Analyst Insight

Aberdeen Group
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# ERP: Is High ROI with Low TCO Possible?

Total Cost of Ownership (TCO) remains a significant factor that influences Enterprise Resource Planning (ERP) strategies and decisions. While the focus for the past decade or more from both ERP solution providers as well their customers has been on reducing the Total Cost of Ownership (TCO) of ERP, as companies brace themselves in this down economy, ERP projects (upgrades, extensions, new implementations) run the risk of being delayed just when they are needed the most. Focusing exclusively on TCO is no longer enough. The focal point must now expand to include the Return on Investment (ROI) of ERP projects in order to justify continued investment and maximize business benefits. What can the average company expect to pay for ERP and the resultant business benefits that can be derived from a successful implementation?

**Analyst Insight**

Aberdeen's Insights provide the analyst perspective of the research as drawn from an aggregated view of the research surveys, interviews, and data analysis.

## "Total" Costs

While "total" costs can and should include a wide range of factors, Aberdeen uses the term loosely because we include only the cost of software, services, and maintenance on an annual basis (Table 1).

**Table 1: Average Costs by Company Size[1]**

| Company Size | Average # of Users | Average Software Cost | Average Service Cost | Average Maint. Rate | Average 3-Year Maint. Cost | Average Total Cost[2] |
|---|---|---|---|---|---|---|
| Under $25 million | 34 | $121,348 | $121,545 | 15.4% | $57,171 | $316,122 |
| $25 to $50 million | 65 | $285,714 | $296,032 | 16.4% | $146,880 | $658,880 |
| $50 to $100 million | 104 | $450,481 | $410,081 | 17.1% | $210,271 | $1,140,590 |
| $100 to $250 million | 285 | $648,485 | $591,500 | 16.8% | $320,528 | $1,516,824 |
| $250 to $500 million | 339 | $1,322,321 | $1,301,613 | 18.1% | $685,602 | $2,985,463 |
| $500 million to $1 billion | 738 | $2,536,458 | $2,010,577 | 16.7% | $1,453,208 | $6,653,208 |
| Over $1billion | 4072 | $3,742,500 | $3,929,891 | 16.3 % | $1,673,344 | $9,144,581 |

1 Performing calculations at the aggregate level shown in this table will not yield accurate results. In order to use as much data as possible, all calculations were made for each individual response and subsequently averaged. In addition, where multiple elements were needed, calculations were only made where the respondent answered all required questions. For example, Total Cost may not equal the sum of Average Software Cost, Average Service Cost, and Average Three-Year Maintenance Cost because not all survey respondents answered all three survey questions. The Average Software Cost is based upon all respondents who answered the said survey question, as is the same for Average Service Cost and Average Three-Year Maintenance Cost. However, the Total Cost is based upon averaging individual responses where respondents answered all three survey questions.

2 Total Cost is the total of software cost, services cost and three years of maintenance cost, where maintenance cost is estimated by multiplying the maintenance rate by the software cost and then multiplying by three.

Source: Aberdeen Group, June 2010



Telephone: 617 854 5200
Fax: 617 723 7897

Past research has found these are the cost elements which are most often measured and considered when evaluating software or measuring the Return on Investment (ROI) of ERP implementations. In evaluating ERP solutions and measuring their ROI, business leaders need to keep in mind that the true total cost of ERP would also include hardware and infrastructure costs, as well as internal costs such as headcount fully or partially assigned to the initial implementation, as well as its continued care and support. We find that few companies fully understand and measure these internal costs and burdened costs can fluctuate dramatically depending on region, making comparisons difficult. Software, service and maintenance can be much more easily compared. Costs vary significantly as companies grow in size and the expected business benefits will vary from company to company.

One would naturally expect a correlation between the size of the ERP deployment and costs. As a company grows, the number of users goes up, along with the total cost of software and services. Unlike past years where we saw some exceptional dips, this proved to be true across the entire spectrum of company size this year with respect to software and service. In general we saw the cost of entry at the low end of the market go down, making it easier for small companies, particularly those with annual revenues less than $25 million, to take the initial plunge into ERP. We also saw a surge in options available for ERP that is delivered on demand or as Software as a Service (SaaS), which also makes this initial investment more palatable by allowing companies to account for the investment as an operating expense rather than a capital expense. Aberdeen's SaaS ERP series of reports dives deeply into those options and therefore the costs presented here are all based on licensing ERP in a traditional on-premise environment.

While we find most ERP vendors today quoting maintenance rates of 20% to 22%, survey respondents report paying rates generally between 16% and 18%. The higher rates will include both technical support as well as product innovations (upgrades and new releases) but some vendors will offer more a la carte options and when all services are not bought and paid for, this will drive average aggregate maintenance rates lower. In addition, keep in mind this is an approximation since maintenance fees may indeed escalate from one year to the next or customers may negotiate lower rates as implementations expand with more modules or additional users. Also bear in mind that our survey respondents report the average age of ERP implementation to be 6.9 years, so many of these rates were negotiated years ago.

To determine average maintenance costs Aberdeen applies these reported rates against the cost of the software. For comparison purposes, we include three years of maintenance in what we report as the "total" cost.

In comparing these same costs across similar size brackets in 2009, we saw a minor jump in total costs, but we also saw a corresponding increase in the size of the implementation. We added a level of granularity at the low end

**What's included in service and maintenance?**

Services typically include implementation and training and may also include the cost of tailoring and/or customizing the software. The cost of internal employees is not included. Think of these services as something for which you write a check.

While some ERP vendors will provide different levels of service included in maintenance fees, generally these will include technical support (by phone and/or online) and innovation delivered as upgrades, new releases, enhancements.

of the market this year. While we simply reported costs for companies with annual revenues less than $50 million in prior years, this year we split that into two categories: under $25 million and those with revenues between $25 and $50 million. However, we are able to combine these two brackets for comparison purposes and found the average total cost increased by 8%, but the average number of users increased by slightly more than 15% and the average number of modules implemented also increased by 5%. So while the price paid increased marginally, the size of the installation and the ERP usage increased more.

In 2008 we observed a slight dip in maintenance rates but saw that recover in 2009 and remain consistent in 2010.

## Costs Per User

Just as the total price of software, services, and maintenance go up as companies grow, costs per user should scale down. Not only should we observe volume discounts being applied, but bargaining power increases with company and deal size. However, over the past several years we have observed there is typically not a uniform reduction in cost per user as companies and implementations grow (Table 2).

**Table 2: Average Costs per User by Company Size[1]**

| Company Size | Average # of Users | Average # of ERP Modules Implemented | Average Software Cost per User | Average Services Cost per User | Average Total Cost[2] per user |
|---|---|---|---|---|---|
| Under $25 million | 34 | 10.2 | $6.072 | $6,342 | $15,795 |
| $25 to $50 million | 65 | 10.1 | $5,433 | $8,103 | $12,576 |
| $50 to $100 million | 104 | 10.4 | $5,628 | $5,768 | $14,954 |
| $100 to $250 million | 285 | 10.9 | $4,195 | $5,124 | $11,272 |
| $250 to $500 million | 339 | 10.2 | $5,018 | $5,596 | $13,816 |
| $500 million to $1 billion | 738 | 11.0 | $5,620 | $3,997 | $13,470 |
| Over $1billion | 4072 | 11.4 | $3,983 | $3,504 | $8,611 |

1-2 Refer to Footnotes 1 and 2 below Table 1
Source: Aberdeen Group, June 2010

As companies broach the $25 million threshold, in the aggregate we see the price of software per user reduced by $639 as the number of users almost doubles. The software cost per user then **increases** by $195 in the next bracket even though the number of users grew from 65 to 104. Also note that the implementations expanded in terms of the number of modules implemented. Yet as companies passed the $100 million mark, the number of users more than doubled (from 104 to 285) while the average price per user dropped by 25% even though the average number of modules implemented continued to grow to 10.9. These are the types of volume discounts and negotiating power we would expect to see.

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However, the cost of the software continued to increase through the next two brackets even as the average number of users continued to grow while the average number of modules first dipped and then recovered. This is counter-intuitive and caused us to further investigate by looking, not only at the number of users but also at the type of license. Generally speaking, ERP solution providers will price software by the number of users or "seats," but users can be defined (and priced) in a variety of ways. This year, Aberdeen added the question, "How are users/seats purchased?" and found the most popular option was concurrent users (see sidebar for definitions), which also introduces a level of variability in our cost per user calculations.

If a company has a named user license, there will be a one to one correspondence between number of users and licensed users. However, there is no such standard for a concurrent user license. A survey response may indicate the company has 100 individual ERP users, but with a concurrent user license, the company may have only paid for 50 or 75 of them to be able to log onto the ERP system concurrently. The number purchased can vary tremendously based on the geographical placement of users (users in Asia Pacific will generally not need to be logged in at the same time as those in North America) and budget (a company may decide to limit the number of users, potentially forcing individuals to wait until others log off in order to access ERP). As a result, ERP vendors that provide both types of licenses will generally charge more for concurrent licenses than for named licenses, sometimes with a two times multiplier (the cost of a concurrent user is twice the cost of a named user).

And finally, an enterprise license can add even more variability. In this case, a company will pay a fixed fee for an unlimited number of users. This fee may be negotiated based on the projected number of users but it also may result from the bargaining power of a very large, multi-national, multi-billion dollar company. While overall 19% of survey respondents indicated they had an enterprise license, the likelihood of this type of license increases with the size of the company. Twenty-nine percent (29%) of large companies surveyed (those with annual revenue over $1 billion) indicated they had an enterprise license.

Therefore in comparing prices between vendors, it is important to understand not only the price, but the type of user license. Look beyond the quoted price per user and do your own calculations to determine your total number of users and divide it by the total software price quoted by the vendor. In this manner, you will be able to use the costs presented in Table 2 as a valid comparison.

The costs per user that are mentioned above assume full (although secured) access to ERP. However, the introduction of casual or self-service users is becoming more pervasive. Casual users may have access to dashboards and inquiries only. Self-service functions such as employee expense reporting, purchase requisitions, project and employee time tracking, and paid time off requests are turning many more employees into ERP users, albeit possibly with limited access and capabilities. As a result be careful in price shopping

**How are users purchased?**

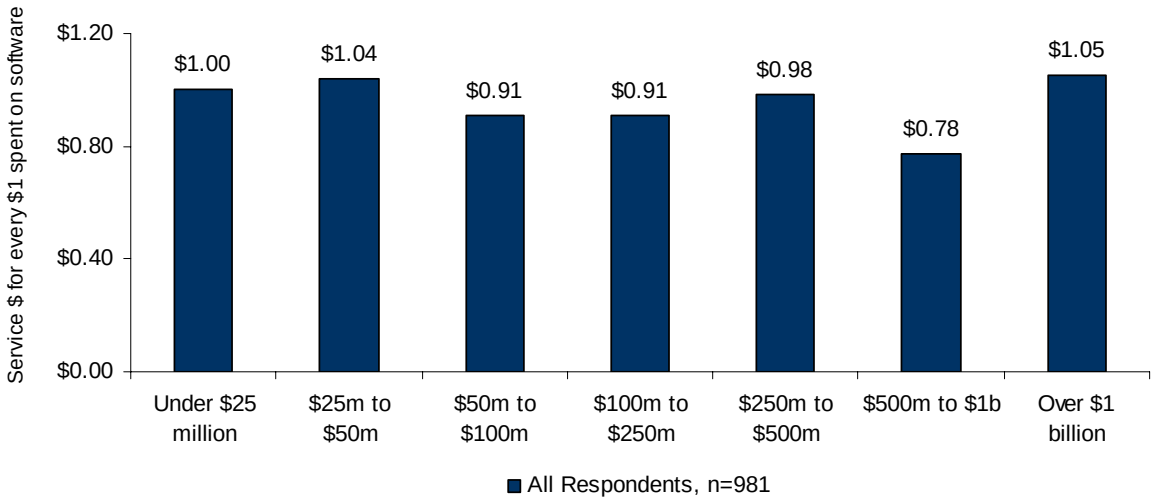
- √ 24% Named users: Each individual that has access is specifically named and is always guaranteed access.
- √ 49% Concurrent users: Regardless of how many individuals have access to ERP only a certain number can be logged in and using ERP at any time. When this threshold is reached, additional users are denied access until another user logs off.
- √ 19% Enterprise license: Unlimited users across the enterprise.
- √ 9% Don't know

to understand the difference in price between these types of limited use licenses versus a full ERP user license. Keep these costs separate for comparison purposes.

## *Services*

Cost per user is included in Table 2 in order to provide a breakdown for the total costs per user (including software, services and three years of maintenance), but there are actually better ways of looking at service costs. The cost of services is often compared against the cost of the software and in general spending about $1 for services for every $1 spent on software is considered an acceptable range. In fact over the past several years, Aberdeen has observed this ratio declining and has settled in around a ratio of one to one (Figure 1). While there will always be the occasional horror story of multi-billion dollar failed implementations, these are definitely not the norm, as evidenced by the ratios in Figure 1.

**Figure 1: Service to Software Cost Ratio**

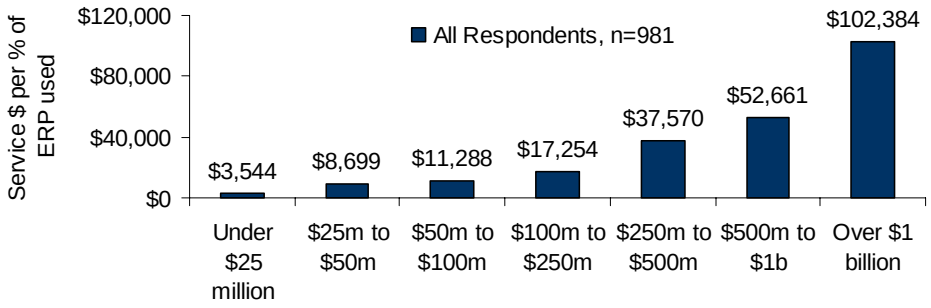



Source: Aberdeen Group, June 2010

Another way of looking at the cost of these same services is to measure it in terms of how much of ERP is being used. Since 2006, Aberdeen's preferred method of measuring ERP usage has been based on the number of modules implemented in combination with the percentage of functionality available (from those modules) that is actually used. We use a list of generic modules which will vary based on industry (see sidebar on the next page for a full list). Survey respondents check off those which have been implemented and we divide that number by the total number for the industry (24 modules for manufacturers, 18 for other industries) and weight the result by the percentage of functionality that is used. The results this year indicate that across all companies and all industries, an average of 10.1 modules are used, with 73.5% of the functionality implemented for a weighted average of 33.0% of ERP used. It is this weighted average,

calculated within each of our brackets that is used to report the service dollars spent per percentage point of ERP used (Figure 2).

**Figure 2: Service Cost for Each Percentage Point of ERP Functionality Used**




Source: Aberdeen Group, June 2010

It is not surprising to see this cost scale with the size of company. Remember, training costs are included as part of the cost of services. As the number of employees and users scale, so scales the cost of the training and implementation services.

## The Cost of Achieving Business Benefits

Thus far we have discussed only TCO, yet cost without value is useless and therefore it is necessary to expand the scope of view to include the ROI of ERP in terms of the value it brings to the business. Often the success of ERP is judged purely based on the time, cost and effort to implement it. Aberdeen takes a different view and measures the performance of an ERP implementation based on specific Key Performance Indicators (KPIs) that measure both the value ERP brings, as well as the overall health of the enterprise.

Different Best-in-Class criteria were used in benchmarking different types of companies' use of ERP but in order to compare companies' performance against a broad range of industries, we used a set of metrics that could be used universally and compared cross industry, regardless of size of company. The following criteria were used:

- number of days to close a month
- days sales outstanding
- percent of orders delivered complete and on-time
- growth in operating margins year over year

Best-in-Class is defined as the top 20% of aggregate performance scorers; Industry Average is the middle 50% and Laggards constitute the bottom 30%.

**Modules Included in ERP Usage:**

- √ General Ledger
- √ Accounts Payable
- √ Accounts Receivable
- √ Fixed Asset Management
- √ Material Requirement Planning
- √ Capacity Requirements Planning
- √ Distribution Requirements Planning
- √ Master Production Schedule
- √ Forecasting / Demand Planning
- √ Human Capital Management
- √ Order Management
- √ Project Management
- √ Shop Floor Control
- √ Purchasing
- √ Inventory Control
- √ After Market Service
- √ Engineering Change Management
- √ Enterprise Asset Management
- √ Supplier Collaboration / Scheduling
- √ Event Management
- √ Workflow Technologies
- √ Sales and Marketing
- √ Product Configurator
- √ Payroll
- √ Workforce Scheduling
- √ Job or Project costing

As ERP has become more pervasive, there is always a risk in perceiving it as a necessary infrastructure. If viewed as a requirement for doing business, companies also run the risk of neglecting to measure the business benefits resulting from its implementation. While an old and often over-used phrase, "you can't manage what you don't measure" is far more than a cliché. This assertion is validated in observing that the Best-in-Class are four times as likely as Laggards to measure the business benefits from the implementation of ERP. The specific business benefits that can be quantified will vary depending on the goals of the organization and the opportunity for improvement.

In expanding our view beyond TCO to include ROI, we need to consider the business benefits achieved through implementation. Aberdeen has consistently measured several of the most universal metrics of inventory, operating and administrative costs, as well as schedule improvements achieved through the implementation of ERP. These are among the numerous business benefits that constitute the ROI of ERP (Table 3).

**Table 3: Performance Gains by Competitive Framework**

| Performance Metric | Best-in-Class | Industry Average | Laggard |
|---|---|---|---|
| Reduction in inventory | 16% | 11% | 9% |
| Reduction in operational costs | 19% | 12% | 7% |
| Reduction in administrative costs | 17% | 10% | 5% |
| Improvements in complete and on-time shipments | 17% | 13% | 6% |
| Improvements in manufacturing schedule compliance (manufacturers only) | 15% | 12% | 10% |
| Improvement in cycle time (Distributors only) | 13% | 14% | 7% |
| Average improvement | 17.5% | 10.2% | 9.8% |
| Total cost per user | $13,192 | $12,628 | $15,741 |
| Total cost per user per percentage point of improvement | $753 | $1,242 | $1,614 |

Source: Aberdeen Group, June 2010

If one assumes "you get what you pay for," one might expect ERP implementations that produce the best or most results to be the most expensive; however, we find on a per user basis, the average cost is the highest amongst our Laggards and while Best-in-Class do not pay the least in terms of total cost per user, they excel in cost of benefits derived. If we further divide that cost per user by the average percentage point of improvement (across the five to six we measure), we find the cost drops successively with increased performance. A sound strategy and precise

execution of that strategy are far more important factors than the size of the check written.

While we are able to provide benchmarking data that allow companies to compare their actual results to those of our Best-in-Class in terms of the cost reductions and schedule improvements shown in Table 3, we also recognize that many companies perceive they have gained significant value from ERP, but may have difficulty quantifying or monetizing those benefits.

While the poorest performing organizations obviously have more room for improvement, they are far less likely to be able to quantify the results (Table 4).

**Table 4: Returns (Savings Factors) Considered in ROI**

| Performance Metric | Best-in-Class Able to Quantify | Best-in-Class Perceived Benefits / Difficult to Quantify | All Respondents Able to Quantify | All Respondents Perceived Benefits / Difficult to Quantify |
|---|---|---|---|---|
| Reduction in operational costs | 54% | 35% | 31% | 58% |
| Reduction of general administrative costs | 53% | 37% | 27% | 59% |
| Reduction or redeployment of headcount | 46% | 41% | 26% | 53% |
| Reduction in inventory costs | 59% | 28% | 34% | 45% |
| Reduction in waste (i.e. scrap, rework) | 38% | 48% | 21% | 54% |
| Better utilization of resources | 43% | 45% | 24% | 60% |
| Increased profits | 48% | 38% | 25% | 51% |
| Increased revenue | 43% | 41% | 20% | 54% |
| Increase in vlaue delivered to customers | 40% | 48% | 24% | 56% |
| Reduced Time to Decision | 33% | 52% | 20% | 61% |
| Increased Production | 49% | 35% | 22% | 54% |
| Increased New Product Introductions (NPI) | 24% | 54% | 11% | 59% |
| Support growth without additional headcount | 44% | 43% | 25% | 58% |

Source: Aberdeen Group, June 2010

While many Industry Average and Laggard organizations perceive benefits from ERP, they are unable to quantify those results. However, without being able to measure and monetize specific savings and improvements, it becomes far more difficult to justify continued investment in both time and money to reap further rewards. While some of the business benefits listed in Table 4, such as increased revenue and new product introductions, are more indirectly related to ERP implementations, inventory, operating and administrative costs and productivity and production throughput can be directly tied back to business processes that are streamlined and improved

by ERP. It is apparent that this type of measurement correlates to more cost reductions and improvement in schedules and more efficient time to decision resulting in better on-time and complete delivery as well as margin growth.

While these improvements may be easily measured, often the direct impact of the ERP implementation on the costs is blended with other organizational and operational actions that also contribute to these cost savings, therefore making it harder to isolate the direct impact of ERP. However, oftentimes without the compelling event of an ERP implementation these gains might never be realized.

It is clear that ERP represents an important investment for any size company. A $300,000 investment for a small $20 million company is just as significant as a $9 million investment for a $10 billion company. For this level of effort and investment, companies of all sizes should expect a substantial, measurable payback. The timeline for this payback is typically measured in years although 21% of our Best-in-Class achieved 100% payback on their investments within one year and the majority (60%) achieved it within three years.

## Key Takeaways and Recommended Actions

A well-managed ERP implementation can be a continuing source of cost savings and operational improvements which help companies survive and thrive, particularly in these troubled economic times. Some recommendations from our annual benchmarking of ERP that are particularly pertinent to any industry in any discussion of TCO and ROI include:

- **Establish specific goals for obtaining business benefit from ERP – measure progress.** Only 15% of Laggards quantify the business benefits resulting from the implementation of ERP. While the reduction of cost was one of the top business drivers of ERP strategies, 19% of companies do not measure reductions in operating, 18% do not measure reduction in administrative costs and 18% do not measure improvements in complete and on-time delivery as a result of ERP. One hundred percent (100%) of the Best-in-Class measure these improvements. What is not measured is not managed.
- **Measure time to value.** While Aberdeen contends an ERP implementation is never "done," allowing too much time for deriving value from an initial implementation can be just as dangerous as not allowing enough time. The Best-in-Class are 194% more likely to measure time to value for the initial implementation of ERP. While it is important to continue to reap the benefits through expanded use of ERP, 76% of those not Best-in-Class fail to even measure this initial result.

- **Continue to measure ROI even after it has been achieved.** While Best-in-Class are 50% more likely to measure ERP at the completion of projects, they are also more likely to continue to do so even after initial goals have been reached. Continued measurement leads to continued business value.

While the total cost of ERP ownership is important to monitor and optimize, focusing on TCO is no longer sufficient. Focus must now expand to include ROI of ERP projects in order to justify continued investment and maximum benefits.

For more information on this or other research topics, please visit www.aberdeen.com.

| Related Research | |
|---|---|
| *ERP in Manufacturing 2010: Measuring Business Benefit and Time to Value;* June 2010 | *Lessons Learned from Best-in-Class ERP Implementations in Industrial Equipment Manufacturing* ; December 2010 |
| *SaaS ERP: Trends & Observations 2010*; October 2010 | *ERP in SME: Fueling Growth and Profits;* August 2010 |
| *Achieving Operational Excellence in Wholesale Distribution: Poised for Recovery?;* November 2010 | *ERP Plus in Process Industries: Managing Compliance in Pursuit of Profits* September 2010 |

Author: Cindy Jutras, Vice President, Research Fellow and Group Director (cindy.jutras@aberdeen.com)