AberdeenGroup
Enterprise Strategies
Insight and Advice for Enterprise Executives

Manufacturing October 2, 2006

The Total Cost of ERP Ownership

Key Facts

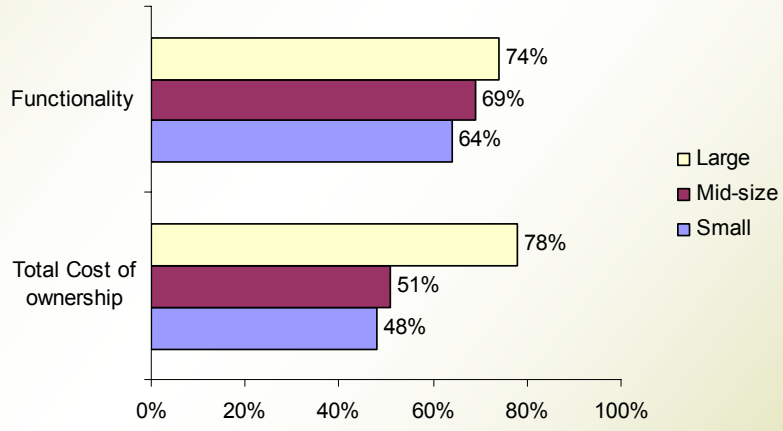
Total Cost of Ownership (TCO) has long been recognized as a significant factor in ERP strategies and decisions. Yet while both end users and ERP solution providers tend to talk about lower TCO, and many vendors claim it as a point of differentiation, seldom do they speak in terms of specific metrics. This Enterprise Strategies report will not only quantify TCO but also present side by side comparison of these metrics from five of the top ERP vendors.

Decision Framework

Who cares?

In July and August, 2006 Aberdeen surveyed over 1100 companies of all sizes, benchmarking ERP in Manufacturing. Functionality and Total Cost of Ownership were clearly the top two selection criteria in ERP software decisions (Figure 1). While vendors have always emphasized lower TCO in selling to small and medium size businesses, Aberdeen found larger companies (those with revenues over $1 billion) were even more sensitive to this criterion.

Figure 1: ERP Software Selection Criteria



Source: AberdeenGroup, August 2006

Aberdeen set out to measure TCO across the ERP vendor landscape, and therefore selected 5 solution providers for comparison. These vendors were selected for two reasons. First, each is a key ERP solution provider competing for market share in the same or significantly overlapping market segments. Secondly, each had more than 100 of their customers participating in the study, providing a significant representative sample.

Announcement

Special announcement with AberdeenAccess link.

Aberdeen's *ERP in Manufacturing* study actually recognized three different elements of total cost associated with ERP implementations:

- Amount spent on software
- Amount spent of external services
- Internal costs

While internal costs are known to be a significant portion of total cost, a large percentage of respondents did not provide this answer and many who did provided a number which Aberdeen felt to be significantly lower than expectations These facts and follow-up interviews led us to conclude that the majority of companies do not have a means to accurately measure these costs. Therefore, while we still believe this adds significantly to the total cost of implementation, Aberdeen chose not to include this element in the comparison.

For comparative purposes…

While many of our survey participants indicated 2 or more ERP packages were implemented across the enterprise, for purposes of vendor comparison, only those responses where participants clearly identified a single ERP vendor were used. This reduced the sample size to 689 responses.

Costs Scale with Company Size

One would naturally expect a correlation between size of the ERP deployment and costs. As the company grows, the number of users goes up, along with the total cost of software and services. Since volume discounts are standard fare in ERP pricing, one would expect the costs per user to go down as the number of users goes up. This expectation was proven to be true, as shown in Table 1. Also, as the number of users goes up, the expectation is that the total cost of software and service also rises, as was the case.

Table 1: Average Software and Services $'s by Company Size

	Average Users	Average Software $'s	Software $'s per User[1]	Average Service $'s	Average SW+Service $	Software + Services $'s per User[1]
Under $50 million	38	$138,806	$4,019	$98,635	$237,441	$7,853
$50 million to $100 million	84	$363,425	$4,622	$339,321	$702,746	$8,827
$100 million to $250 million	150	$480,048	$3,171	$485,590	$965,638	$6,869
$250 million to $500 million	256	$527,273	$2,916	$600,455	$1,127,727	$6,247
$500 million to $1 billion	292	$561,667	$2,463	$495,000	$1,056,667	$2,537
Over $1billion	1,485	$1,137,500	$1,535	$1,562,500	$2,700,000	$3,278

Source: AberdeenGroup, August 2006

260 Franklin Street
Boston, Massachusetts 02110-3112

Telephone: 617 723 7890
Fax: 617 723 7897
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However, while the software price per user did consistently go down with additional seats, not so with the total cost of software and services. While this was the case throughout the range of small to mid-size companies, enterprises over $1 billion in revenue actually paid more per user than those in the $500 million to $1 billion range. This can result from a combination of factors. First of all, implementations in these larger companies can be far more complex. Secondly, companies less than $1 billion in revenue will be more likely to have tighter purse strings and therefore more likely to attempt to implement by engaging fewer outside resources.

Costs Vary by Vendor

Because of this correlation between size of company and total costs, our side-by-side comparison includes the average number of users by software vendor. Although both SAP and Oracle were represented by a significant number of smaller companies, the predominance of larger companies drives the average number of users much higher than Lawson, QAD and Infor. However, even though we saw the general cost per user dropping with larger installations, Oracle and SAP customers paid on average more than companies with smaller numbers of users from our other 3 vendors. While Lawson's software only price per user was lowest, they ranked number 2 in total software and services price per user. Table 2 presents these 5 vendors in the order of total cost of software and services per user, lowest to highest.

Table 2: Average Software and Services $'s by Vendor

	Average Number of Users	Average Software $'s	Software $'s per User[1]	Average Service $'s	Average SW+Service $'s	Software + Services $'s per User[1]
Infor	104	$237,170	$2,290	$169,035	$406,205	$3,922
Lawson	195	$408,333	$2,086	$383,333	$791,667	$4,044
QAD	148	$328,706	$2,201	$301,633	$630,339	$4,221
Oracle	440	$1,159,091	$2,633	$960,455	$2,119,545	$4,816
SAP	385	$830,033	$2,249	$1,382,500	$2,212,533	$5,995

Source: AberdeenGroup, August 2006

Since the average size of our 5 vendors varied significantly, we have attempted to provide some close comparisons based on our overall averages by company size and general numbers of users. Table 3 places each vendor between the next lower average number of users and the next higher from Table 1. We observe Infor, Lawson and QAD significantly beating the averages that bracket their average numbers of users, while SAP and Oracle are significantly higher.

Table 3: Vendor Costs Relative to Closest Average # of Users

	Next Lower Average (all vendors)	Average Number of Users	Next Higher Average (all vendors)	Next Lower Average SW+Service $'s (all vendors)	Vendor Average SW+Service $'s	Next Higher Average SW+Service $'s (all vendors)
Infor	84	104	150	$8,352	$3,922	$6,423

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	Next Lower Average (all vendors)	Average Number of Users	Next Higher Average (all vendors)	Next Lower Average SW+Service $'s (all vendors)	Vendor Average SW+Service $'s	Next Higher Average SW+Service $'s (all vendors)
Lawson	150	195	256	$6,352	$4,044	$4,399
QAD	84	148	150	$8,827	$4,221	$6,869
Oracle	292	440	1,485	$3,613	$4,816	$1,818
SAP	292	385	1,485	$3,613	$5,995	$1,818

Source: AberdeenGroup, August 2006

A Better Measure of Price Performance

But size of company and number of users doesn't necessarily tell the whole story. While there is a generally accepted view that ERP is grossly underutilized in most manufacturers today, and statistics get tossed around liberally estimating that most companies use only 20% of the features and functions available, Aberdeen examined this issue to better quantify these statistics. In the *ERP in Manufacturing Benchmark*, Aberdeen found companies using on average 27.6% of ERP. This average was based on determining both the average number of modules implemented and the percentage of available functionality used. On average all companies surveyed used 10.51 of 24 generic modules and made use of 63% of available functionality, although both of these factors varied by size of company.

Aberdeen therefore set out to determine the cost per percentage point of functionality deployed, both by company size and across our 5 vendors. For this comparison, Aberdeen again only used those companies with a single ERP implemented, and therefore eliminated some of the variability naturally introduced in a multi-vendor environment.

Table 4: Costs Per Utilization by Company Size

	Average # of Modules Used	Unweighted Average (based on 24 generic modules[2])	Average % of functionality Used	Weighted Average	Cost per user per percentage point of functionality used
Under $50 million	9.79	40.79%	62.01%	25.29%	$314
$50 million to $100 million	10.31	42.97%	61.52%	26.43%	$316
$100 million to $250 million	10.13	42.22%	63.09%	26.64%	$241
$250 million to $500 million	10.83	45.14%	63.10%	28.48%	$154
$500 million to $1 billion	10.86	45.24%	57.65%	26.08%	$139

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	Average # of Modules Used	Unweighted Average (based on 24 generic modules[2])	Average % of functionality Used	Weighted Average	Cost per user per percentage point of functionality used
Over $1billion	11.71	48.78%	69.72%	34.01%	$53

Source: AberdeenGroup, August 2006

Weighted average was computed by first determining the percent of the 24 generic modules used. For example, 9.79 represents 40.79% as an un-weighted average. We then applied the percent of the available functionality used, in this case 62.01%, to yield the weighted average of 25.29%. The cost per percentage point was then calculated by taking the total cost per user from Table 1, in this case $7,853, and dividing it by the weighted average percent.

While we observed the average number of modules generally increasing in a linear manner, there was one exception around the threshold of $250 million, where we saw a slight dip in average number of modules used. We also observed a more pronounced dip in functionality applied in the $500 million to $1 billion range, but a sharp increase in large companies over $1 billion. We should note however, this phenomenon was much more pronounced in this smaller sample of single ERP companies. When considering the entire population of over 1000 companies in the *ERP in Manufacturing Benchmark* report we observed the highest use of functionality in the $100 to $250 million range, with a sharp decline up until we reached companies over $5 billion. For a full description of findings, please refer to the full benchmark report.

In this sample of respondents using a single ERP, we saw a steady decline in the cost per percentage of functionality used as more and more functionality was deployed. Once a threshold is reached and dues are paid, payback multiplies as ERP penetrates more broadly and deeply into an organization.

Price Performance by Vendor

Aberdeen observed users of Lawson and SAP software implementing more modules while Infor and Oracle users were more likely to take fuller advantage of functionality in those modules deployed. We found SAP with the highest weighted average and QAD with the lowest, with only slightly more than 3.5 percentage points separating the two. However there was a wider spread in cost per user per percentage point of functionality with Lawson being the lowest cost and SAP being the highest, with a $64 difference in spite of only a .37% difference in functionality utilized. The vendors are presented in Table 5 in ascending order in terms of the cost per user per percentage point of functionality.

Table 5: Costs Per Utilization by Vendor

	Average # of Modules Used	Un-weighted Average (based on 24 generic modules[2])	Average % of functionality Used	Weighted Average	Cost per user per percentage point of functionality used
Lawson	11.11	46.28%	63.20%	29.25%	$138

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Boston, Massachusetts 02110-3112

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	Average # of Modules Used	Un-weighted Average (based on 24 generic modules[2])	Average % of functionality Used	Weighted Average	Cost per user per percentage point of functionality used
Infor	9.77	40.72%	64.43%	26.23%	$150
QAD	10.36	43.16%	60.46%	26.09%	$162
Oracle	10.25	42.71%	64.35%	27.48%	$175
SAP	11.11	46.28%	64.00%	29.62%	$202

Source: AberdeenGroup, August 2006

The Cost of Achieving Business Benefits

In Aberdeen's *ERP in Manufacturing Benchmark*, respondents were asked how they measured the success of an ERP implementation. In general companies responded with some combination of length of time to implement and specific business performance metrics including the standardization and the streamlining of business processes. Yet in determining Best in Class, we took the approach that the success of an ERP implementation needs to be measured in terms of the business benefits derived. Examples of these metrics in manufacturing companies include reduction in costs and improvement in scheduling. Therefore, for one final measure of Total Cost of Ownership, Aberdeen sought to measure the cost of each percentage point of improvement gained from the deployment of ERP implementations of each of our 5 vendors.

Table 6: Cost of Performance Improvement by Vendor

	QAD	Infor	Lawson	Oracle	SAP
Reduction in inventory costs	17.4%	12.1%	17.8%	16.0%	14.0%
Reduction in manufacturing operational costs	13.4%	11.9%	8.5%	11.6%	10.6%
Reduction of administrative costs	15.7%	13.9%	11.9%	14.7%	14.9%
Improved complete and on-time shipments	23.8%	17.9%	17.9%	15.1%	19.1%
Improved mfg schedule compliance	20.1%	16.8%	12.1%	16.5%	13.8%
average	***18.1%***	***14.5%***	***13.6%***	***14.8%***	***14.5%***
cost per % point of improvement	***$233***	***$270***	***$297***	***$326***	***$414***

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Source: AberdeenGroup, August 2006

QAD users consistently outperformed users of the other 4 vendors in terms of improvements across most of the Key Performance Indicators (KPIs), with the single exception of reduction in inventory costs where Lawson users gained a slight advantage. But average improvements across all KPIs put QAD users squarely ahead of its competitors' users both in terms of performance gains and cost per percentage point of improvement.

Aberdeen Conclusions

We see from these results a variety of levels of achievement in terms of general improvement, and also a range of costs associated with each percentage point gained. However, what we ***do not*** see is a direct correlation between spending and benefits achieved. Significant benefits can be achieved from all 5 of these vendors and also other ERP vendors. We saw different vendors leading in each of the following TCO categories:

- Software cost per user: Lawson is #1
- Total cost of software and services per user: Infor is #1
- Highest number of modules used: SAP and Lawson tied as #1
- Most functionality utilized: SAP is #1
- Cost per percentage point of functionality used: Lawson is #1
- Best average performance improvement: QAD is #1
- Cost per percentage point of performance improvement gains: QAD is #1

Experience and facts from Aberdeen surveys indicate attention to function and fit are key, as well as continued attention to implementation and deployment strategies long after the ERP decision is made. Recommended actions from Aberdeen's *ERP in Manufacturing Benchmark* include the following:

- Balance aligning business processes to software capabilities against aligning software capabilities
- Don't fall into the trap of believing an ERP implementation is ever completely done

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1. To the astute reader, "Software $'s per User" does not equal "Average Software $'s" divided by "Average Users" for the following reason. Not all survey respondents answered both "Cost of - Software $'s" and "# of Users Installed" survey questions. Subsequently, "Average Software $'s" is based upon all respondents who answered the said survey question, as is the same for "Average Users". However, "Software $'s per User" is based only upon averaging individual responses where respondents answered both said questions. The above also holds true for "Software + Service $s per User".

2 Modules included were General Ledger, Accounts Receivable, Accounts Payable, Fixed Assets, MRP, CRP, DRP, MPS, Forecasting & Demand Planning, Human Capital Management, Order Management, Project Management, Shop Floor Control, Purchasing, Inventory Control, Service, Engineering Change Mgt, EAM, Supplier Collaboration and Scheduling, Event Management, Workflow, Sales & Marketing, Product Configuration, Payroll

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Related Research

ERP in Manufacturing Benchmark; August 2006

Asia Pacific Embraces ERP with Fewer Users; September 2006

Mid-Size Manufacturers Face Tough ERP Decisions; August 2006

Small Manufacturers Not Taking ERP to the Limit: August 2006

Author: Cindy Jutras, Vice President & Service Director, Manufacturing & ERP, cindy.jutras@aberdeen.com