The Case for Cloud ERP in Manufacturing:

Alleviating Outdated Concerns

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With its roots in Material Requirements Planning (MRP), Enterprise Resource Planning (ERP) has long been used by leading manufacturers to uncover untapped efficiencies, reduce costs, and provide visibility to enable managers to make informed decisions. In fact, Aberdeen's *ERP in Manufacturing 2012: The Evolving ERP Strategy* noted 92% of manufacturers responding to the 2012 ERP Benchmark survey utilized ERP. As the organizations with the longest history with ERP, manufacturers have been tentative to change what has worked in the past. A case in point is cloud deployment models. Manufacturers have been slow to accept ERP deployment options other than the traditional on-premise model. The motivation behind this reticence is unclear. It may be because of misinformation, such as the perception that cloud options are not as secure. It could be that manufacturers simply are not aware of the benefits of cloud solutions. It could even be because of a change-resistant organizational culture. Whatever the case, Aberdeen's research finds that cloud perceptions may be changing in manufacturing and there are reasons that cloud ERP may be more of a viable choice than in the past. This report illustrates trends in cloud deployment, lays out the reasons for manufacturers to consider cloud ERP, and notes performance advantages for organizations using cloud.

ERP Cloud Options

Much of Aberdeen's research has illustrated the benefits of ERP in organizations of all sizes. As an operational and transactional system of record used to run a business, ERP solutions present a clear business value. Still, there are many different factors to consider when choosing an ERP solution. One of these is the deployment method. In the past, this was a simple decision because on-premise ERP was pretty much the only option. Recently, however, software vendors have begun to offer solutions hosted in the cloud or as Software-as-a-Service (SaaS). This has added an additional checkbox in solution selection that many business leaders, particularly those not in IT, do not understand. To account for this, Aberdeen uses the following definitions:

- **Traditional license on-premise**: Software may be licensed for use on a particular computer, or by other criteria such as number of users. The license can be either on a term basis or perpetual, and is often treated as a capital expense. The software is located in-house.

- **SaaS** or **on-demand**: The software itself is not licensed or owned by the end user; it is provided as a service. It is often paid for on a subscription basis, and can be accessed from a normal internet connection. SaaS avoids a large upfront capital investment. This deployment method is one form of the Public Cloud.

- **Hosted**: Also considered part of the Cloud, licensed applications are hosted by a third party. This deployment method may be on a dedicated piece of hardware not shared with any other organization, or on shared hardware.

Because it is the traditional deployment method for ERP, Aberdeen's *SaaS and Cloud ERP Observations: Is Cloud ERP Right for You?* noted that 71% of current ERP implementations are deployed on-premise versus 12% delivered as SaaS. Further, 79% of deployments in Large companies (over $500 million in annual revenue) are on-premise compared to only 4% as SaaS. While the gap is still significant between SaaS and on-premise in Small companies (under $50 million in annual revenue) organizations, it is much smaller than larger organizations (59% vs. 26%. But this takes into account ERP solutions implemented long before SaaS and cloud options were widely available. Will these new options gain favor in the future?

Cloud Trends

Aberdeen has measured trends in ERP deployment methods for the past six years (Figure 1). As demonstrated in Aberdeen's *SaaS and Cloud ERP Observations: Is Cloud ERP Right for You?*, during that time frame there has been an increase in the willingness to consider cloud solutions as well as a corresponding decrease in the willingness to consider on-premise solutions. These trends may be triggered by the increased availability of cloud solutions, whether from vendors that had previously only offered on-premise models or by the emergence of new cloud-focused ERP vendors. This trend may also be triggered by increased awareness of the benefits of the cloud and education that challenges the classic concerns about the deployment model. Either way, it seems like there will come a point where all users will understand the pros and cons of each deployment option. This will result in ERP deployment methods being selected solely on their merits when it comes to cost, functionality, ease of use, and overall fit for the business.

Fast Facts

√ In 2011, 17% of ERP implementations in small organizations were SaaS while 71% were on-premise.

√ In 2012, 26% of ERP implementations in small organizations were SaaS while 59% were on-premise.

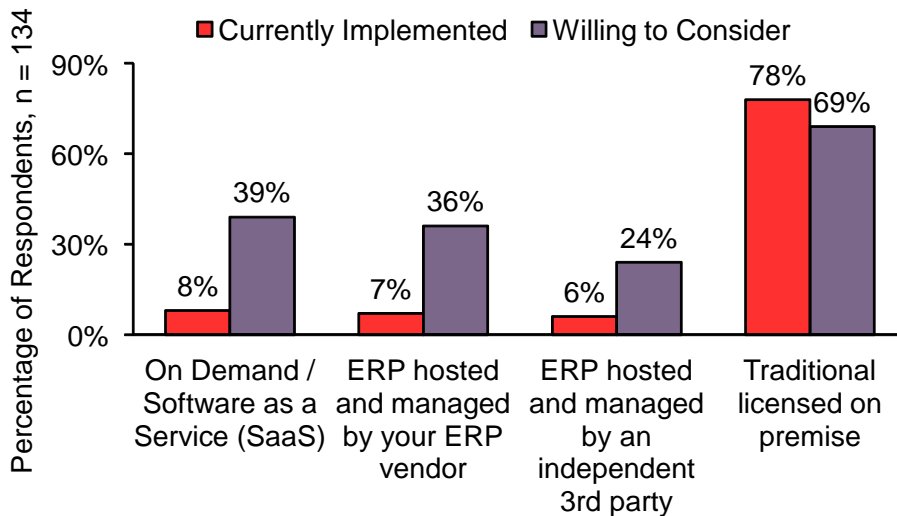**Aberdeen Group**
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Figure 1: Increasing Cloud Considerations
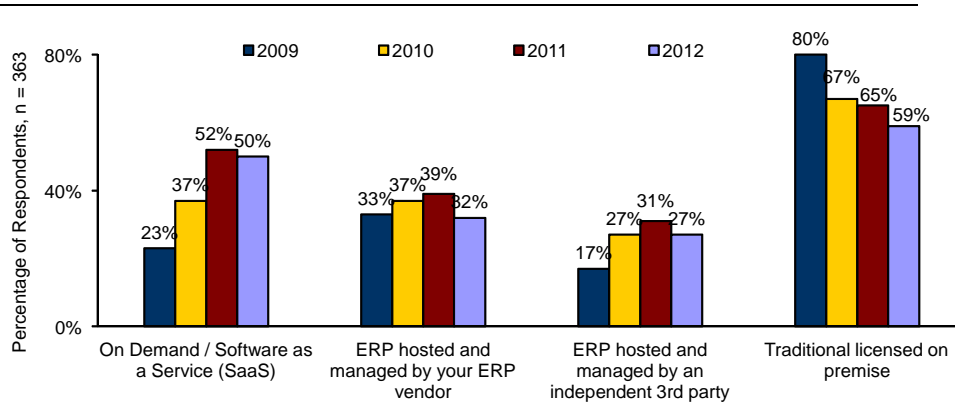
Source: Aberdeen Group, October 2012

While this is great news for cloud ERP vendors that is not to say that there are not still some holdouts that are not on the cloud ERP bandwagon. Manufacturing organizations have been notoriously hesitant in their acceptance of cloud ERP. Aberdeen's 2012 ERP Benchmark survey found that current ERP deployments in manufacturing organizations heavily favor the traditional on-premise model (Figure 2). Since today's ERP grew out of Material Requirements Planning (MRP) and Manufacturing Resource Planning (MRP II), manufacturers were the first to adopt ERP. As such, many have used the same systems for many years and have not taken the time to consider changing — why fix what isn't broken? Aberdeen's yearly research on cloud ERP has attempted to highlight the reasons that hesitant organizations should reconsider their stance. While still far below many other industries, it appears that the tides may be turning in manufacturing. Compare the percentage of organizations willing to consider a specific deployment method to the percentage of those that have already implemented that method. Traditional on-premise is the only model where the demand is lower than the current deployment. Are new deployments going to alter the perception that manufacturing is hesitant to support the cloud? Why is now a good time to make that change?

Figure 2: Cloud Trends in Manufacturing*

*Remaining deployments are pre-configured on a hardware appliance
Source: Aberdeen Group, October 2012

Is Cloud the Future in Manufacturing?

Much of Aberdeen's research has illustrated that accessible cloud options are relatively new in the lifespan of ERP. This newness works against cloud deployments, as manufactures may be unwilling to change for change's sake. To that point, the average age of an ERP solution in manufacturing is 6.97 years. This is older than other industries studied such as financial services, technology, logistics, professional services, and retail, among others.

Compare this age to data from Aberdeen's *Aging ERP: When Old ERP is Too Old*, which uncovered that time goes on, the benefits gained from an ERP system decrease. In fact, the sharpest decline happens between seven and 15 years. This indicates that for many manufacturers, it may be time for a change. Since cloud solutions are newer, and thus within their useful life, perhaps organizations with older ERP implementations can find new benefits with a software change. This possibility, however, brings up the question of what the most important factors are when selecting an ERP installation.
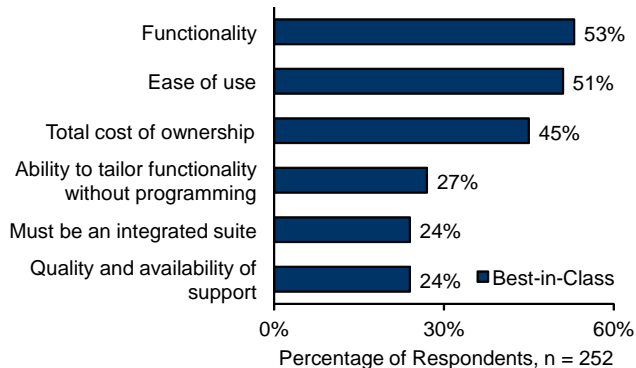
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Figure 3: Rate of Benefits from ERP Implementation
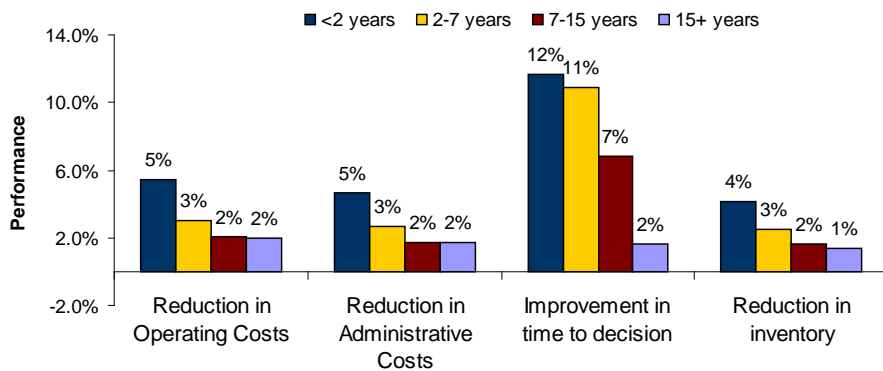
Source: Aberdeen Group, May 2011

Aberdeen's *ERP Selection: Finding the Right Fit* illustrated the top ERP selection criteria of the Best-in-Class (Figure 4). Out of a list of around 20 selection criteria, deployment model did not even finish in the top ten. That is not to say that Best-in-Class organizations were not more likely to look towards the cloud than on-premise. But the point stands that Best-in-Class organizations are more likely to pay attention to functionality and ease of use when selecting a solution. It is really all about whether or not the solution can support the business. Manufacturers can require very complex processes, and they understand the importance of this level of support. This comes even before total cost of ownership. None of these criteria preclude manufacturers from selecting a cloud solution.

Figure 4: Best-in-Class ERP Selection Criteria

Source: Aberdeen Group, September 2012

Today's modern cloud solutions can rival, or even surpass, the technology that is being currently offered with on premise. In the case of total cost of ownership, SaaS solutions can offer attractive options. But really, it all comes down to the benefits of the solution itself, and not deployment model.

Aberdeen Methodology

The Aberdeen maturity class is comprised of three groups of survey respondents. Classified by their self-reported performance across several key metrics, each respondent falls into one of three categories. All respondents within this group currently use ERP:

√ **Best-in-Class**: Top 20% of respondents based on performance

√ **Industry Average:** Middle 50% of respondents based on performance

√ **Laggard:** Bottom 30% of respondents based on performance

√ In the report *ERP Selection: Finding the Right Fit*, Best-in-Class organizations from the 2012 ERP Selection, Implementation, and Training survey achieved:

√ 16% improvement in profitability over the past 2 years
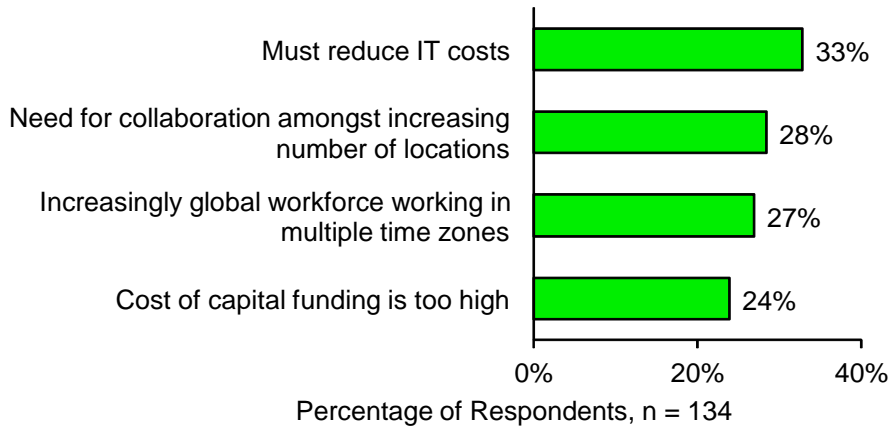
√ 18 months until ROI for ERP solution

Fast Facts

√ 14% of the Best-in-Class choose an ERP based on a cloud deployment model compared to 6% of All Others

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Why the Cloud?

Aberdeen's 2012 ERP Benchmark survey identified the reasons that manufacturers would choose a cloud ERP solution (Figure 5).

Figure 5: The Tipping Point

Must reduce IT costs	33%
Need for collaboration amongst increasing number of locations	28%
Increasingly global workforce working in multiple time zones	27%
Cost of capital funding is too high	24%

Percentage of Respondents, n = 134

Source: Aberdeen Group, October 2012

Unsurprisingly, for those in touch with common cloud perceptions, two of the top reasons causing manufacturers to move to the cloud concern costs. For example, with a SaaS solution, a manufacturer with limited IT resources or that wants to cut IT costs can still adequately support an ERP installation. This is because rather than relying on internal IT resources, these organizations can rely on their ERP vendor. Additionally, organizations that have difficulty obtaining capital funding to pay for the solution can choose the SaaS model in order to pay on a subscription bases. Therefore, they can treat the solution as an operating expense rather than a large up-front capital expenditure.

The other top reasons that manufacturers would move to the cloud involve collaboration. By enabling employees to connect to the ERP solution securely wherever there is internet access, manufacturers can ensure collaboration and constant access to data. This alleviates the need for a Virtual Private Network (VPN) into a traditional on-premise deployment. This can be important as organizations grow and become more geographically dispersed.

It should be noted that these reasons for moving to the cloud align quite well with multi-tiered ERP strategies. Data collected for Aberdeen's *ERP in Manufacturing 2012: The Evolving ERP Strategy* found that Best-in-Class organizations are over twice as likely as All Others to have a multi-tiered ERP strategy with a corporate standard and a separate second tier ERP deployment to support local business models. In a multi-tiered ERP strategy, there is often one standard ERP implementation for the corporate offices. This would be referred to as an "administrative ERP." Additional ERP solutions that may offer different functionality or configurations are

Fast Facts

√ Best-in-Class manufacturers are over twice as likely as All Others to have a multi-tiered ERP strategy.

implemented at separate locations. This would be referred to as an "operational ERP." Often times, the locations receiving operational ERP are new business units or acquisitions. These business units often need to get up and running quickly, do not have existing IT resources, and are disconnected geographically from the rest of the organization. This would be the perfect opportunity to implement a cloud solution.

So what are the benefits that manufacturers can expect to receive if they do select a cloud solution (Figure 6)? Two of these have already been discussed, but the importance of being able to react quickly to business demands must be noted. Constant connection to ERP through the cloud, including automated alerts, ensures that manufacturers can minimize adverse events and take advantage of opportunities as they present themselves. While these capabilities can be enabled by on-premise software, Aberdeen's research shows that organizations with cloud technology are more likely to use them. This agility can be essential in getting ahead of competitors in industries that may be rigid and slow moving.

Figure 6: Top Benefits of Cloud Technology
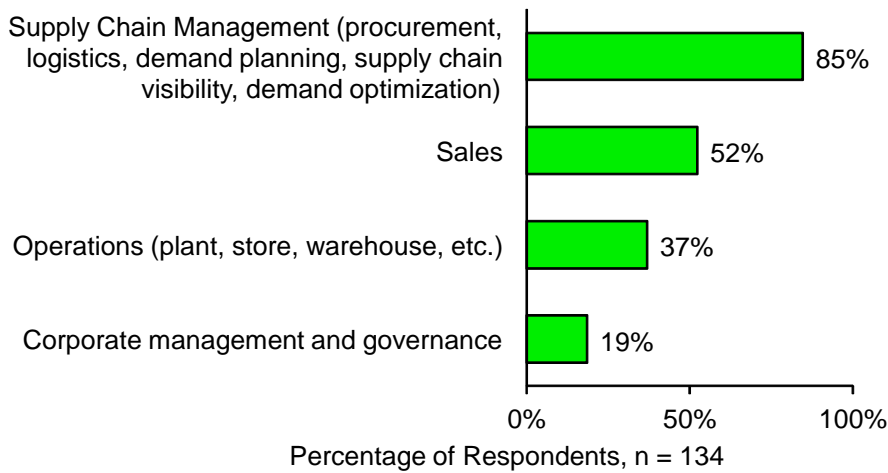

Percentage of Respondents, n = 134
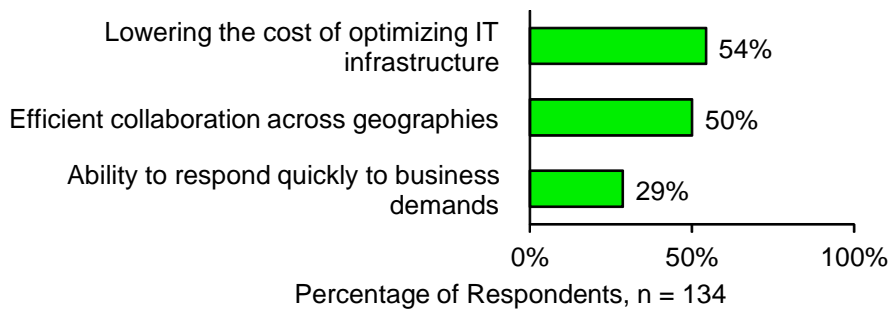
Source: Aberdeen Group, October 2012

And these benefits filter down to individual employees in the organization. Aberdeen asked which employees in manufacturing organizations benefit the most from cloud ERP (Figure 7). Areas such as supply chain appear to receive the most benefit because they are more likely to be distributed, and have more to gain from being connected through cloud ERP. Marketing and sales are also likely to benefit from cloud computing, because they can access customer data while on the road. When it comes to operations, an example of the benefits of cloud ERP would be its ability to connect manufacturing operations with product development in order to promote collaboration between these two different functions. Contrary to the outdated beliefs that cloud computing only impacts IT, cloud computing, through improved application performance and connectivity, can help improve operations across many functions in the organization.
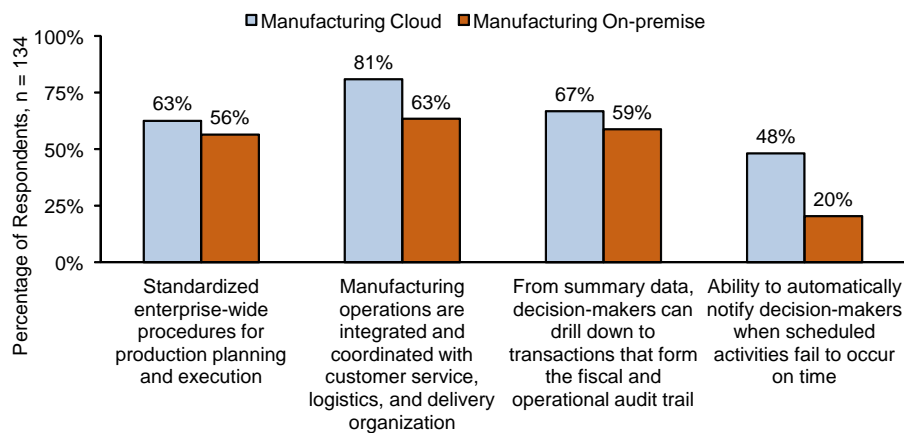
Figure 7: More Functions Benefit from Cloud Computing

Supply Chain Management (procurement, logistics, demand planning, supply chain visibility, demand optimization) — 85%

Sales — 52%

Operations (plant, store, warehouse, etc.) — 37%

Corporate management and governance — 19%

Percentage of Respondents, n = 134

Source: Aberdeen Group, October 2012

These benefits do not just appear out of thin air. Some of the reasons that organizations choose a cloud ERP solution stem from the capabilities that a cloud solution is better able to enable. When comparing manufacturing organizations with cloud ERP to manufacturers with on-premise implementations, standardization, agility, and collaboration capabilities stand out (Figure 8). These may be features of the solutions that are selected, or more evidence that cloud users take a better approach in picking ERP.

Figure 8: Capabilities Enabled by the Cloud

Manufacturing Cloud / Manufacturing On-premise

Percentage of Respondents, n = 134

Standardized enterprise-wide procedures for production planning and execution — Cloud 63%, On-premise 56%

Manufacturing operations are integrated and coordinated with customer service, logistics, and delivery organization — Cloud 81%, On-premise 63%

From summary data, decision-makers can drill down to transactions that form the fiscal and operational audit trail — Cloud 67%, On-premise 59%

Ability to automatically notify decision-makers when scheduled activities fail to occur on time — Cloud 48%, On-premise 20%

Source: Aberdeen Group, October 2012

With a cloud solution that stretches across the organization, manufacturers may be better able to ensure that best practices are standardized across the organization, which creates consistency and efficiency. From a collaboration standpoint, an example of cloud ERP's influence comes from the fact that 81% of organizations with a cloud solution integrate and coordinate manufacturing operations with customer service, logistics, and delivery

compared to 63% of manufacturers with on-premise ERP. Linking these functions facilitates process flows. Finally, cloud technology can have a large impact on visibility and agility. Instant access to information is essential to business agility. Shutting down production as soon as a noncompliance issue surfaces can save an organization both money and reputation. Manufacturers with cloud ERP solutions are over two and a half times as likely as those with an on-premise solution to have the ability to automatically notify decision-makers when scheduled activities fail to occur on time.

SaaS Start-up Benefits

The above data points are based on perceptions of cloud ERP. These are distinct from the tangible benefits, explored in Aberdeen's *SaaS and Cloud ERP Observations: Is Cloud ERP Right for You?* as it relates to implementation, impact on IT's workload, and attainment of ROI (Figure 9). SaaS ERP solutions are implemented, on average, in 63% of the time that it takes to install an on-premise solution. This means new organizations or first time ERP buyers can get up to speed much more quickly and not tie up internal resources for as long. Additionally, this is a major benefit for organizations with multi-tier ERP strategies that need to get new business units or subsidiaries running as quickly as possible. This quick "time to value" has a resultant effect on ROI.

Organizations with SaaS solutions achieve ROI 75% quicker than those with on-premise solutions. Finally, SaaS solutions create less of an impact on IT's workload. Organizations rated the impact that their ERP solution has had on their IT department's workload on a scale of 1 to 5, with 5 being the highest. SaaS solutions outperform on-premise solutions in this aspect by 27%. All three of these data points validate common perceptions of SaaS ERP solutions and help to provide a compelling case for implementation.

Fast Facts

√ Organizations with SaaS ERP spent exactly 100% of their ERP implementation budget on implementation, compared to organizations with on-premise ERP that went 12% over budget.

Figure 9: Validating Perceptions
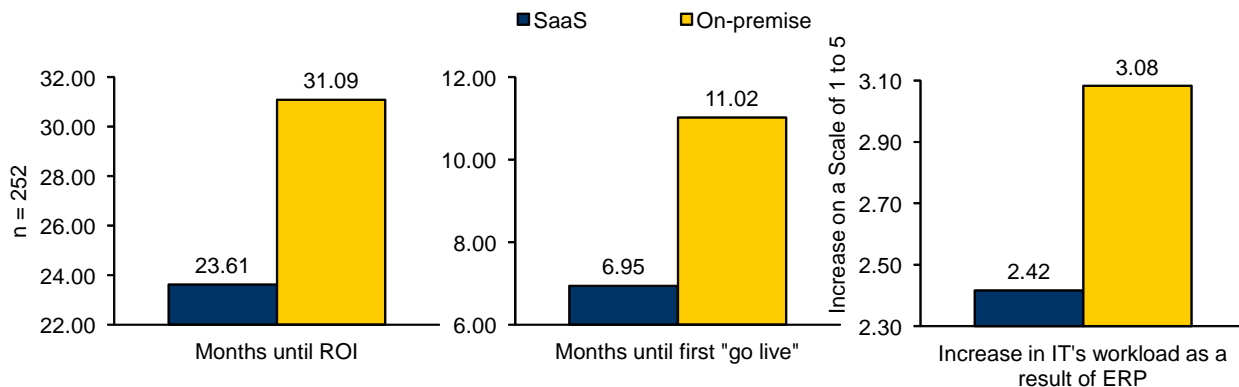
Source: Aberdeen Group, September 2012

While maybe not a result of the solution itself, it appears that organizations that choose cloud solutions perform more effectively overall on many extremely important manufacturing metrics (Table 1). These organizations

ship orders more efficiently, make quicker decisions, have more accurate inventories and financial reports, and enable their employees to be more effective. That is not to say that there is no influence on these metrics from ERP. Organizations with cloud ERP solutions have received greater benefits as a direct result of their SaaS solution (see sidebar). This may be that these solutions are newer and perform more effectively, as mentioned above; it's all about if the solution can effectively support the business, but, all other things equal, it appears cloud solutions produce an advantage.

Table 1: Superior Performance of Organizations Using SaaS

Metric	SaaS ERP	On-premise
Days to close a month	5.31	5.45
Days Sales Outstanding	40.75	41.04
Hours from order taking to shipment	91.39	111.84
Complete and on-time delivery	94%	91%
Increase in operating margins over the past 2 years	13%	10%
Employees that exceed performance metrics	46%	30%
Decrease in time to decision over the past year	27%	18%
Internal schedule compliance	92%	89%
Inventory accuracy	95%	93%
Percentage of accurate financial reports	95%	93%

Source: Aberdeen Group, October 2012

Key Takeaways

While manufacturing organizations have resisted deploying ERP in the cloud, there is evidence that their perceptions may be changing. In fact, there is potential for a swing in the amount of new ERP deployments delivered in the cloud, particularly given that the average current ERP deployment in manufacturing organizations is almost seven years. Aberdeen's research finds that this timeframe is when an ERP solution's impact has been fully absorbed. Therefore, these organizations may be in the market for a new solution in the near future. Ultimately, however, manufacturers should choose their ERP solutions based on functionality and ease of use rather than age. It is really about whether or not the new solution can effectively support the constantly changing business. There are, however, a few key benefits of cloud solutions that manufacturers must consider:

- **Cost**
- **The ability to not rely on internal IT resources**
- **Enhanced collaboration, standardization, and visibility across the enterprise**
- **Scalability**

Direct Benefits of ERP

Aberdeen's *SaaS and Cloud ERP Observations: Is Cloud ERP Right for You?* compared the direct benefits in organizations using SaaS ERP compared to those using on-premise ERP:

√ Improvement in inventory turns: 45% vs. 41%

√ Reduction in operational costs: 22% vs. 14%

√ Reduction in administrative costs: 20% vs. 13%

√ Reduction in inventory: 14% vs. 11%

√ Improvement in complete and on-time shipments: 19% vs. 14%

- **Flexibility as SaaS deployments are updated by the
  software vendors**

These are enticing factors to consider. Manufacturers that have simply
ignored cloud options unconditionally do themselves a disservice. While
simply selecting an ERP solution because it is delivered in the cloud would
be a mistake, selecting a solution that supports the business as well as
features the benefits of a cloud installation can help manufacturers evolve
ahead of their competitors.

For more information on this or other research topics, please visit
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Related Research	
SaaS and Cloud ERP Observations: Is Cloud ERP Right for You?; December 2012	_SaaS and Cloud ERP Trends, Observations, and Performance 2011_; December 2011
SoMoClo's™ Impact on ERP; August 2012	_SaaS and the Multi-tiered ERP Strategy_; November 2011
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