Aberdeen Group
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The 2008 ERP in Manufacturing Benchmark Report

June 2008

Executive Summary

Pressures to reduce costs outweigh all other business drivers impacting Enterprise Resource Planning (ERP) in 2008. While ERP is generally viewed as a necessary infrastructure, it is also a strategic weapon in streamlining and automating business processes – while providing visibility to those processes throughout the enterprise. This report explores feedback provided by over 1200 manufacturers, and aims to serve as a roadmap to those in the manufacturing community that desire to reduce costs, improve accuracy of inventory and schedules, and develop customer responsiveness through successful ERP implementations.

Research Benchmark

Aberdeen's Research Benchmarks provide an in-depth and comprehensive look into process, procedure, methodologies, and technologies with best practice identification and actionable recommendations

Best-in-Class Performance

Aberdeen used five key performance criteria to distinguish Best-in-Class companies. While the implementation of ERP produced a reduction in costs and improvements in scheduling across all companies, Best-in-Class companies achieved significantly better results:

- 20% reduction in levels of inventory, with 97% inventory accuracy
- 95% manufacturing schedule compliance, and 97% on-time and complete shipments
- An average of 3.3 days to close a month

Competitive Maturity Assessment

Survey results show that the firms enjoying Best-in-Class performance shared several common characteristics.

- Top performers implement 30% more ERP functionality
- The success of Best-in-Class ERP implementations is 32% more likely to be owned by line of business executives
- 73% of the Best-in-Class have standardized enterprise-wide procedures for order management, procurement, production planning and execution, cash collection, and financial reconciliation

"We have grown through acquisition. We currently have 14 different ERP systems and we will continue to do more acquisitions. As CIO, I need to be the champion from within, but divisional General Managers must own the implementations. Where we can achieve superior operational excellence we will rationalize and consolidate applications but these projects will be initiated with specific objectives for anticipated business benefits."

~ CIO, Multi-billion Dollar Manufacturer and Distributor of Food and Beverage Products

Required Actions

In addition to the specific recommendations in Chapter Three of this report, to achieve Best-in-Class performance, companies must:

- Assign ownership of ERP success to line of business executives
- Continue to broaden and deepen use of features, modules, and extensions
- Standardize common processes and ERP implementation

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Benchmarking the Best-in-Class

Business Context

Enterprise Resource Planning (ERP) provides the necessary infrastructure that forms the operational and transactional system of record for manufacturers of all types and sizes. With its roots in Material Requirements Planning (MRP) and a history that spans more than two decades, ERP has truly become a mature business application. In a world where industry observers are in constant search of the "next killer application," can a technology that is viewed by many as a necessary infrastructure also be a strategic weapon that provides competitive advantage? Best-in-Class ERP implementations can indeed be a strategic weapon in standardizing and automating business processes and providing the visibility needed for agile data-driven decision-making, but only if companies take advantage of expanding feature sets and emerging technologies.

Fast Facts

Best-in-Class ERP implementations produce an average of **69% more** cost reductions than a combination of Industry Average and Laggards:

√ **82%** more inventory cost reductions

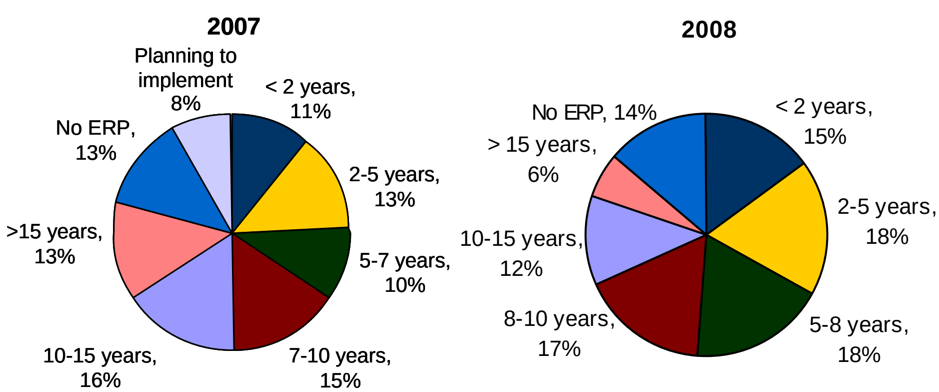
√ **75%** more manufacturing operational cost reductions

√ **50%** more administrative cost reductions

Leveraging Innovation and Technology

While an ERP evaluation was once thought to be a strategic five to eight year decision, Aberdeen's *2007 ERP in Manufacturing Benchmark* found the average age of implementations to be almost nine years, implying the longevity of these solutions often exceeds the anticipated life. This has often resulted in aging implementations, based on outdated technology, limiting the business evolution necessary to any company that wants to thrive amidst the pressures of shareholder growth expectations and increasingly demanding customers. This year's survey of over 1200 manufacturing companies found a very significant two year drop in the average age of ERP implementations, and 54% fewer companies with implementations over 15 years old, signaling that the push beyond outdated technology has truly begun.

Figure 1: Maturity of ERP Implementations



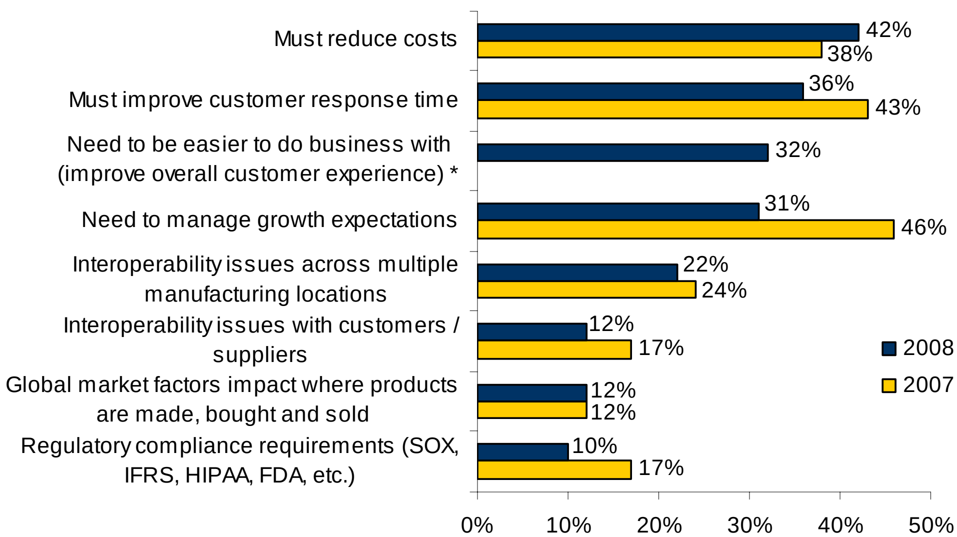
Source: Aberdeen Group, June 2008

Most significantly, note the 38% increase in percentage of implementations which are less than five years old (Figure 1). Beyond the five year range, it is important to point out that Aberdeen's survey question changed slightly from 2007 to 2008. The five to seven year range shifted to five to eight years in order to distinguish implementations that pre-date the year 2000 (Y2K), which represented a significant turning point for ERP technology and functionality. The percentage of post-Y2K implementations grew by 50% year over year.

A Shift in Pressures

Growth expectations, customer service, and cost control have consistently been the top three business drivers impacting ERP over the past three years. While in 2007, growth strategies dominated, followed closely by the need to improve customer service and response times, this year we see a shift in pressure with an increased emphasis on reducing costs (Figure 2).

Figure 2: Top Business Drivers of ERP Strategies



Source: Aberdeen Group, June 2008

* The business drivers "Must improve customer response time" and "Need to be easier to do business with" were combined in the 2007 survey as a single response option.

This shift is not surprising given the rising costs of fuel and raw materials, as well as predictions of a recession in the United States. Cost reduction has proven to be an important business benefit of ERP, with Best-in-Class reaping rewards through reduction in inventory, manufacturing operating costs, as well as administrative costs.

Improving the customer experience by improving response time (36%) as well as being easier to do business with (32%) both remain strong business drivers. These two customer-centric issues were separated in the 2008

Planning to Implement?

Another important change in our survey question year over year involves those with no ERP and those planning to implement within one year. In 2006 and 2007 Aberdeen presented *planning to implement within 1 year* alongside the option of *No ERP (or MRP) implemented.*

In follow up interviews with survey respondents who had selected *planning to implement within 1 year* we found at least half had indeed already implemented ERP, indicating plans to replace their current system.

In order to get better clarity over plans to implement for the first time versus replacement strategies, our 2008 survey separated these two options and only asked those with no ERP about their intentions to implement ERP for the first time. The results:

√ **37%** plan to implement ERP with a two year timeframe

√ **33%** have no plans to implement

√ **30%** are undecided

survey in order to distinguish between general service and response time, both of which found their way into the top four business drivers.

While the emphasis on growth has diminished over the past year, it is still an important factor with almost a third (31%) of respondents selecting it as one their top two business drivers. Growth factors often combine with (and cause) the need to address interoperability issues in a distributed environment. The number of manufacturing locations supported by either a centralized or de-centralized implementation of ERP grows steadily as companies grow. While our average small company supports 1.8 locations, mid-size companies support an average of 4.1 and large companies support an average of 8.8.

Company Size

Aberdeen defines company size by annual revenues:

√ Small companies: Under $50 million

√ Mid-size companies: Between $50 million and $1 billion

√ Large companies: Over $1 billion

The Maturity Class Framework

Aberdeen used five Key Performance Indicators (KPIs) to distinguish the Best-in-Class from Industry Average and Laggard organizations. These KPIs were chosen not only because every manufacturer should be measuring them, but also because a well executed ERP implementation can have a very significant impact on these metrics.

Table 1: Top Performers Earn Best-in-Class Status

Definition of Maturity Class	Mean Class Performance
Best-in-Class: Top 20% of aggregate performance scorers	▪ 20% reduction in inventory levels ▪ 97% inventory accuracy ▪ 3.3 days to close a month ▪ 95% manufacturing schedule compliance ▪ 97% complete and on-time shipments
Industry Average: Middle 50% of aggregate performance scorers	▪ 12% reduction in inventory levels ▪ 92% inventory accuracy ▪ 5.6 days to close a month ▪ 89% manufacturing schedule compliance ▪ 92% complete and on-time shipments
Laggard: Bottom 30% of aggregate performance scorers	▪ 5% reduction in inventory levels ▪ 83% inventory accuracy ▪ 7.1 days to close a month ▪ 76% manufacturing schedule compliance ▪ 82% complete and on-time shipments

Source: Aberdeen Group, June 2008

The Best-in-Class PACE Model

To achieve these significant benefits from an ERP solution, a combination of strategic actions, organizational capabilities, and enabling technologies are required. These can be summarized as shown in Table 2.

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Table 2: The Best-in-Class PACE Framework

Pressures	Actions	Capabilities	Enablers
▪ Must reduce costs	▪ Provide visibility to business processes across functions and departments ▪ Standardize and accelerate manufacturing processes ▪ Standardize and accelerate non-manufacturing processes (order management, service, finance, and administration)	▪ Standardized enterprise-wide procedures for order management, procurement, production planning and execution, cash collection, and financial reconciliation ▪ Manufacturing operations are integrated and coordinated with customer service, logistics, and delivery organization ▪ From summary data, decision-makers can drill down to transactions that form the fiscal and operational audit trail ▪ Decision makers are notified in anticipation of exceptions and respond proactively	▪ Integrated ERP modules: general ledger, accounts payable, accounts receivable, fixed asset management, MRP, shop floor control, purchasing, inventory control, after market service, ECM, CRP, DRP, MPS, forecasting / demand planning, human resources, order management, project management, EAM, supplier collaboration / scheduling, sales and marketing, product configurator, payroll ▪ Business Intelligence (BI) or analytical tools ▪ Workflow automation / Business Process Management (BPM) ▪ Event management (triggers and alerts) ▪ Access to ERP through mobile devices

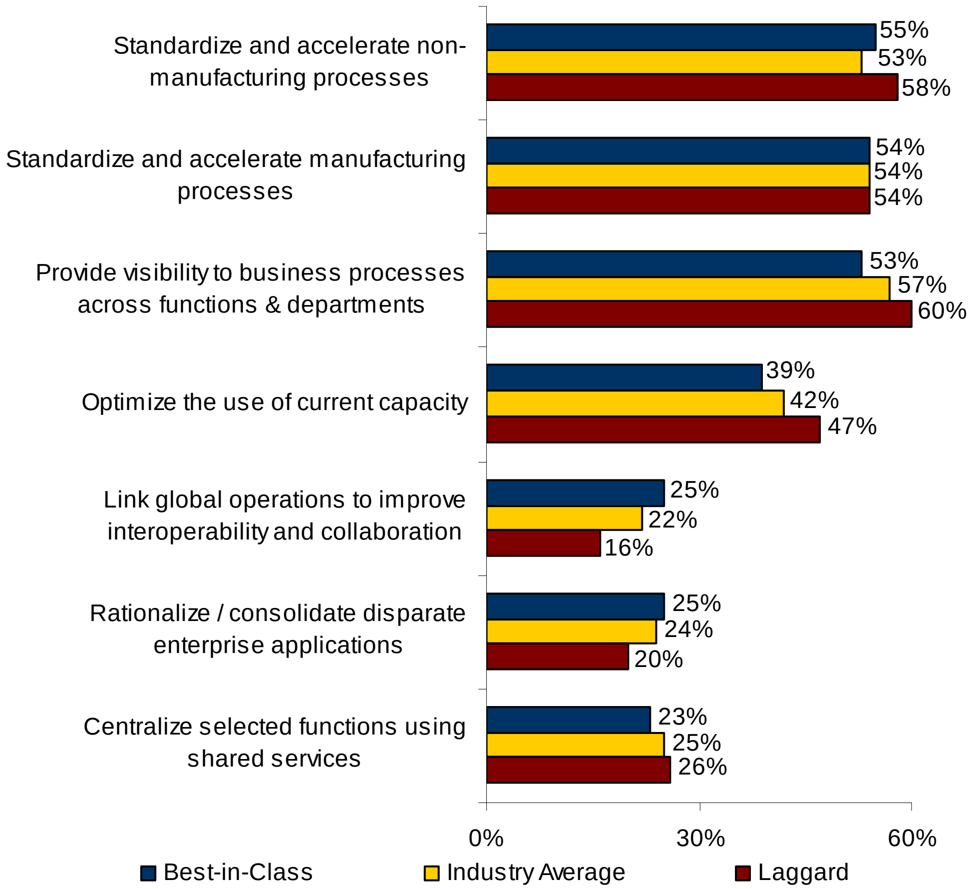
Source: Aberdeen Group, June 2008

Best-in-Class Strategies

ERP plays a key role in both standardizing and accelerating business processes. While Best-in-Class and Industry Average manufacturers place close to equal emphasis on manufacturing and non-manufacturing processes, Laggards are slightly more likely to concentrate efforts on the front and back-office (non-manufacturing) processes (Figure 3). Yet, as a result, Laggards produce 50% more reduction in administrative costs (6%) than in manufacturing operating costs (4%), with inventory reductions squarely in the middle (5%).

Best-in-Class companies assign providing *visibility across functions and departments* as a strategic objective with very similar priority, yet this is actually the top choice for all other firms and the dominant choice for Laggards (60%), implying a definite lack of visibility today. Indeed Aberdeen found Laggards 44% less likely than the Best-in-Class to have full real-time visibility into status of all processes from quote to cash. As a result, Laggards are 54% less likely to be able to anticipate exceptions and respond proactively.

Figure 3: Strategic Actions of the Best-in-Class



Source: Aberdeen Group, June 2008

"Through acquisitions, Nuplex currently has six different ERP's running on 10 servers. As we are still looking to grow through further acquisition we need to put an ERP in place that could be used on a regional basis and perhaps global. Although two of our current ERP's could be considered regional or global we are undertaking a full review which takes into consideration process change and standardization for the whole Nuplex Group. A further benefit of implementing a regional / global ERP is that we can also rationalize and reduce the number of ERP instances."

~ Stuart Barry, Group General Manager, Communications & Business Systems, Nuplex Industries (Aust) Pty Ltd

Aberdeen Insights — Strategy

The drop in the average age of ERP implementations, and a 38% decline in implementations which are over 10 years old signal replacement strategies are indeed being executed. One year ago 9% of all survey respondents indicated plans to replace ERP with a different package at one or more locations within 12 months. Given the significant time and effort that go into implementing ERP, rip and replace strategies are typically approached with much trepidation, yet many factors may combine to make this the wisest choice. These replacement strategies are largely driven by the proliferation of enterprise applications, creating the desire to consolidate or rationalize multiple ERP's (46%) and also causing integration issues (39%) and creating the need for a global, standard solution (39%). However functionality and ease of use are also driving factors, particularly in smaller companies.

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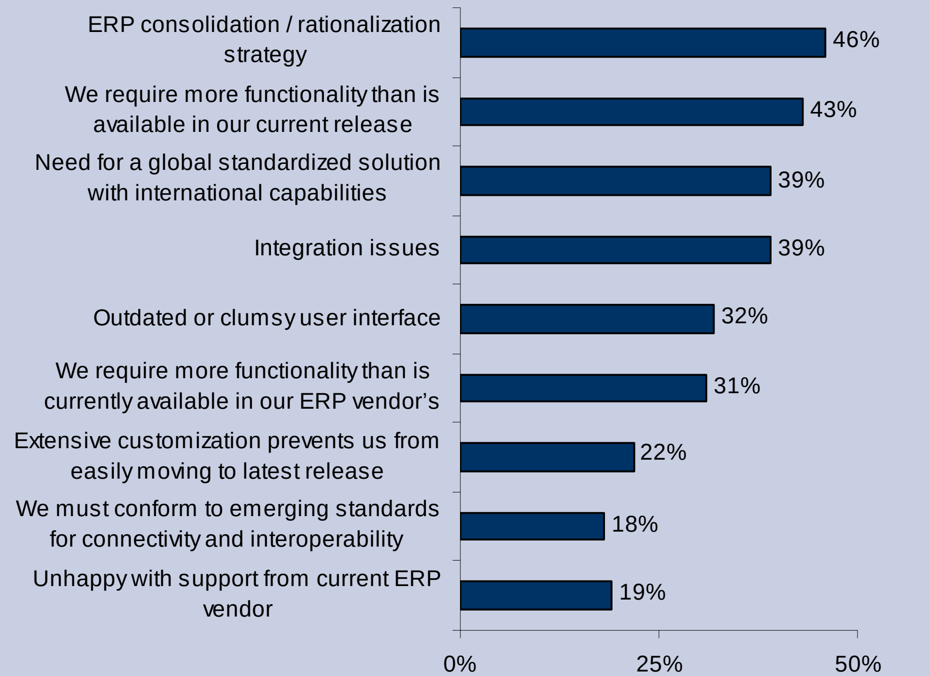
Figure 4: What Prompts a Replacement Strategy?



Source: Aberdeen Group, June 2008

continued

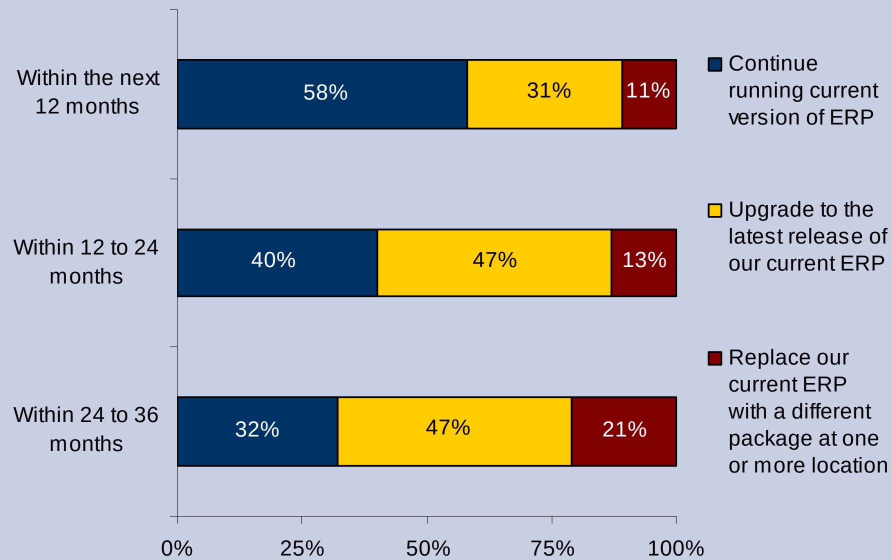
"Our current system, purchased, from a small local vendor, can clearly not meet American Food & Drug Administration (FDA) nor European regulations on cosmetics, which in certain categories, such as sunscreens, are akin to pharmaceutical regulations. Right now product lot numbers are added manually on exported product batches, which is error-prone and does not reach down to ingredient lots. If we want to expand substantially on an international scale, we will need a good ERP system that tracks lots and handles product recalls well."

~ VP of Operations, Mid-size Canadian Manufacturer of Cosmetics

Aberdeen Insights — Strategy

Aberdeen expects this trend to continue. In 2007, not only did 9% of respondents indicate replacement plans within one year, but 12% planned to replace at least one ERP package within two years, and 22% planned a replacement within three years. Figure 5 indicates similar results from our latest survey.

Figure 5: Replacement Strategies Continue



Source: Aberdeen Group, June 2008

"We are currently implementing a new ERP. The main reason results from consolidation of ERP vendors. Both of our current solution providers were acquired and since the solutions we are running are 'older' products we question the on-going commitment to them. While the vendors claim they will continue to support us, we no longer see these products being actively enhanced or developed.

The selection of [the replacement ERP] is a direction of the corporation. Our 'new' ERP is already implemented in other regions of the world and with very goods results. We now look for other opportunities of Shared Services, global planning, global common data using Master Data Management (MDM) and other projects."

~ Manager of Logistics / Supply Chain, Mexican Textile Manufacturer

In the next chapter, we will see what the top performers are doing to achieve these gains.

Chapter Two: Benchmarking Requirements for Success

The selection and implementation of ERP is a major undertaking for any company. Using ERP as a template for standardization of business processes, as well as the integration and coordination of people, processes, and technology can have a significant impact on the benefits achieved.

Case Study — Robbins & Myers

Robbins & Myers, Inc. is a leading supplier of highly engineered, critical equipment and systems for global energy, chemical, and industrial markets. Before the corporation decided to develop a centralized IT function, and to settle on one global ERP / data warehouse system, one of the business families, "Energy Systems" had already implemented an ERP system to manage their operations at five factories and 15 service centers in three countries. The team that was charged with the effort to select and implement this system was pulled from operations and was dedicated full time to this effort. The team included a plant manager, a materials manager, a sales manager, an engineering manager, and others. Similarly, the project's steering committee was also made up of operational managers. The CEO mandated that the project be business focused and not IT focused.

"This project turned out to be extremely effective in delivering business value as well as providing a timely and under-budget implementation. As a result, when corporate decided to take ownership of IT and to spread the system to all of their operations (potentially 26 factories in 13 countries), they decided to follow the same model," said Jim Moore, Global ERP Manager.

"The software system we have chosen is extremely flexible. It allows each factory to operate with unique processes, while still adhering to corporate and financial standards. The operational focus that we bring to each implementation allows us to concentrate on what procedures will best serve efficient manufacturing while maximizing customer service," said Moore. The entire project cycle involves the end users in determining what will work the best. He continued, "Thus, since the users have been part of the process, they are much more accepting of the changes that such projects always bring. They understand that their needs - and the needs of the customer - are the reason for changes. The end result is easier implementations and faster operational benefit."

Continued…

Fast Facts

√ Best-in-Class use **30%** more ERP functionality

√ Best-in-Class ERP implementations are **32%** more likely to be owned by line of business executives

√ Manufacturers with Best-in-Class ERP implementations are **52%** more likely to have real-time visibility into the status of all processes from quote to cash

"Some of the global team members were recruited to corporate, and additional staff that was hired was required to have extensive line of business experience. The current team members average over 20 years experience in their disciplines, as well as previous ERP implementation activities.

As the director of global ERP, I have responsibility for managing all of the implementations. My personal experience is 28 years in manufacturing including serving as Plant Manager, Demand / Forecast Manager, Global Materials Manager, and Production Planning Manager. We insist that the local factory teams also represent the best of the operational disciplines. Likewise, each local steering committee must be made up of the local responsible executives. Fortunately, our global Director of Information also came out of manufacturing (engineering), so he is not resistant to this methodology."

~ Jim Moore, Global ERP Manager, Robbins & Myers

Case Study — Robbins & Myers

"Conversely, our experience helps us to facilitate disputes and to demonstrate alternate methods and solutions," said Moore. "It is not a matter of outside consultants saying 'here it is, this is how it works'. Should a modification be required (we try to keep these to a minimum), IT staff trusts that we have already considered every other alternative."

Robbins & Myers considers the success of a project is best measured by user acceptance. "If we can go live with users who understand the system and are properly trained, we have not only mitigated risk, but we have accelerated the improvement process (phase 2). Finance always experiences quick improvements, and Sales usually does as well. It is the shop floor and the supply chain planners who are the true test of the project. That's where the on-going benefit and pay-back really exists."

Competitive Assessment

Aberdeen Group analyzed the aggregated metrics of surveyed companies to determine whether their performance ranked as Best-in-Class, Industry Average, or Laggard. In addition to having common performance levels, each class also shared characteristics in five key categories: (1) **process** (the standardization of business processes and ERP implementation); (2) **organization** (dedication of resources and line of business ownership of ERP); (3) **knowledge management** (contextualizing data and exposing it to key stakeholders); (4) **technology** (scope of ERP deployment); and (5) **performance management** (the ability to drive effective cost reductions). These characteristics (identified in Table 3) serve as a guideline for best practices, and correlate directly with Best-in-Class performance across the key metrics.

Table 3: The Competitive Framework

	Best-in-Class	Average	Laggards
Process	Standardized enterprise wide procedures for order management, procurement, production planning and execution, cash collection and financial reconciliation		
	73%	64%	51%
Organization	Dedicated resources are / were assigned throughout ERP implementation project		
	78%	62%	53%
	Line of business ultimately owns the success of the implementation		
	62%	49%	41%
Knowledge	Real time visibility into status of all processes from quote to cash		
	50%	34%	28%

	Best-in-Class	Average	Laggards
Technology	Average aggregated ERP usage:		
	▪ 12.0 modules implemented[1] ▪ 80.5% of functionality available deployed ▪ 40.4% weighted average of ERP usage[2]	▪ 10.8 modules implemented[1] ▪ 72.9% of functionality available deployed ▪ 32.9% weighted average of ERP usage[2]	▪ 9.5 modules implemented[1] ▪ 70.4% of functionality available deployed ▪ 27.8% weighted average of ERP usage[2]
Performance	Improvements as a result of ERP implementation:		
	▪ 20% reduction in inventory ▪ 14% reduction in operational costs ▪ 15% reduction in administrative costs ▪ 18% improvement in manufacturing schedule compliance ▪ 18% improvement in complete and on-time shipments	▪ 12% reduction in inventory ▪ 9% reduction in operational costs ▪ 10% reduction in administrative costs ▪ 12% improvement in manufacturing schedule compliance ▪ 12% improvement in complete and on-time shipments	▪ 5% reduction in inventory ▪ 4% reduction in operational costs ▪ 6% reduction in administrative costs ▪ 5% improvement in manufacturing schedule compliance ▪ 6% improvement in complete and on-time shipments

1. The number of modules is based on a set of 24 generic ERP modules (Table 4)
2. Calculated as: average number of modules / 24 * percent of functionality used

Source: Aberdeen Group, June 2008

Capabilities and Enablers

Based on the findings of the Competitive Framework and interviews with end users, Aberdeen's analysis of the Best-in-Class demonstrates standardized enterprise wide procedures, coupled with comprehensive use of features and functions with appropriate executive oversight can lead to significant cost reductions and improvements in schedule performance, resulting in improved customer satisfaction.

Process

The top two strategic actions of Best-in-Class manufacturers are to standardize and accelerate both manufacturing and non-manufacturing (front and back-office) processes. The combination of these two actions touches many departments across the manufacturing organization as it executes the steps to plan, source, make, and deliver, as well as collect cash and perform financial reconciliation. Formalizing and documenting these steps forms a foundation for automation and therefore acceleration. Without careful consideration, automating poor processes simply means you continue to operate poorly, only faster.

"We are looking at our business processes first. We will simplify the processes, and then automate. The combination will result in process improvement. Today our visibility to the quote to cash process is poor. We need to improve our ability to monitor KPIs in real time. While Business Intelligence is a big initiative, ERP is our prime focus in improving customer response time."

~ Business Process Improvement Manager, Fortune 1000 Consumer Products Company

Companies undergoing transformation, either through improvement initiatives or via a new ERP implementation or major upgrade, might take one of a variety of approaches. One is to concentrate first on the evaluation of current processes in isolation from the current or proposed ERP. The advantage is that processes can mirror true best practices which are not constrained by any software limitations. This is an important step when choosing a brand new ERP solution. Without a firm grasp of the capabilities of current and proposed processes, it will be difficult to judge the degree of fit of any package.

However, this may in fact create the need for the software to be customized in order to adapt to the new or revised process. This is particularly true where the business process transformation occurs after an ERP solution is implemented. The optimal scenario will include an evaluation of current and proposed business process, while at the same time considering functionality and best practices specific to the current or proposed ERP.

While the Best-in-Class are 22% more likely to standardize procedures across the enterprise, and 23% more likely to standardize implementation across a potentially distributed enterprise, the degree to which these processes can be standardized will depend on the profile of the enterprise. Where multiple locations, divisions or operating entities produce very different products and / or run with a high degree of autonomy, standardizing production planning and execution may have little value. However, even in this diverse environment, standardizing back office processes which guide basic order management, procurement, cash collection and financial reconciliation can have significant value, minimally in facilitating consolidated financial reporting, but also as a potential cost cutting measure through shared services.

Organization

Management commitment is a well-recognized requirement for a successful ERP. However two additional organizational requirements have a significant impact during the implementation process. All too often ERP is "owned" by the Information Technology (IT) department. In these instances, the perceived success of the implementation is often based on costs and how quickly "go-live" milestones are achieved while the true Return on Investment (ROI), measured in cost reductions and performance improvements, is overlooked. This observation is reinforced by the fact that line of business executives in Best-in-Class companies are 51% more likely to own the success of the implementation than Laggards. Correlate this with an average of 240% more reductions in cost and 200% more schedule improvements. By placing ownership with the executives who stand to gain the most from the implementation, the focus shifts to performance improvement, placing significantly more emphasis on ROI.

The other important factor is the dedication of resources assigned throughout the ERP implementation project. It is an unfortunate fact that the people best qualified to manage and execute the deployment of ERP are the people you can least afford to take away from their primary responsibilities. Yet the on-going benefits of a successful implementation far outlast the disruption of the implementation itself.

Knowledge Management

In order to trim customer response times and also to become a business partner that is easy to do business with, decision makers must have visibility into all business processes from quotation to cash collection, without digging through spreadsheets or relying on manual processes. While Best-in-Class companies are 79% more likely than Laggards to have this level of real-time visibility, a full 50% of our top performers still do not. These percentages are almost identical to those we found last year, indicating little advancement in this regard.

"It's not just about bringing in software; it's about embedding it in the process."

~ President,
Fortune 1000 Hardware and Software Manufacturer

However, an important step in providing full visibility is to make summary data immediately available with detail data available on demand. In 2007 study results showed that 53% of Best-in-Class companies had this real-time visibility for exception management, allowing significant room for improvement. This year, we did observe improvement, 65% of Best-in-Class have this capability. However, Industry Average companies improved by only 5% and Laggards saw no improvement at all.

The path to this level of visibility and exception management may involve a variety of features and technology which have become relatively main stream today. By combining predictive Business Intelligence (BI) and analytics, along with event management technology, which can trigger alerts when events occur or fail to occur as planned, decision makers can be well-armed to respond quickly.

Technology: ERP Usage

Since its *2006 ERP in Manufacturing Benchmark Report* confirmed the generally accepted view that ERP is grossly underutilized. Aberdeen has been tracking ERP usage on an annual basis. The 2006 and 2007 benchmarks found the average number of modules (10.5 out of a generic set of 24) remained the same, but the percentage of the functionality used (of that available in those modules) grew from 63% to 71%. This year's study showed a slight increase in modules deployed (10.7) accompanied by a small increase in the average percent of functionality used (to 74%). As a result the weighted average use grew from 27.6% in 2006 to 31.2% in 2007 to 32.6% in 2008.

While Best-in-Class companies use 30% more ERP functionality, comparing usage on a module by module basis makes little sense, since requirements will vary depending on industry. A repetitive manufacturer of razors and razor blades for example would have little use for field service and the manufacturer of custom designed race cars would not necessarily need distribution requirements planning. Table 4 depicts the percentage of respondents using each of the modules in 2006, 2007 and 2008, yet we observe insignificant differences from year to year. While ERP usage is growing incrementally, we do not see major shifts in focus. These modules

Modules versus Extensions

Aberdeen is careful to distinguish between a "module" of ERP and an "extension." All the modules of ERP use a single data base model. Integration is built in and there is little or no redundancy of data elements, except where there is a specific need. A module is built with the same development tools, on the same architecture as core ERP. While a module can be implemented incrementally, its release cycle is in lock step with the remainder of the core ERP modules.

The simplest definition of an extension to ERP is an enterprise application that extends the functionality, but is separate.

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are generally well-established. Where we see more activity is in extensions to ERP.

Table 4: ERP Module Adoption Rates Remain Relatively Stable

Technology Solution Area	Percent Implemented in 2006	Percent Implemented in 2007	Percent Implemented in 2008
General Ledger	93%	91%	90%
Accounts Payable	93%	93%	92%
Accounts Receivable	92%	92%	92%
Fixed Assets	43%	38%	38%
MRP (Material Requirements Planning)	79%	77%	76%
CRP (Capacity Requirements Planning)	20%	19%	21%
DRP (Distribution Requirements Planning)	23%	16%	18%
MPS (Master Production Scheduling)	19%	35%	34%
Forecasting and Demand Planning	37%	46%	46%
Human Capital Management	9%	14%	13%
Order Management	80%	81%	84%
Project Management	17%	23%	23%
Shop Floor Control	56%	55%	60%
Purchasing	94%	90%	92%
Inventory Control	92%	87%	91%
After Market Service (Field Service / Depot Repair)	13%	15%	14%
Engineering Change Management	28%	33%	32%
Enterprise Asset Management (EAM)	6%	10%	8%
Supplier Collaboration / Scheduling	14%	16%	16%
Event Management	5%	8%	5%
Workflow Technologies	18%	19%	20%
Sales and Marketing	42%	42%	43%
Product Configuration	20%	22%	21%
Payroll	24%	27%	23%
Weighted Average[1]	27.6%	31.2%	32.6%

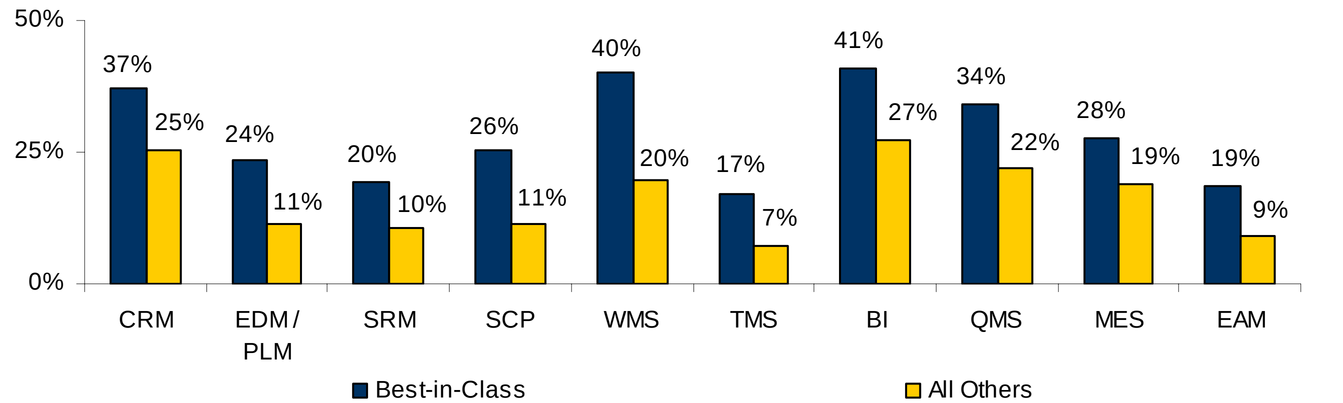
1. Calculated as: average number of modules / 24 * percent of functionality used

Source: Aberdeen Group, June 2008

While for the purposes of our survey Aberdeen distinguished between modules and extensions (see callout "Modules versus Extensions") the boundaries between the two are often blurred. As ERP vendors expand their solution footprints, features and functions which traditionally have been offered as extensions might be included as modules. Conversely as some ERP vendors acquire solutions to fill product gaps, what might be considered by some to be a module is actually delivered as a separate application.

In addition to using 30% more module-based ERP functionality, Best-in-Class are also 46% to 130% more likely to have adopted extensions to ERP (Figure 6).

Figure 6: Adoption Rates of ERP Extensions



Source: Aberdeen Group, June 2008

The distinction between modules and extensions is even hazier in considering how and from which provider these extensions were purchased (Figure 7). Not only are companies 56% to 326% more likely to have purchased these "extensions" to ERP from their ERP solution provider than from another independent software vendors, but in most cases the majority were purchased as modules of ERP and not as separate applications.

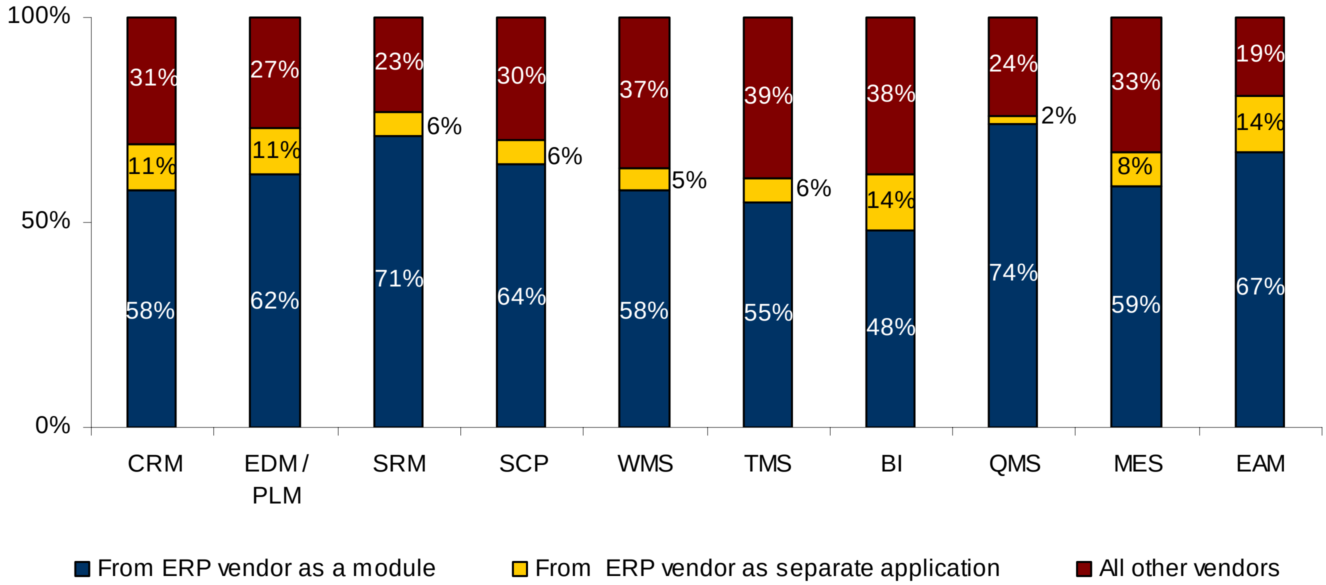
Performance Management

For the purposes of this study, Aberdeen measured performance in the context of improvements as a result of ERP implementations. Since the duration of ERP implementations range from less than six months to more than two years, the length of time to realize these improvements will have similar variability. The most significant cost savings came from reductions in inventory, yet reduced overall manufacturing operational and administrative costs were achieved even by Laggard organizations at a rate of 4% to 6%. An improvement in manufacturing schedule compliance produced a corresponding 13% improvement across all companies in complete and on-time shipments to customers, specifically addressing the need to improve customer response times.

Acronyms

- √ Customer Relationship Management (CRM)
- √ Electronic Data Management (EDM) / Product Lifecycle Management (PLM)
- √ Supplier Relationship Management (SRM)
- √ Supply Chain Planning (SCP)
- √ Warehouse Management System (WMS)
- √ Transportation Management System (TMS)
- √ Business Intelligence (BI)
- √ Quality Management System (QMS)
- √ Manufacturing Execution System (MES)
- √ Enterprise Asset Management (EAM)

Figure 7: Who Did You Purchase These "Extensions" From?



Source: Aberdeen Group, June 2008

Aberdeen Insights — Technology

Past Aberdeen surveys have asked ERP users to select the top three criteria used in selecting an ERP solution. Functionality, Total Cost of Ownership (TCO), and ease of use have consistently been the highest priorities. While functionality always comes out at the very top, the relative priorities of the second and third criteria will vary depending on size of company, industry, and other factors. Yet Aberdeen suspected that other selection criteria, which did not make the "top three," were also very important. Figure 8 confirms our suspicions. When asked to rank each of the selection criteria on a scale of one to five, with five being very important, none of the criteria ranked lower than 3.7.

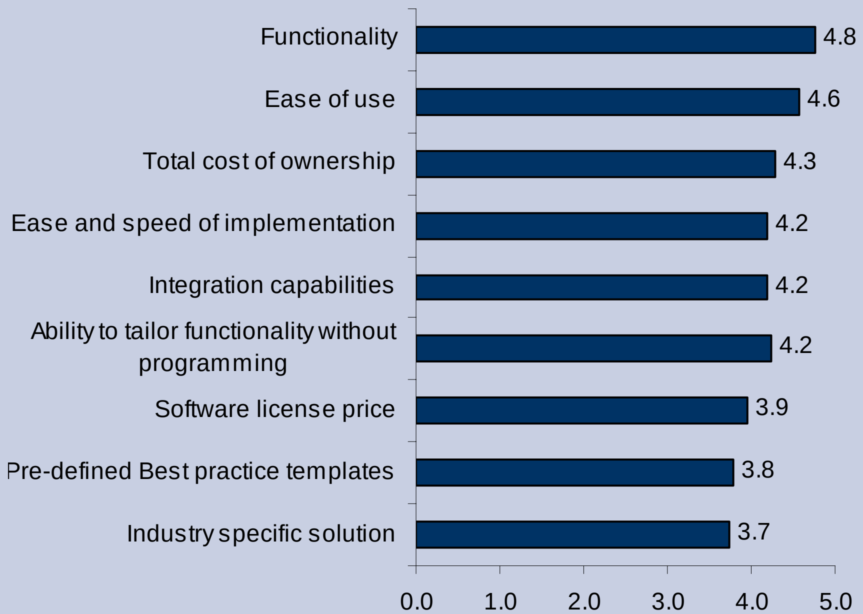
continued

"Give your vendor a demo script. Don't let him lead you down the primrose path. During the demo I was looking for ease of use. Do I have to go through 16 screens to enter one sales order, or is this something I can do relatively quickly?"

~ Scott Schultz, VP of Finance, Water Gremlin

Aberdeen Insights — Technology

Figure 8: ERP Software Selection Criteria



Source: Aberdeen Group, June 2008

While our traditional "top three" still remained at the top, *ease and speed of implementation, integration capabilities,* and *the ability to tailor ERP without programming* were in a dead tie for fourth place, with only a tenth of a point separating them from TCO. Other factors such as price, pre-defined implementation templates and industry specific solutions, which had traditionally appeared to be significantly less important, were also very high on the priority scale.

"In selecting an enterprise application, we require the vendor to complete an [Request for Proposal] RFP. Our latest had 600 questions. But we also look at the underlying technology and the company itself. We behave as is if we are buying the company, not just its product. We look at stability and financial performance. And finally, we talk to their long-time customers, and not just the ones they give us as reference."

~ VP and CIO,
Major European Auto Maker

Chapter Three: Required Actions

Whether a company is trying to move its performance in ERP implementation from Laggard to Industry Average, or Industry Average to Best-in-Class, the following actions will help spur the necessary performance improvements:

Laggard Steps to Success

- **Assign ERP ownership to the line of business executive who stands to gain the most benefit from the implementation.** Laggard implementations stop short of reaching the full benefits that can be attained in terms of cost reductions, improvements in schedules, and further business benefits. While the reduction of cost was the top business driver of ERP strategies for 42% of Laggard companies, 18% to 19% do not measure reductions in inventory, manufacturing operational or administrative costs. Assigning ownership to an executive measured by these criteria will ensure a more complete implementation and better (ROI).
- **Formalize and document current processes.** This provides a foundation from which to uncover variability of processes and evaluate efficiency. ERP forms the transactional system of record and an opportunity to automate. It is important to fully understand current processes before attempting to automate.
- **Keep current on ERP solution providers' latest releases.** While it may be acceptable to run one release behind or to skip a release and catch up with the next major upgrade, falling significantly behind will leave innovations in features and functions unused and technology will quickly become outdated. In the past year, Laggards have fallen further behind the upgrade curve. In 2007, 38% of Laggards operated two or more releases behind the most current version. In 2008, this percentage rose to 42%.

Fast Facts

√ 18% to 19% of Laggards do not measure critical metrics such as reductions in inventory, manufacturing operational, and administrative costs

√ 46% of Industry Average companies indicated that customizations make upgrading cost prohibitive

√ Best-in-Class companies are 35% less likely than Laggard companies to operate on a significantly outdated version of ERP

Industry Average Steps to Success

- **Evaluate current documented processes, comparing them against functionality and best practices published by the current or proposed ERP solution provider.** Not only will this encourage best practices, but it will ensure a proper fit. Forty-six percent (46%) of Industry Average companies indicate customization of their software makes upgrading cost prohibitive. Weigh carefully the trade-offs between adapting processes to conform to ERP software and customizing the software to align with existing processes.
- **Broaden and deepen use of ERP.** This recommendation has been a consistent message throughout Aberdeen's ERP benchmark reports, but results are clear: Best-in-Class manufacturers make more extensive use of ERP in terms of number of modules implemented and the percentage of available functionality deployed.

"Deploying 'out-of-the-box' doesn't mean everyone has their own box. Sometimes we have to make tough decisions to change our processes, but usually this means we improve them."

~ Managing Director, Industrial Equipment Manufacturer

This year, we also saw that Best-in-Class companies are significantly more likely to have extended ERP with a combination of modules and separate applications, making integration capabilities and open architectures even more important.

- **Take advantage of tools that provide the ability to review summary data and optionally drill down to successive levels of detail.** ERP vendors deliver this functional capability in a variety of ways, including embedded analytics, executive portals and dashboards, as well as integration with popular desktop tools. If unclear on what the options are, ask an ERP solution provider to explain them.

Best-in-Class Steps to Success

- **Centralize selected functions using shared services. This is an important option provided by standardizing common business processes across the enterprise.** The most common functions to "share" are financial operations such as accounts payable, accounts receivable, and financial reporting. Eliminating redundancy and automating can result in the reduction or redeployment of headcounts to tasks which add more value to the organization. Shared services need not be limited to finance functions. The enterprise may benefit through improved buying power to negotiate discounts by centralizing purchasing. Check to make sure that the ERP provider supports these functions.
- **Improve real-time visibility to the entire quote to cash process.** A full 50% of Best-in-Class companies still do not have this level of full visibility. To be fully armed for decision-making, business users must be notified in real time as exceptions occur in order to react immediately. Currently, only 38% of the Best-in-Class have this capability. Providing direct access to enterprise data is the first step in achieving this goal. In addition, event management technologies are important tools to detect when exceptions occur. As the amount of data collected continues to expand, it becomes increasingly important to prioritize and present critical data on a "need-to-know" basis.

"My advice to other ERP users is to get involved with your vendor and with the community of users. There is no perfect product. You need to use what you have and work with your ERP supplier to make it better. ERP is like a marriage. You are in it for the long haul but you need to work at it."

~ SVP and CIO, Sports Equipment Manufacturer

Aberdeen Insights — Summary

ERP has become a necessary infrastructure, yet it can also be a source of competitive differentiation. However, to turn ERP into a strategic weapon, it is necessary to take full advantage of the technology, features, and functions which continue to expand at an ever-increasing rate. New application development tools and methodologies are allowing ERP solution providers to innovate at a much more rapid pace than ever before. Operating on old releases and outdated technology while your competition is implementing these new capabilities is a sure way to lose competitive advantage.

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Appendix A: Research Methodology

Between April and May 2008, Aberdeen examined the use, the experiences, and the intentions of over 1200 enterprises using ERP in a diverse set of manufacturing enterprises.

Aberdeen supplemented this online survey effort with interviews with select survey respondents, gathering additional information on ERP strategies, experiences, and results.

Responding enterprises included the following:

- *Job title / function:* The research sample included respondents with the following job titles: CEO (7%); CFO / VP Finance / Controller (7%); CIO / VP IT (8%); EVP/SVP/VP/GM (5%); Director (10%); Manager (25%); Consultant (9%); and Enterprise IT (6%), other (18%).
- *Industry:* The research sample included respondents from the following industries: general manufacturing (28%); automotive (10%); industrial equipment manufacturing (10%); aerospace & defense (9%); metals and metal products (8%); food and beverage (7%); high technology (11%); consumer goods (6%); and other (11%).
- *Geography:* The majority of respondents (72%) were from the Americas. Remaining respondents included those from the Asia-Pacific region (12%) and Europe, the Middle East and Africa (16%).
- *Company size:* Sixteen percent (16%) of respondents were from large enterprises (annual revenues above US $1 billion); 41% were from midsize enterprises (annual revenues between $50 million and $1 billion); and 43% of respondents were from small businesses (annual revenues of $50 million or less).
- *Headcount:* Twenty-seven percent (27%) of respondents were from large enterprises (headcount greater than 1,000 employees); 47% were from midsize enterprises (headcount between 100 and 999 employees); and 26% of respondents were from small businesses (headcount between 1 and 99 employees).

Solution providers recognized as sponsors were solicited after the fact and had no substantive influence on the direction of this report. Their sponsorship has made it possible for Aberdeen Group to make these findings available to readers at no charge.

Study Focus

Responding manufacturing executives completed an online survey that included questions designed to determine the following:

√ The degree to which ERP is deployed in their operations

√ The structure and effectiveness of existing ERP implementations

√ Current and planned use of ERP

√ The business benefits that have been derived from ERP initiatives

The study aimed to identify emerging best practices for ERP usage in manufacturing, and to provide a framework by which readers could assess their own management capabilities.

Table 5: The PACE Framework Key

Overview
Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows: **Pressures —** external forces that impact an organization's market position, competitiveness, or business operations (e.g., economic, political and regulatory, technology, changing customer preferences, competitive) **Actions —** the strategic approaches that an organization takes in response to industry pressures (e.g., align the corporate business model to leverage industry opportunities, such as product / service strategy, target markets, financial strategy, go-to-market, and sales strategy) **Capabilities —** the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products / services, ecosystem partners, financing) **Enablers —** the key functionality of technology solutions required to support the organization's enabling business practices (e.g., development platform, applications, network connectivity, user interface, training and support, partner interfaces, data cleansing, and management)

Source: Aberdeen Group, June 2008

Table 6: The Competitive Framework Key

Overview	
The Aberdeen Competitive Framework defines enterprises as falling into one of the following three levels of practices and performance: **Best-in-Class (20%) —** Practices that are the best currently being employed and are significantly superior to the Industry Average, and result in the top industry performance. **Industry Average (50%) —** Practices that represent the average or norm, and result in average industry performance. **Laggards (30%) —** Practices that are significantly behind the average of the industry, and result in below average performance.	In the following categories: **Process —** What is the scope of process standardization? What is the efficiency and effectiveness of this process? **Organization —** How is your company currently organized to manage and optimize this particular process? **Knowledge —** What visibility do you have into key data and intelligence required to manage this process? **Technology —** What level of automation have you used to support this process? How is this automation integrated and aligned? **Performance —** What do you measure? How frequently? What's your actual performance?

Source: Aberdeen Group, June 2008

Table 7: The Relationship Between PACE and the Competitive Framework

PACE and the Competitive Framework – How They Interact
Aberdeen research indicates that companies that identify the most influential pressures and take the most transformational and effective actions are most likely to achieve superior performance. The level of competitive performance that a company achieves is strongly determined by the PACE choices that they make and how well they execute those decisions.

Source: Aberdeen Group, June 2008

Appendix B: Related Aberdeen Research

Related Aberdeen Group research that forms a companion or reference to this report include:

- *2007 ERP in Manufacturing Benchmark;* July 2007
- *2006 ERP in Manufacturing Benchmark Report*; August 2006
- *The Order-to-Cash Cycle: Integrating Business Processes to Improve Operational Performance*; March 2008
- *ERP Plus in Process Industries*; February 2008
- *ERP in SMB: Exploring Growth Strategies*; December 2007
- *ERP in Industrial Machinery and Components Manufacturing*; November 2007
- *2007 ERP in the Mid-Market: Serving the Needs of 1.2 Million Businesses*; September 2007

Information on these and any other Aberdeen publications can be found at www.Aberdeen.com.

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