Aberdeen Group
A Harte-Hanks Company

# ERP in Manufacturing 2010

## Measuring Business Benefit and Time to Value

June 2010

Cindy Jutras

Aberdeen Group
A Harte-Hanks Company

# Executive Summary

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 a history that spans almost three decades, ERP has truly become a mature business application. Aberdeen's theme this year in benchmarking ERP in manufacturing is measuring business benefit and time to value. As ERP has become more pervasive in manufacturers, there is risk in perceiving it as a necessary infrastructure and neglecting to measure the business benefits resulting from its implementation. This fifth annual Aberdeen benchmark, based on over 445 survey respondents, explores Best-in-Class approaches to realizing the greatest business benefit possible from ERP.

**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:

- 22% reduction in levels of inventory
- 97% inventory accuracy
- 96% manufacturing schedule compliance
- 98% on-time and complete shipments
- An average of 3.4 days to close a month

## Competitive Maturity Assessment

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

- Top performers are 111% more likely to quantify the business benefits of ERP implementations
- The Best-in-Class take advantage of 39% more ERP functionality
- The top 20% in terms of aggregate performance scores also enjoy an 83% advantage in full visibility to their business

## Required Actions

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

- Establish a baseline, set goals and quantify the business benefits resulting from the implementation of ERP
- Measure cost reductions and schedule improvements, along with time to value
- Don't let maintenance dollars go to waste; broaden and deepen ERP functionality

"After completing a successful implementation we measure success through the following:

√ Stability of the application

√ Ability to meet the business needs and support business processes

√ Ability to report data for compliance reporting and performance

√ Conformance to planning metrics

√ Ability to track key metrics against strategic goals."

~ James Kneece, Vice President Finance and Operations Administration, GTC Biotherapeutics, Inc.

Aberdeen Group
A Harte-Hanks Company

## Table of Contents



## Figures



## Tables

Telephone: 617 854 5200
Fax: 617 723 7897

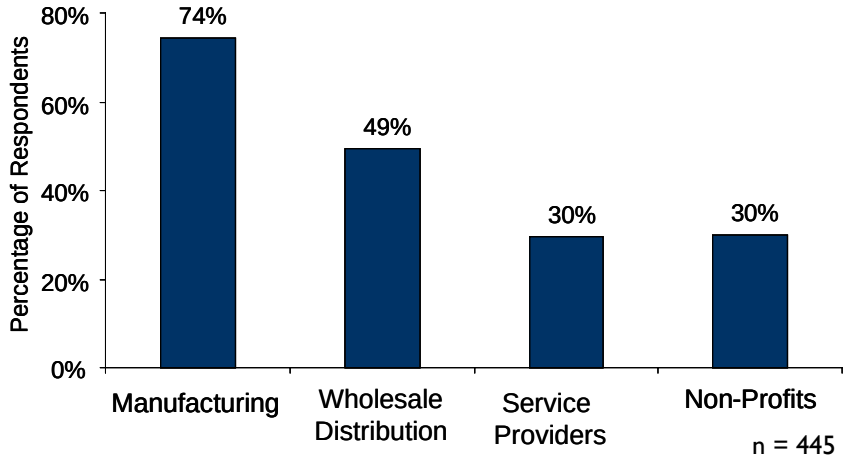
Aberdeen Group
A Harte-Hanks Company

# Chapter One: Benchmarking the Best-in-Class

## Business Context

Given its genesis in Material Requirements Planning (MRP), the roots of Enterprise Resource Planning (ERP) are firmly planted in manufacturing. The first quarter 2010 *Aberdeen Business Review* found 74% of manufacturers have implemented ERP, more than twice the adoption rate of other industries (Figure 1). These other industries indeed look to manufacturing for best practices in utilizing ERP to provide the operational system of record that forms the basis of the business itself.

**Figure 1: Manufacturing Leads in ERP Adoption**




Source: Aberdeen Group, January 2010

At the same time, continued pressure on manufacturers to optimize resources, meet tighter delivery schedules, and improve overall responsiveness is driving change and forcing many manufacturing companies to re-evaluate their ERP strategies. Aberdeen recently collected over 700 survey responses, including 445 manufacturers, to its fifth annual ERP survey. This year, as in the four previous years, the business drivers impacting ERP strategies have been **cost reduction**, **customer service** and **growth**. While the need to support growth expectations and the desire to improve customer service jockeyed for the top two pressures in 2006 and 2007, the need to reduce cost began to emerge as the dominant driver in 2008 and has continued to dominate through 2010.

However, cost reduction is not the principal business driver across all segments of our survey population. While still the top pressure in small to mid-size companies, the requirement for interoperability across multiple operating locations escalates with company size, and becomes the foremost factor as companies breach the threshold of $1 billion in annual revenues (Figure 2).

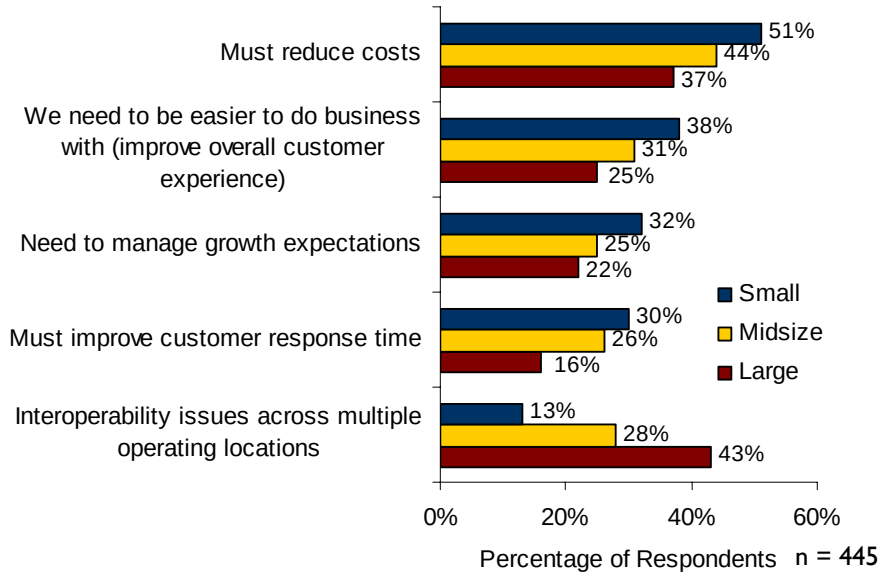
**Fast Facts**

Best-in-Class ERP implementations slash **93%** **more** costs (than all others):

- √ **134%** more inventory cost reductions
- √ **73%** more manufacturing operational cost reductions
- √ **115%** more administrative cost reductions

At the same time, they produce **57%** better schedule improvements with 23% fewer days' supply of inventory

## Figure 2: "Top Two" Business Drivers Impacting ERP Strategies




Source: Aberdeen Group, June 2010

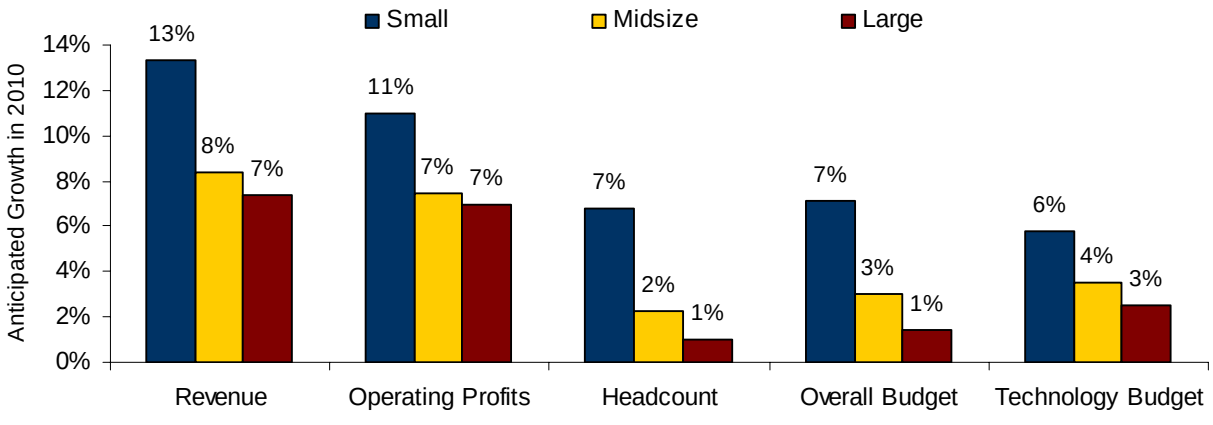
### Company Size Defined

Aberdeen defines company size by annual revenue:

- √ Small: companies with annual revenues under $50 million
- √ Midsize: those with revenues between $50 million and $1 billion
- √ Large: enterprises with revenues in excess of $1 billion a year

In the smallest companies, cost reduction could spell the difference between survival and failure. Without the market clout of a larger enterprise, smaller companies are under increased pressure to be responsive and easy to do business with. While growth can be important for any size company, the most recent survey of over 1,780 companies for the *Aberdeen Business Review* indicated small companies had very aggressive planned growth in 2010 (Figure 3). While a smaller percentage growth in a multi-billion dollar company might produce a higher growth in terms of absolute dollars, managing a double digit percentage growth can be a significant challenge for smaller companies with limited resources.

## Figure 3: 2010 Planned Growth Rates




Source: Aberdeen Group, June 2010


Telephone: 617 854 5200
Fax: 617 723 7897

In the largest companies, cost reduction, customer service and growth are all overshadowed by the need for interoperability. The number of operating locations which must be supported by ERP implementations grows along with revenue. While 54% of small companies operate from a single location, that percentage shrinks to 20% for midsize companies and 0% for large companies participating in our survey. Furthermore less than 10% had five or less and 83% of large companies have more than 10 locations. As a result, interoperability outweighs all the other factors which exerted pressures on smaller companies.

**Number of Locations**

The number of operating locations supported by ERP increases with company size.

- √ Small companies average 2.3 operating locations
- √ Midsize: 5.4 locations
- √ Large: 10.9 locations

## The Maturity Class Framework

Aberdeen used five key performance criteria to distinguish the Best-in-Class from Industry Average and Laggard ERP implementations (Table 1). These Key Performance Indicators (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 | ▪ 22% reduction in inventory levels<br>▪ 97% inventory accuracy<br>▪ 3.4 days to close a month<br>▪ 96% manufacturing schedule compliance<br>▪ 98% complete and on-time shipments |
| **Industry Average: Middle 50%** of aggregate performance scorers | ▪ 11% reduction in inventory levels<br>▪ 94% inventory accuracy<br>▪ 5.3 days to close a month<br>▪ 88% manufacturing schedule compliance<br>▪ 93% complete and on-time shipments |
| **Laggard: Bottom 30%** of aggregate performance scorers | ▪ 3% reduction in inventory levels<br>▪ 90% inventory accuracy<br>▪ 7.3 days to close a month<br>▪ 73% manufacturing schedule compliance<br>▪ 84% complete and on-time shipments |

Source: Aberdeen Group, June 2010

"[Benefits from our ERP implementation included] increased order fill rates, improved inventory turns and reduced ABC (Activity Based Costing) costs related to overhead."

~ General Manager, Midsize Industrial Products Manufacturer

## The Best-in-Class PACE Model

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

**Table 2: The Best-in-Class PACE Framework**

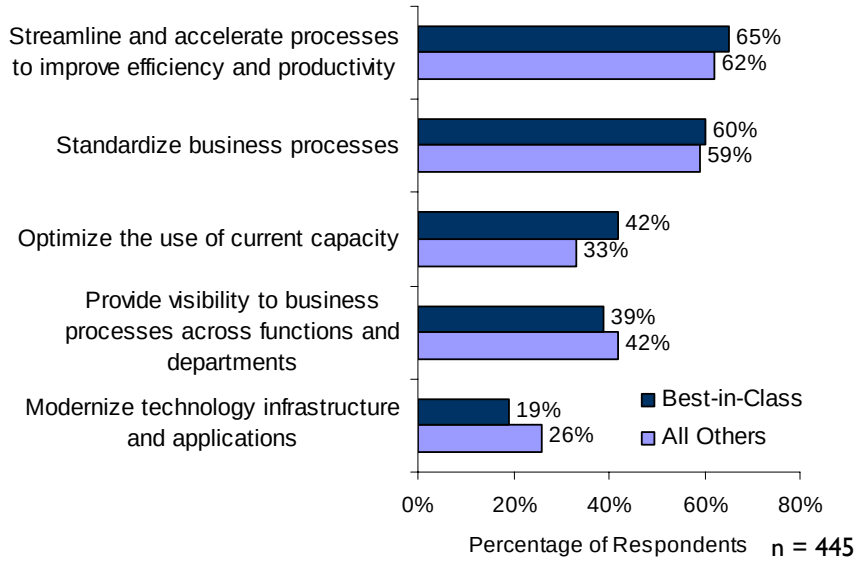
| Pressures | Actions | Capabilities | Enablers |
|---|---|---|---|
| ▪ Must reduce costs | ▪ Streamline and accelerate business processes<br>▪ Standardize business processes | ▪ Integrated business applications serve as a complete and auditable system of record<br>▪ Standardized enterprise-wide procedures for order management, procurement, production planning and execution, cash collection, and financial reconciliation<br>▪ From summary data, decision-makers can drill down to transactions that form the fiscal and operational audit trail<br>▪ Line of Business ultimately owns the success (or failure) of the implementation of ERP<br>▪ Quantifiable business benefits resulting from overall implementation of ERP are measured | ▪ 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<br>▪ Workflow automation / Business Process Management<br>▪ Event Management (triggers and alerts)<br>▪ Extensions to ERP including CRM, SRM, SCP, WMS, TMS, Project / Portfolio Management, BI and others |

Source: Aberdeen Group, June 2010

## Best-in-Class Strategies

As we have observed over the past four years, we see little difference in the strategies behind Best-in-Class ERP implementations versus those that are Average or Laggard (all others). Difference in performance is instead linked to execution of strategy.

**Figure 4: "Top Three" ERP Strategies**




Source: Aberdeen Group, June 2010

"[Our ERP implementation] has provided us with the ability to accurately schedule material requirements as well as accurately plan for capacity requirements."

~ Managing Director, Industrial Equipment Manufacturer

Streamlining and accelerating business processes represent key objectives of these deployments and ERP can be useful in serving as the vehicle for not only this efficiency boost but for standardizing these processes as well (Figure 4).

While these strategies are consistent across all competitive categories, we do see the Best-in-Class as 27% more likely to utilize the features and functions of ERP to optimize the current use of capacity. For many manufacturers the impact of the worst economic recession in decades has been a tightening of available credit, causing the need to preserve cash and cut capital spending. This has a ripple effect throughout supply chains, resulting in demand volatility as well. All these conditions combine to create an environment which is far from conducive to expansion of production facilities, requiring instead the optimization of current capacity. ERP solutions designed specifically for manufacturers blend demand planning with material requirements and capacity planning to improve throughput and make optimal use of production capacity.

Improved visibility rounds out the top four strategic actions. However, even though this has been a priority for the past four years, we find progress in achieving it disappointing. Last year we observed only 31% of all survey participants had full visibility to all business processes from quote to cash. While this percentage only inched up to 37% overall this year, we did observe very significant progress in our Best-in-Class which improved from 41% to 64%, giving the top performers a 73% advantage.

In prior years Aberdeen pointed out this indicated a failure across all maturity classes to take full advantage of their integrated solutions and / or the failure to put access to this information directly in the hands of decision-makers. This year the significant progress achieved by the Best-in-Class indicates this level of visibility should indeed be achievable. Often visibility is hampered by legacy applications and older technology which can be far from intuitive and executive friendly. This should provide added incentive to take the strategic action shown at the bottom on Figure 4 - the modernization of technology infrastructure and applications. While ERP solution providers have added configurability and "ease of use" features into their products, companies stuck on old releases based on outdated technologies will find their ability to execute against these strategies severely limited.

"ERP must support a living, ever-changing business environment by providing the tools to manage it."

~ Director of Operations, Manufacturing Services Company Serving Electronics Manufacturers

**Aberdeen Insights — Strategy**

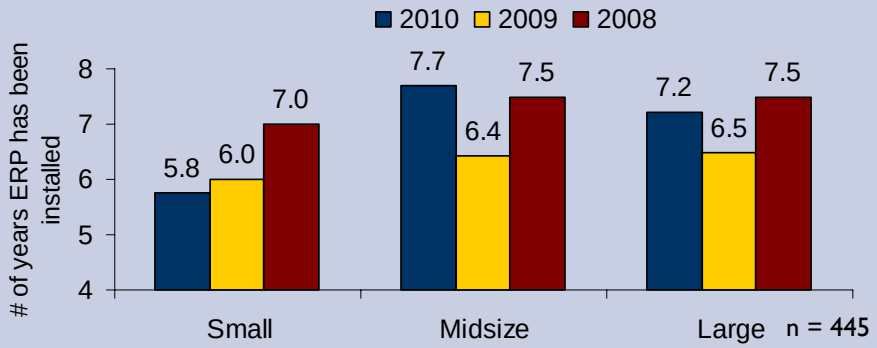
Upgrade and replacement strategies become all that much more important as ERP implementations mature. While the average age of ERP implementations shrank last year, reflecting an increase in replacements and first time implementations, this average rebounded this year to approximate 2008 maturity levels in midsize and large companies (7.7 and 7.2 respectively).

*continued*

Aberdeen Group
A Harte-Hanks Company

## Aberdeen Insights — Strategy

### Figure 5: Average Age of ERP Implementation




Source: Aberdeen Group, June 2010

At the same time, the average age of ERP implementations in small companies continues to shrink, an indication that smaller companies are investing in ERP solutions. Some are investing for the first time and others are replacing some combination of desktop applications (including spreadsheets) and applications which lack the depth and breadth of functionality or a flexible architecture that will grow with them.

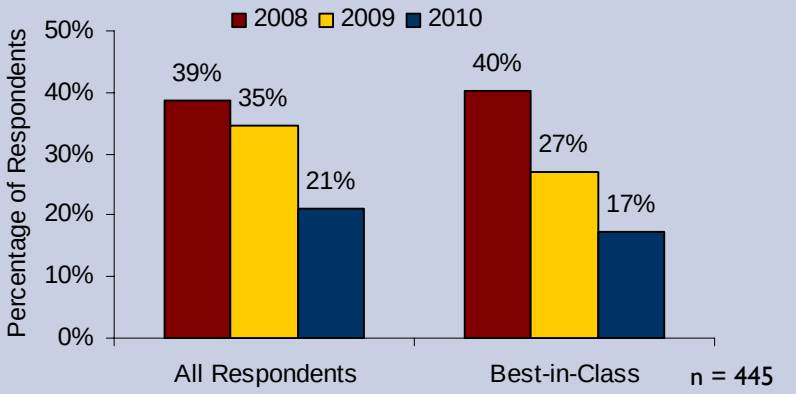
However, the age of the ERP implementation tells only part of the story. Sustained innovation is very important if the ERP solution is to continue to satisfy the needs of the enterprise. Business needs change as companies grow and evolve or as economic and/or market conditions change. An ERP system with a long history may be based on older, inflexible architectures, or it may have undergone a technology refresh.

How old is "old?" Over the last several years, in determining the maturity of ERP implementations, Aberdeen has continued to shift the boundaries of longevity in order to distinguish between pre-Y2K (the year 2000, which signaled the beginning of the new millennium) and post-Y2K implementations. Over the past three years we have seen the number of implementations that pre-date Y2K shrink and the number of pre-Y2K Best-in-Class implementations disappearing at a faster rate (Figure 6).

*continued*

## Aberdeen Insights — Strategy cont'd

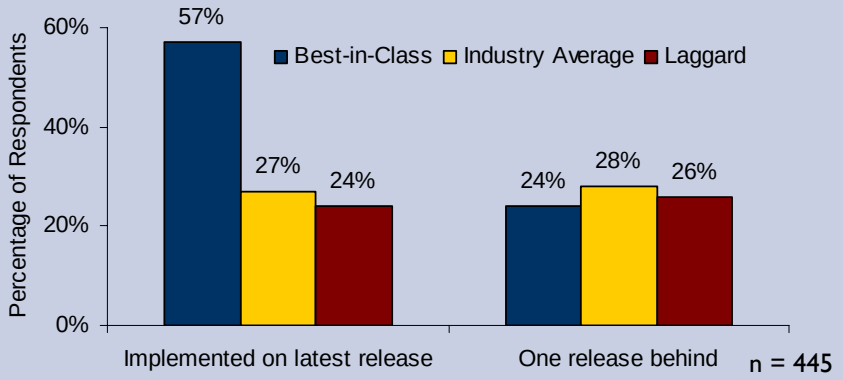
### Figure 6: Percentage of ERP Implementations that Pre-Date Y2k




Source: Aberdeen Group, June 2010

In order to sustain the needs of the enterprise, ERP implementations must also evolve. ERP solution providers deliver innovation through maintenance agreements. A very consistent recommendation by Aberdeen over the past several years: don't let maintenance dollars go to waste. A Best-in-Class implementation is 119% more likely to be operating on the latest release (Figure 7). Businesses evolve and technology evolves, and if one does not keep up with the other, manufacturers can potentially lose their competitive edge. Companies that are able to take full advantage of their current stack of technology and applications, including innovations delivered by ERP solution providers, are better positioned to compete.

### Figure 7: Current Release Status




Source: Aberdeen Group, June 2010

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

Aberdeen Group
A Harte-Hanks Company

# 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 and the time to value.

## Case Study — Walton Signage

Walton Signage is a $25 million company that designs, delivers and installs custom-made signs for a wide variety of businesses. With a single plant and office in San Antonio, Texas, sales representatives around the country and thousands of (contract) installers, the company caters to signage needs nation-wide. The company delivers turn-key projects that span from securing permits to surveying sites to manufacturing and installation. Walton Signage installed its current ERP solution about four and a half years ago after having outgrown a less robust solution. "We wanted something more conducive to managing our business with a single solution," said Jennifer Mesiano, IT Manager.

Mesiano is one of two ERP managers with over 10 years experience with the application. "We are always looking at the incremental cost and benefit of doing more with ERP. We do a major upgrade every two to three years and then look to further develop each aspect of the release between upgrades. For each project we go through a full process of evaluation. We might do a lead time analysis, creating a value stream map of current processes either during a Kaizen (continuous improvement) event or otherwise. Then we map where we feel we will be in the future as a result of the project. At the end we analyze and assess where we thought we would be and where we are.

Each department has a strategic plan that looks two years out. The result of those departmental plans often includes requests of IT that get folded into the IT strategic plan. "The goal of our [IT] strategy is to make the end user experience as efficient as possible. Our plan outlines ways to improve ERP workflow and produce cost savings. We look at hours and time saved. Any hard costs are easier to measure and get published. Each department typically monitors 10 to 20 metrics and for most these include cost savings."

*continued*

## Fast Facts

- √ The Best-in-Class are almost four-times more likely than Laggards to quantify the business benefits of ERP
- √ The weighted average use of ERP modules increased 14% year over year while average growth in adoption of ERP extensions grew by less than 1%
- √ The Best-in-Class use 59% more functionality than Laggards
- √ 64% of the Best-in-Class have full visibility into the status of all processes from quote to cash, an improvement of 21% year over year, giving them an 83% advantage over all others

**Case Study — Walton Signage**

She continued, "Recently we implemented a tax module and saved significant time in calculating taxes. We also enhanced our data collection with bar codes. As a result we reevaluated how we collected labor. Just the cost savings alone in eliminating paperwork was $10,000, a tremendous savings for something that took a few hours to formulate and implement. One of our next steps will be to implement Document Management. It will be a huge project in terms of time and cost savings. As we streamline and accelerate business processes, we need a way to eliminate paper. Everyone is pushing to go green. Everyone is tired of seeing all the paper."

## 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** (demonstrated ability to standardize processes and ERP implementation); (2) **organization** (executive commitment and assigned ownership of ERP implementation); (3) **knowledge management** (providing visibility in order to drive decision-making); (4) **technology** (effective use of modules of and extensions to ERP); and (5) **performance management** (the ability of the organization to measure its results to improve its business). 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 procurement, cash collection, and financial reconciliation | | |
| | 84% | 71% | 63% |
| | Standardized procedures for order management and delivery across similar businesses within the enterprise | | |
| | 83% | 66% | 61% |
| | Standardized enterprise-wide procedures for production planning and execution across similar businesses | | |
| | 71% | 56% | 46% |
| **Organization** | Line of business ultimately owns the success of the ERP implementation | | |
| | 79% | 62% | 44% |
| | Cross-functional continuous improvement teams are responsible for improving operational performance | | |
| | 72% | 52% | 47% |
| | Manufacturing operations are integrated and coordinated with customer service, logistics, and delivery organization | | |
| | 74% | 59% | 51% |

Modules Included in ERP Usage:

- √ General Ledger
- √ Accounts Payable
- √ Accounts Receivable
- √ Fixed Asset Management
- √ Material Requirement Planning (MRP)
- √ Capacity Requirements Planning (CRP)
- √ Distribution Requirements Planning (DRP)
- √ Master Production Schedule (MPS)
- √ 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

| | Best-in-Class | Average | Laggards |
|---|---|---|---|
| **Knowledge** | From summary data, decision-makers can drill down to transactions that form the fiscal and operational audit trail | | |
| | 74% | 52% | 44% |
| | Real time visibility into status of all processes from quote to cash | | |
| | 64% | 38% | 31% |
| **Technology** | ERP Usage: | | |
| | ▪ Average of 13.8 modules implemented[1]<br>▪ 80% of functionality available deployed<br>▪ 45.9% weighted average of ERP usage[2] | ▪ Average of 11.4 modules implemented[1]<br>▪ 75% of functionality available deployed<br>▪ 35.5% weighted average of ERP usage[2] | ▪ Average of 10.1 modules implemented[1]<br>▪ 68% of functionality available deployed<br>▪ 28.8% weighted average of ERP usage[2] |
| **Performance** | Quantifiable business benefits resulting from overall implementation of ERP are measured | | |
| | 59% | 36% | 15% |
| | Time to Value was / is measured for initial implementation | | |
| | 53% | 28% | 18% |

1. The number of modules is based on a set of 24 generic modules (see sidebar)
2. Calculated as: average number of modules / 24 X percent of functionality used

Source: Aberdeen Group, June 2010

## Capabilities and Enablers

Based on the findings of the Competitive Framework and interviews with end users, Aberdeen's analysis demonstrates that very significant benefits can be gained from an integrated ERP solution, including:

- Quantifiable cost savings and schedule improvements
- Streamlining and automation of manual processes
- Visibility to data and also to business process status, from quote to cash
- Consolidation and compliance with fiscal reporting requirements
- Better control over inventory and manufacturing schedules
- Improved customer service and response times

"As a result of our ERP implementation and continuous improvement activities, we are achieving leaner, more standardized and automated processes that lead to less inventory across the whole supply chain and greater visibility of the entire business to the management."

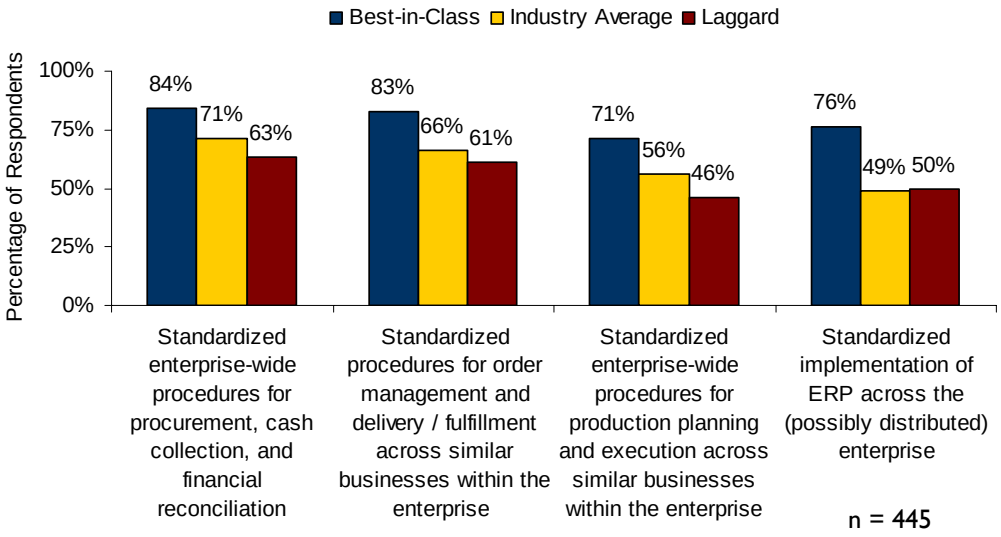
~ Luis Faustino, European ERP Manager, Global Automotive Supplier

### *Process*

Standardized business processes are essential to improving efficiency and productivity. A single set of standard processes is far easier to streamline and automate than a collection of procedures designed only to meet a

singular or individual need. As companies grow through acquisition or geographic or market expansion, this standardization may become more difficult, but at the same time, is all that much more important, particularly in addressing the challenges associated with interoperability between operating locations.

**Figure 8: Process Capabilities**




Source: Aberdeen Group, June 2010

In Table 3 and Figure 8, Aberdeen compares the standardization of three different groups of processes across the competitive framework: those that are purely back-office processes, those that are more customer-facing (in terms of delivery) and those procedures that relate directly to manufacturing or production.

Standardized back office processes can often lead to better economy of scale through centralization and possibly shared services. This makes the most obvious and intuitive sense in terms of back office processes. Ultimately financial transactions across the enterprise must be consolidated for reporting purposes. Where a single ERP solution is implemented enterprise-wide, this is a relatively simple task. But as companies grow in size the likelihood of having a single ERP solution diminishes. The average number of ERP solutions implemented in large companies surveyed is 3.8 and 19% of small and 38% of midsize companies have more than one ERP solution installed.

Figure 8 shows that the Best-in-Class are 55% more likely to standardize ERP implementations. While having a single ERP solution makes consolidated reporting and standardization easier, it is possible to standardize even with a more diverse portfolio. Indeed many larger companies today take a two tier approach to ERP implementation, defining one or more standards for individual manufacturing locations and a separate and different standard at the corporate level. Yet many elements of an ERP

implementation, such as normalized master data and procedural definitions, can be standardized even across diverse ERP applications. Indeed, where these added investments are separate applications, standardization becomes even more important.

Standardization can also be particularly useful in terms of customer facing activities, particularly when customers are shared across divisions or operating locations. Increasingly, Aberdeen is finding global enterprises are taking an "engineer anywhere, manufacture anywhere, and sell anywhere" approach, which also provides added incentive for production planning and execution to share standard processes.

"[Our ERP implementation] has been a great success in providing central information for our company on a global basis, but allowing the individual countries to operate in their own environment."

~ Eric Piersol, IT Manager, Alltech

## *Organization*

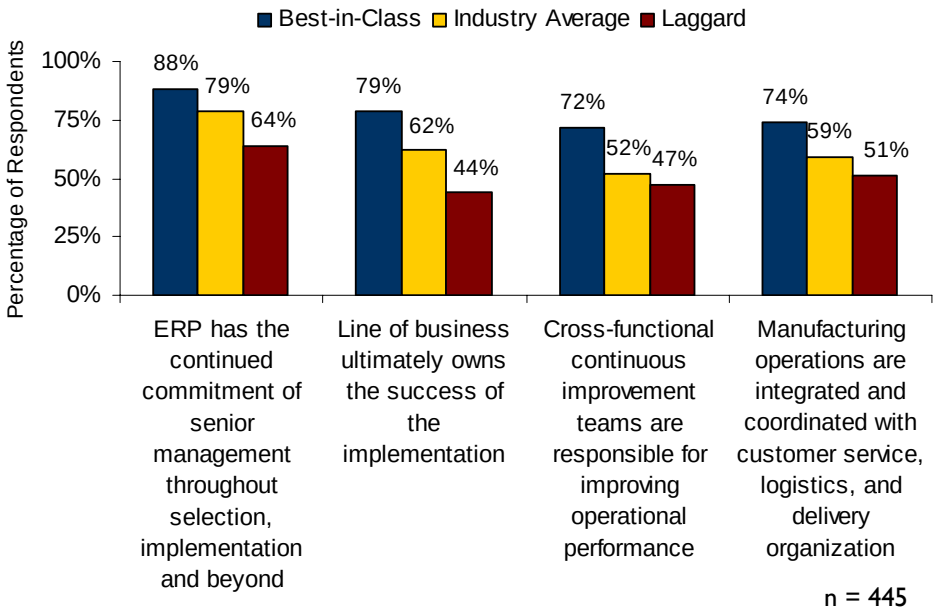
The organizational capabilities that differentiate our Best-in-Class ERP implementations are only in part related directly to ERP (Figure 9). Management commitment is a well-recognized requirement for a successful ERP and for the past several years Aberdeen has been advocating ERP "ownership" by line of business executives. While Information Technology (IT) must play a critical role in the selection, installation and implementation of ERP, assigning ownership of ERP to the line of business executive that stands to gain the most from its implementation will encourage the active pursuit of business benefits such as the cost reductions and schedule improvements our survey measures as a result of ERP.

"We have measured the success [of our ERP implementation] by continuous improvement in system processes. We are constantly improving how we use [the solution]. ROI is well documented and published."

~ Jennifer Mesiano, IT Manager, Walton Signage

The organizational capabilities that are less directly tied to the ERP implementation are related to collaboration and coordination across functions within the manufacturer. Continuous improvement has become a hallmark of Best-in-Class manufacturers yet data collected on current release status leads us to believe this continuous improvement is not uniformly and universally applied to ERP implementations. Only 30% of survey respondents are on the most recent version of their ERP solution and on average perform a major upgrade every 3.5 years. Of course major upgrades are not the only means of continuous improvement. Improvements may come from expanded use of functionality or bringing access and visibility to a broader audience within the company.

**Figure 9: Organizational Capabilities**




n = 445

Source: Aberdeen Group, June 2010

"We measure the success of our ERP implementation by the amount of time we spend creating each component of our business: quote, order, job, PO, invoice. We also consider the ease of tracking jobs, accounting information, inventory control, and purchased components. The final factor is time spent maintaining, training, and procedural-izing the system and the personnel required to use the system."

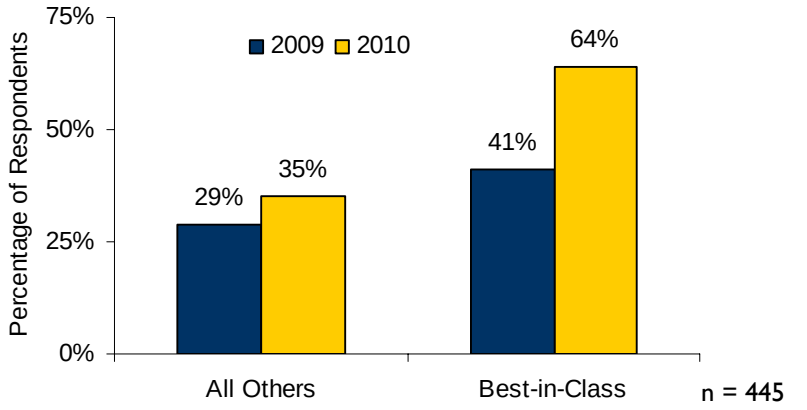
~ CEO, Small Tooling and Machinery for the Packaging Industry

## *Knowledge Management*

Providing visibility is one of the primary goals of ERP. However, Aberdeen has observed little progress in attaining real time visibility of processes from quote to cash in the majority of survey respondents. However, the top 20% of performers this year did make significant progress, improving visibility by 56% while those not Best-in-Class improved by only 21% (Figure 10).

True visibility requires real-time access to data at an appropriate level of summarization coupled with the ability to drill down to supporting transactions. Forcing decision makers to wade through excruciating detail is a sure way of guaranteeing that they will avoid directly accessing the data and instead rely on subordinates to summarize data, or will rely on their own desktop or paper-based versions of the data. Most modern ERP solutions today provide the ability for decision makers to start at a high level of summary and drill down to successive levels of detail all the way to the transactions that form the system of record on which a business is run. This may be provided as an embedded feature of ERP or through a complementary solution.

**Figure 10: Real-time Visibility from Quote to Cash**




Source: Aberdeen Group, June 2010

## *Technology*

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. The number of modules implemented in 2006 and 2007 were identical and finally inched up slightly in 2008, only to drop in 2009. However, in 2010, for the first time, we see a jump by more than a full module (Table 4).

**Table 4: ERP Usage Trends**

| Average Aggregated ERP Usage | | | | |
|---|---|---|---|---|
| **2006** | **2007** | **2008** | **2009** | **2010** |
| ▪ 10.5 modules implemented[1]<br>▪ 63% of functionality available deployed<br>▪ 27.6% weighted average of ERP usage[2] | ▪ 10.5 modules implemented[1]<br>▪ 71% of functionality available deployed<br>▪ 31.2% weighted average of ERP usage[2] | ▪ 10.7 modules implemented[1]<br>▪ 74% of functionality available deployed<br>▪ 32.6% weighted average of ERP usage[2] | ▪ 10.1 modules implemented[1]<br>▪ 72% of functionality available deployed<br>▪ 30.1% weighted average of ERP usage[2] | ▪ 11.3 modules implemented[1]<br>▪ 73% of functionality available deployed<br>▪ 34.4% weighted average of ERP usage[2] |

1. The number of modules is based on a set of 24 generic modules (see previous sidebar)
2. Calculated as: average number of modules / 24 X percent of functionality used

Source: Aberdeen Group, June 2010

As in prior years, use of modules and the embedded functionality does not tell the entire story. In 2009, the drop in module used was accompanied by a corresponding rise in the implementation of complementary solutions that Aberdeen labeled as "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. If provided by the ERP vendor, its release cycle may or may not be synchronized with core ERP. Many of these functional areas could indeed be addressed by either, and in fact, it is becoming increasingly difficult to determine where ERP ends and other applications begin. A relatively large percentage of extensions are purchased from the installed ERP solution provider (see sidebar).

While in 2009 the number of ERP modules dropped while the adoption of extensions increased, we saw this reversed in 2010. The number of modules implemented increased while the adoption of extensions stayed relatively constant, with adoption of only three of the complementary solutions increasing:

- Manufacturing Executions Systems adoption increased from 20% to 27%
- Quality Management Systems adoption increased from 28% to 33%
- Adoption of Document Management Systems increased from 23% to 33%

This shift from extensions to modules is reflective of the increased innovation and functionality offered by many of the major ERP solution providers today. In the past, choosing between a module of ERP and a "best-of-breed" point solution often meant a trade off between more robust functionality and ease of integration. However, modern technology and open architectures, including Service Oriented Architecture (SOA) facilitate software development and more seamless integration of functional components. As a result, application solution providers are less constrained by existing software.

It is far easier to develop features and functions in "new" code than to enhance and modify existing software. Modern infrastructures allow development of new components yet support seamless integration. So even if the new functionality might be developed as an entirely new extension, it can appear as fully integrated as a module of ERP. This approach can be used to significantly enhance functionality offered and facilitate an expanded footprint of ERP.

## Performance Management

Aberdeen's theme this year in benchmarking ERP in manufacturing is measuring business benefit and time to value. As ERP has become more pervasive in manufacturers, there is 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

**Percentage of ERP Extensions purchased from an ERP vendor:**

- √ 72% Customer Relationship Management (CRM)
- √ 59% Contact Center Management
- √ 37% Product Life Cycle / Data Management
- √ 88% *Supplier Relationship Management (SRM)*
- √ 70% Supply Chain Planning (SCP)
- √ 69% Warehouse Management Systems (WMS)
- √ 65% Transportation Management Systems (TMS)
- √ 54% Business Intelligence
- √ 67% Quality Management Systems (QMS)
- √ 74% Manufacturing Execution Systems (MES)
- √ 30% *Enterprise Asset Management (EAM)*
- √ 56% *Human Capital Management (HCM)*
- √ 54% Financial Planning & Budgeting
- √ 51% Document Management
- √ 56% *Field Service (beyond ERP)*
- √ 77% Enterprise Manufacturing Intelligence (EMI)
- √ 56% *Project / Portfolio Management (PPM)*

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.

**Table 5: Ability to Measure Business Benefits**

| Business Benefit Derived from ERP | Best-in-Class | Industry Average | Lagg-ards |
|---|---|---|---|
| | Able to Quantify | | |
| | *Perceived benefits but unable to quantify* | | |
| Reduction in operational costs | 69% | 38% | 21% |
| | *28%* | *53%* | *62%* |
| Reduction of general administrative costs | 53% | 34% | 20% |
| | *40%* | *56%* | *59%* |
| Reduction or redeployment of headcount | 55% | 36% | 19% |
| | *36%* | *50%* | *57%* |
| Reduction in inventory costs | 78% | 52% | 19% |
| | *19%* | *36%* | *59%* |
| Reduction in waste (i.e. scrap, rework) | 50% | 30% | 15% |
| | *43%* | *52%* | *58%* |
| Better utilization of resources | 48% | 27% | 17% |
| | *48%* | *59%* | *62%* |
| Increased profits | 59% | 35% | 15% |
| | *31%* | *49%* | *59%* |
| Increased revenue | 45% | 28% | 12% |
| | *47%* | *50%* | *61%* |
| Increase in value delivered to customers | 45% | 27% | 15% |
| | *57%* | *54%* | *60%* |
| Reduced Time to Decision | 40% | 32% | 16% |
| | *60%* | *64%* | *59%* |
| Increased Production | 62% | 31% | 17% |
| | *31%* | *51%* | *56%* |
| Increased New Product Introductions | 22% | 15% | 9% |
| | *64%* | *59%* | *59%* |
| Support growth without additional headcount | 48% | 34% | 18% |
| | *47%* | *54%* | *61%* |

Source: Aberdeen Group, June 2010

While Laggard organizations obviously have more room for improvement, they are far less likely to be able to quantify the results (Table 5). While

**Improvements measured as a result of implementing ERP:**

Best-in-Class companies:

- √ 20% reduction in operating cost
- √ 18% reduction in administrative cost
- √ 22% reduction in inventory cost
- √ 17% improvement in complete and on time shipment
- √ 18% improvement in manufacturing schedule

Industry Average companies:

- √ 13% reduction in operating cost
- √ 10% reduction in administrative cost
- √ 11% reduction in inventory cost
- √ 13% improvement in complete & on time shipment
- √ 12% improvement in manufacturing schedule compliance

Laggard companies:

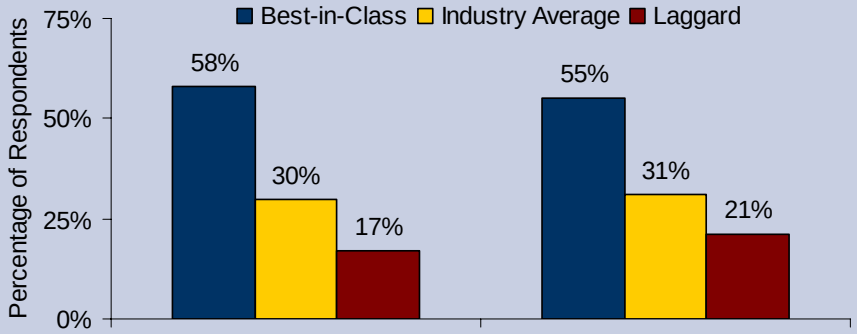
- √ 5% reduction in operating cost
- √ 4% reduction in administrative cost
- √ 3% reduction in inventory cost
- √ 5% improvement in complete & on time shipment
- √ 7% improvement in manufacturing schedule compliance

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 5, such as increased revenue and new product introductions, are more indirectly related to ERP implementations, inventory costs and production throughput can be directly tied back to business process that are streamlined and improved by ERP. It is apparent that this type of measurement correlates to more cost reductions and improvement in schedules resulting in better on-time and complete delivery.

## Aberdeen Insights — Technology

A sure measure of real-time visibility is an organization's ability to alert decision makers of events and conditions. When an order is booked, it is important for the credit department to be immediately notified to check credit; it may be equally important to notify design and engineering or production planning and/or fulfillment and logistics. However, it is equally important to trigger an alert when an expected event fails to occur. Perhaps a critical component or raw material scheduled for delivery fails to arrive on time; scheduled completion of production is interrupted.

**Figure 11: Real "Real-time" Visibility**




n = 445

Source: Aberdeen Group, June 2010

Monitoring and managing events and conditions (such as inventory levels lower than expected demand or quality below acceptable thresholds) are critical to delivering orders complete and on time. Two enablers are critical to assist in not only detecting these conditions, but alerting appropriate roles or individuals in the organization to take prompt action: event management and workflow automation.

*continued*


Telephone: 617 854 5200
Fax: 617 723 7897

## Aberdeen Insights — Technology

Event management is required to detect events and conditions, escalating where necessary when no response or an inadequate response fails to remedy the situation within an acceptable time limit. Workflow automation routes tasks, again to the appropriate role or individual, eliminating the need for a manual hand-off. These two enablers are necessary to support and sustain effective exception management. As business leaders are inundated with more and more data, having to wade through volumes of data to manually detect potential problems and relying on manual processes introduces added business risk. Alerting decision makers to potential business disruption and / or missed performance goals is a necessary component in proactively managing exceptions.

While the Best-in-Class have been consistently more likely to adopt these technologies, progress in each of the maturity classes has been less consistent (Table 6) and we see the gap closing between top performers and Industry Average or Laggard companies. In fact the overall adoption rate of event management of Best-in-Class dipped year over year while both Average and Laggards made small gains.

**Table 6: Exception Management Enablers**

| | Year | Best-in-Class | Industry Average | Laggards |
|---|---|---|---|---|
| Event Management | 2009 | 16% | 2% | 3% |
| | 2010 | 14% | 11% | 6% |
| Workflow Automation | 2009 | 26% | 11% | 17% |
| | 2010 | 39% | 27% | 23% |

Source: Aberdeen Group, June 2010

While Industry Average companies lagged behind even Laggards in workflow automation a year ago, these "middle of the road" performers caught up and surpassed those in the bottom 30% in spite of the fact that Laggard adoption rates increased by 29%.

These gains in adoption rates should serve as a warning to the Best-in-Class to carefully guard their performance advantage by better enabling exception management.

Aberdeen Group
A Harte-Hanks Company

# Chapter Three: Required Actions

Whether a company is trying to move the performance of its ERP implementation from Laggard to Industry Average, or Industry Average to Best-in-Class, the following actions will help spur the necessary performance improvements. Since 2006, Aberdeen has repeated many of its recommendations for improving ERP implementations. Some are well-known prerequisites to successful implementation. Yet evidence that they are not universally put into practice indicates that they bear repeating, even as nothing more than a reminder of what anyone who has ever been involved in such an implementation knows to be generally accepted best practices.

**Fast Facts**

- √ Best-in-Class are 130% more likely to measure time to value for the initial implementation of ERP
- √ 100% of the Best-in-Class measure cost reductions and schedule improvements as a result of ERP
- √ The Best-in-Class are 119% more likely to be on the latest release of ERP
- √ 79% of the Best-in-Class have cross-functional continuous improvement teams responsible for improving operational performance

## 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. Assigning ownership to an executive measured by these criteria will ensure a more complete implementation and better Return on Investment (ROI).
- **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 the top business driver of ERP strategies for 45% of Laggard companies, 18% do not measure reductions in inventory, and 27% do not measure reductions in manufacturing operational or administrative costs. 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, 82% of Laggards fail to even measure this initial result.

## Industry Average Steps to Success

- **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 what the options are, ask an ERP solution provider to

explain them. While increased visibility is a common objective of an ERP implementation only 38% of Industry Average companies have achieved real time visibility into the status of all processes from quote to cash. The Best-in-Class have made great strides in this regard since 2009, with 64% of the Best-in-Class having this level of visibility. This means the tools are available today to support transparency but provide no value unless they are implemented.

- **Coordinate, collaborate, and continuously improve.** The organizational capabilities that differentiate our Best-in-Class ERP implementations are related to collaboration and coordination across functions within the manufacturer. Continuous improvement has become a hallmark of Best-in-Class manufacturers yet the Industry Average are only 10% more likely than Laggards to have formed cross-functional continuous improvement teams responsible for improving operational performance. In addition 41% of manufacturing operations in this category are integrated and coordinated with service and delivery function.
- **Broaden and deepen ERP usage.** 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 the number of modules implemented and the percentage of available functionality deployed. We see a gap of almost 30% between the Industry Average (11.4 modules, 35.5% weighted average) and Best-in-Class (13.8 modules, 45.9% weighted average).
- **Don't let maintenance dollars go to waste.** This has been a recurring theme over the past several years, but this year we see the Best-in-Class outpacing the Industry Average by more than a factor of two in terms of staying current on the latest release of software. A key to being able to continue to broaden and deepen ERP usage is to take advantage of innovation provided by your ERP solution provider. The Best-in-Class are 119% more likely to be on the latest release of ERP.

## Best-in-Class Steps to Success

- **Improve real-time visibility to the entire quote to cash process.** While far ahead of Industry Average and Laggards, more than a third (36%) of Best-in-Class companies still does not have this level of full visibility. While 74% of the Best-in-Class have the ability to monitor activity at a summary level and selectively drill down to successive detail, down to the transaction level, a smaller percentage have the ability to automatically notify decision-makers when scheduled activities fail to occur as planned (58%) or when certain conditions are detected (55%). While the Best-in-Class may think they have full visibility, these capabilities add the "real" to real-time.

- **Manage by exception**. To be fully armed for decision-making, business users must be notified in real time as exceptions occur in order to react immediately. Event management technologies are important tools to detect when exceptions occur but are still nascent in terms of adoption rates. While the Best-in-Class are more likely to have implemented this enabler, adoption rates slipped year over year from 14% to 16% while adoption rates of Industry Average and Laggards grew from 2% to 11% and from 3% to 6%, respectively. If this trend continues, the Best-in-Class will be in jeopardy of losing their competitive position.

## Aberdeen Insights — Summary

ERP has become a necessary infrastructure to any manufacturing company seeking a competitive advantage today. While 74% of manufacturers have implemented ERP, the depth and breadth of functionality deployed varies considerably. While even our Laggard implementations derived business benefit from ERP, the wide gap between cost reductions and schedule improvements of our top and bottom performers indicate there is risk in neglecting to measure the business benefits. And for those manufacturers that have yet to implement ERP, the performance gap will widen as ERP solution providers continue to innovate solutions and those with ERP continue to reap the benefits. Those that aspire to Best-in-Class status would be well advised to turn ERP into a strategic weapon by taking full advantage of the technology, features, and functions which continue to expand at an ever-increasing rate.

# Appendix A: Research Methodology

Between April and May 2010, Aberdeen examined the use, the experiences, and the intentions of over 445 manufacturers using ERP in a diverse set of industries.

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:* The research sample included respondents with the following job titles: C-Level (12%); EVP / SVP / VP / GM (11%); Director (16%); Manager (37%); Consultant (7%), Staff and other (17%).
- *Functional Area*: Corporate Management (8%), Finance / Administration (7%), Information Technology (39%), Manufacturing & Operations (15%), Logistics/Supply Chain (15%), Other (15%)
- *Industry:* The research sample included respondents from the following industries: discrete manufacturing (54%); process manufacturing (25%); hybrid of discrete and process (21%)
- *Geography:* The majority of respondents (78%) were from the Americas. Remaining respondents included those from the Asia-Pacific region (7%) and Europe (12%), the Middle East and Africa (2%), South/Central America (1%)
- *Company size:* Fifteen percent (15%) of respondents were from large enterprises (annual revenues above US $1 billion); 43% were from midsize enterprises (annual revenues between $50 million and $1 billion); and 42% of respondents were from small businesses (annual revenues of $50 million or less).
- *Headcount:* Thirteen percent (13%) of respondents were from large enterprises (headcount greater than 5,000 employees); 40% were from midsize enterprises (headcount between 251 and 5,000 employees); and 47% of respondents were from small businesses (headcount between 1 and 250 employees).

**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.

Aberdeen Group
A Harte-Hanks Company

### Table 7: 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:<br>**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)<br>**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)<br>**Capabilities —** the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products / services, ecosystem partners, financing)<br>**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 2010

### Table 8: The Competitive Framework Key

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

Source: Aberdeen Group, June 2010

### Table 9: 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 2010

# Appendix B:
# Related Aberdeen Research

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

- *SaaS ERP: Trends and Observations,* December 2009
- *ERP in Manufacturing 2009: Expanding Beyond Traditional Boundaries;* June 2009
- *Beyond the Total Cost of ERP Ownership,* June 2009
- *Enterprise Solution Strategies: The Value of an Integrated Suite,* September 2009
- *ERP in the MidMarket 2009: Managing the Complexities of a Distributed Environment;* August 2009
- *Measuring the ROI of ERP in SMB: Keeping ERP Projects Alive When You Need Them the Most*; March 2009
- *Enterprise Applications: The Cost of Keeping Current…Or Not,* January 2009
- *ERP in Complex Manufacturing: Improving Collaboration and Visibility*; December 2008
- *ERP Plus in Process Industries: Beyond Compliance*; November 2008
- *2008 ERP in the Mid-Market*; August 2008
- *2008 ERP in Manufacturing Benchmark Report*; June 2008
- *The Order-to-Cash Cycle: Integrating Business Processes to Improve Operational Performance*; March 2008

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

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