets were purchased, as well as their original cost and ongoing value. Integration with invoice management software automates the provision of cost, purchase date and vendor information.

Transportation management and warehouse management applications: These keep track of the assets' whereabouts, including their shipping details and physical locations. The software also monitors financial-related information as depreciation, maintenance, warranties and the like. Overall, it contributes to improvements in inventory control,

spending control, time spent on routine administrative tasks and overall visibility and control of the business.

Expense management applications: These keep track of and manage spending on items such as travel. Like procurement management, their integration with online travel services make it possible to automate purchases of flights and other travel items, as well as the process of obtaining approval from supervisors. Similar to (or in conjunction with) invoice management apps, they can accept invoices in a variety of forms. Integration with core financial applications lets them provide data that management can use to analyze spending patterns and enforce spending policies. These apps play a key role in spending control and improving overall visibility and control of the businesses for management.

The above ERP applications are useful to many types of businesses and organizations. But there are also others that target specific businesses and industries, or even specialized activities within those industries. Though there are a large number of such applications, each one

is suitable for a relatively small number of organizations or activities — the very definition of niche products.

In any case, ERP is broadly useful across industries. Though the technology started as a way for manufacturers to streamline their operations, now there are solutions designed for almost every type of industry or organization imaginable. These include:

- Apparel
- Chemical
- Construction
- Distribution
- Energy
- Financial services
- Government
- Military
- Non-profit
- Petroleum
- Pharmaceutical
- Professional services
- Restaurants
- Retail

- Sports and entertainment
- Transportation
- Utilities

In general, the more specialized your needs, the more likely it is you'll be looking at non-mainstream vendors' products. Niche vendors typically do not offer core financial applications themselves. But their products will certainly be compatible with mainstream core modules.

If you have extremely specialized needs, your only choice may be custom software. You may develop it yourself, or have a vendor do it. The advantage is that no one else will have the same software, since it will be designed for your specific needs. The disadvantage is that developing it will be time consuming and expensive. It may also require modification when the commercial ERP apps with which it works are upgraded.

How and When to Choose Your ERP Solution

There are two contrasting approaches to choosing an ERP solution. At one end of the scale, you choose your solution first, and use it as the foundation around which to reorganize, rationalize and automate your business. At the other, you rationalize your business to maximize its efficiency, and then choose your ERP solution to fit your new process. Each approach has attractions. But neither works well if taken to the extreme.

On its own, ERP software is too flexible to provide a solid foundation for reorganizing and rationalizing a business. Even if it could, what structure it provides is designed to make business processes meet the needs of the software. And the needs of the software don't necessarily match the needs of your company. On the other hand, if you wholly reorganize without thought of the software you'll be using, you may not be able to later find the software you need to automate your newly reorganized processes. That might defeat the purpose of the entire effort.

Obviously the only practical approach is a combination of the two. You need to put off your choice of software until you know how you're going to reorganize your processes. But you also want to be aware of, and make use of, any help ERP software can give you in guiding and informing your reorganization. This means you need some substantial knowledge of ERP solutions as early in the reorganization process as possible. You may be able to acquire this knowledge on your own, or you may need outside help.

How to Deal with More Advanced Implementation Issues

While this guide provides basic information to get you started in ERP implementation, you will have to deal with more complex issues as you proceed. Here are some of the most important:

Who is going to help you: By now, it should be clear that you may not want to tackle ERP implementation on your own. You might get help from a number of potential

implementation partners. Each will come with its own set of strengths and weaknesses. A short list includes:

- ERP vendors themselves, who would like to be your main partner for obvious reasons
- Consultants, who should in theory offer the most objective advice about choosing and implementing an ERP system
- Systems integrators, who knit disparate IT equipment and software products into functioning systems and can actually install and get your ERP running
- Value-added resellers (VARs), who will try to find ways to make the ERP products they sell you work better than if you bought and installed them on your own

Particularly important in choosing an implementation partner is clarifying any motives it may have to favor one type of solution over another.

All at once or bit by bit: You can implement your new system with a “big bang” or incrementally. Each

approach has major implications in terms of time, difficulty, cost, complication and potential for disaster. Each also has its own proponents. As in other areas, there's a good chance you'll end up taking a hybrid approach, doing as much as possible at once, and as much as necessary in phases.

Regulatory issues: Regulations will vary widely according to your location, industry and other factors. Your ERP system might have to deal with:

- Financial compliance
- Security compliance
- Safety of products or services
- Environmental issues
- Export/import rules
- Restricted/reported products
- Country- or location-specific issues

Choosing the wrong ERP system could make dealing with compliance issues a nightmare. You should find out what your region's requirements are — and how an ERP solution can handle them — as early as possible.

Data cleansing: Your existing databases and systems have a lot of data in them. These data are stored in a variety of formats and structures. To implement an ERP system, the data needs to be in a format the new system can use. If it isn't, which is likely, you need to “cleanse” — that is, convert or standardize — the data to fit the new system.

This may be a major task. Software can automate some of the process, but usually not all of it. Just figuring out what needs to be done is a task in itself. In any case, plan on devoting considerable resources to the effort.

Training: Training users on the new system is one of the most crucial factors in the success or failure of an ERP implementation. You have to do it before cutover, just to get the new system up and running. You also have to keep doing it after cutover in order to realize the full benefits of the new systems. Who will do it — the vendor, your own staff or outside specialists — is a key decision. And even when you do it right, you have to

expect some lost productivity at the start, as users get used to doing things the new way.

How you will measure success: Determining afterward whether your ERP implementation has succeeded might be harder than expected. There is no single measurement or criterion to judge success or failure. Much will depend on how well you thought through and pinned down your goals at the beginning. But a significant portion of both goals and results will always be hard to quantify. Here are several ways to judge success:

- Visible results, such as getting up and running without shutting the company down, as well as implementing the system on schedule and budget
- Measurable results, which will be easier or harder to determine depending in large part on how thoroughly you did your TCO and ROI calculations at the start
- Tangible benefits, visible if not necessarily quantifiable improvements in how your company operates, such as less employee frustration over

time spent clarifying needs or straightening out problems, better communication due to easier access to relevant data, etc.

- Intangible benefits, including some of the less-quantifiable improvements like better customer relations and a better corporate public image.
- Internal indicators, such as the fact that the new system has become a fundamental and relied-upon part of the business, rather than a marginalized or rejected technical initiative.
- Strategic impact, such as a marked improvement in management's ability to understand and control the business.

Major ERP Vendors and Products

There are a large number of ERP vendors to choose from. There is also a variety of ways to categorize them.

The most common method is based on Tiers:

- Tier I vendors target the largest companies, with solutions that have the highest complexity and cost of ownership.

- Tier II vendors target mid-sized companies with less complex and expensive solutions that are easier to support.
- Tier III vendors target the smallest companies with solutions that are cheaper and less complex, and may be suitable for single-site installations.

Cloud providers offer ERP solutions running on their own servers, not on yours. They offer the usual advantages of cloud services, such as lower upfront cost, greater flexibility, and a lower burden on the customer to keep the software up-to-date technically.

Vendors sometimes described as vertical, ancillary or third-party providers offer specialized applications or modules that deliver functionality that mainstream vendors cannot. These providers often don't offer core financial modules, but their applications are compatible with the core software of the major vendors.

This combination opens up various mix-and-match options. You may, for example, start with generic or

general-purpose core software from a major vendor, such as financial and HR packages. These will probably work for you because such functions are largely the same across most companies. You may then add specialized modules from other vendors that are compatible with the mainstream core modules. If necessary, you might then fill in the gaps with cloud services that provide specialized functions and let you add and subtract users quickly. And you might develop your own software to fill some needs.

The accompanying chart shows a sample of 15 vendors of all types. It is not an authoritative list or exhaustive database, which are available from a number of sources. Rather, it is meant to give you an idea of what is out there, and to provide a starting point for your search.

| Company | Category | Product Name | Website |
|-----------------------|----------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clearview | Tier III; Cloud | InFocus | http://www.clearviewsoftware.net |
| Epicor | Tier I; Cloud | Epicor | http://www.epicor.com/products/erp-software.aspx |
| Exact | Tier I/II | MAX ERP | http://max.exactamerica.com |
| Global Shop Solutions | Tier II | Global Shop Solutions | http://www.globalshopsolutions.com |
| IFS | Tier I | IFS Applications | http://www.ifsworld.com |
| Infor | Tier I; Cloud | Infor M3; Infor CloudSuite Industrial | http://www.infor.com/solutions/erp |
| Microsoft Dynamics | Tier I/II/III; Cloud | Microsoft Dynamics ERP | https://www.microsoft.com/en-us/dynamics/erp.aspx |
| Netsuite | Cloud | Netsuite ERP | http://www.netsuite.com/portal/products/netsuite/erp.shtml |
| Oracle | Tier II; Cloud | Oracle ERP | https://www.oracle.com/applications/enterprise-resource-planning/index.html |
| Plex | Cloud | Plex Manufacturing Cloud | http://www.plex.com |
| Sage | Tier I/II/III | Sage 100; Sage 300; Sage 500 ERP | http://www.sage.com/us/erp |
| SAP | Tier I | SAP ERP | http://www.sap.com/pc/bp/erp.html |
| ShopTech Software | Tier II/III; Cloud | E2 Shop System | http://www.shoptech.com/e2-shop-system |
| Syspro | Tier II/III; Cloud | Syspro ERP | https://www.syspro.com |
| xTuple | Tier I/II/III | xTuple | http://www.xtuple.com |