AberdeenGroup

Procurement in New Product Development: Ensuring Profit from Innovation

Business Value Research Series

March 2006

Executive Summary

Product innovation is a team sport. Product strategists dream up products that meet unmet needs and capture the customer's imagination. Engineers translate product concepts into deliverable products that meet customer requirements with high quality. Marketing and sales persuade customers, generating demand for a new product. In short, the entire product development team pulls together to meet product launch targets.

However, because taking a new product from concept to production involves myriad tasks by different disciplines, the moderate success of any team members can significantly affect the success of a product launch, especially as measured by profitability. Even when all team members deliver their part of the product development (which is difficult enough for most companies to accomplish), if the product cost structure doesn't support the price the market will bear, the product won't sell, and margins and profitability will suffer. Furthermore, if suppliers can't keep up with demand and meet quality expectations, profitability windows vanish while competitors catch up.

For these reasons, Procurement and Sourcing functions are critical to ensuring that product costs and supply risks are addressed early in new product development (NPD), helping design profitability into products.

Issue at Hand

Corporate strategies today are focused on *profitable* growth. Aberdeen research shows that while manufacturers are targeting increased revenue through innovation, they are also focusing on controlling product costs. Yet, as Aberdeen*Group*'s *Product Innovation Agenda* benchmark study shows, despite the importance of managing product costs, manufacturers are struggling to meet cost targets:

Table 1: Failure to Meet Product Development Targets

Product Development Performance	% of Products Meeting Product Cost Targets	% of Products Meeting Launch Date Targets
Best-in-class	81% to 100%	81% to 100%
Average	41% to 80%	21% to 80%
Laggards	40% or less	20% or less

Source: Aberdeen*Group*, September 2005

According to the research, the majority of companies meet their product cost targets on only 41% to 80% of their new products. These figures support previous Aberdeen*Group* research that indicates that less than half of manufacturers can predict product costs within 25%. Product costs that are designed in are often locked in for the life of the product, and sourcing risk, resulting in added costs, may be hard to combat after the product has been introduced to the market.

In short, sourcing decisions have a major impact on controlling product costs and maintaining product profitability, and most companies show significant room for improvement. Without timely collaboration and input from Procurement specialists, product profitability is uncertain at best. Furthermore, beyond the direct cost implications, late sourcing involvement can significantly delay product launch targets (Table 1), further limiting product profitability by narrowing the window of opportunity.

Key Business Value Findings

Aberdeen*Group*'s The CPO's Agenda report indicates that although only 12% of manufacturers currently involve Procurement or supply chain functions in the design process prior to the prototype phase, the role of Procurement is changing. Many companies are recognizing the need to include procurement personnel and direct material sourcing techniques earlier in the new product development process. Specifically, more than 60% of manufacturers report initiatives to involve Procurement, suppliers, and other relevant stakeholders such as the CFO earlier in product development. This finding was confirmed in the *Product Innovation Agenda*, in which over two-thirds of respondents indicated that they are pursuing the capability to manage total product costs early in the design phase.

Best-in-class companies are now collaborating with Procurement earlier in the design process and making sourcing decisions a higher priority during early phases of the product lifecycle. Many companies have begun a transition to include procurement resources directly within their design teams or within the Engineering department. The approach is paying dividends, such as:

- Product cost reduction of nearly 18%.
- 10% to 20% improvements in time-to-market cycles.

Analysis and Implications

Increasing collaboration and incorporating procurement considerations in design processes provide value, but also increase product development complexity. Design information and status must be made available across departments; sourcing data must be readily available at the point of design; and processes must allow for input and approval from multiple sources. To handle this complexity, manufacturers are introducing sourcing collaboration in the context of product development by using PLM technologies. In fact, Aberdeen*Group*'s *Product Innovation Agenda* indicates that about half of manufacturers recognize that product cost management / integrated sourcing technology is a very important requirement to decrease product costs.

Recommendations for Action

Clearly, procurement plays a valuable role in product development because of its critical contribution to ensuring product profitability. Manufacturers should align processes, organizations, and metrics to bring sourcing knowledge and decision-making closer to the point of design. In addition, companies should support integrated processes with the appropriate enabling technology, including integrated sourcing and PLM solutions.

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Chapter One:
Issue at Hand

Managing product costs is a very important priority for manufacturers today. When asked to characterize the focus of their corporate strategies, more than three-quarters of respondents to *The Product Innovation Agenda* study say their corporate strategies place "a lot of emphasis" on increasing product revenue. At the same time, because of cost pressure from customers and intense global competition, approximately half of corporate strategies also place "a lot of emphasis" on decreasing product cost, and 93% place at least "some emphasis" on product cost reduction. In fact, cost pressure was identified as the top challenge to product innovation and reported by over half of companies surveyed.

Figure 1: Top Challenges to Product Innovation
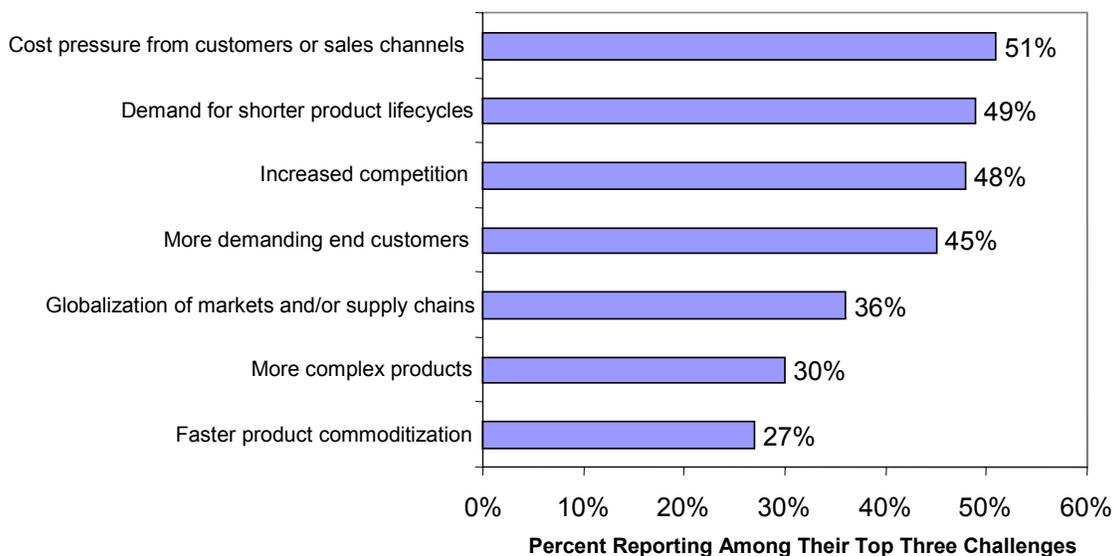
Source: Aberdeen*Group*, September 2005

Despite these corporate goals, companies are not currently meeting their product cost targets (Table 1, page i). *The Product Innovation Agenda* research indicates that even best-in-class companies hit their product cost targets only between 80% and 100% of the time, on average. Manufacturers that are average in their product development performance hit their product cost targets between 30% and 80% of the time. And laggards, those that perform in the bottom 25% in respect to product development, hit their product development targets less than 30% of the time.

Why are these product cost problems so prevalent? Traditionally, most companies make procurement decisions at the prototype phase – after engineers have made materials and component choices based on design and engineering criteria without considering accurate cost information. At this stage, the costs that are designed into a product are likely to be locked in. According to DARPA (Defense Advanced Research Projects Agency) research, 80% of product costs are set during design. Considering that direct material costs can account for 60-80% of the total product cost depending on the industry, sourcing decisions at design time can have a significant impact on profitability.

Figure 2: Impact of Change over Time
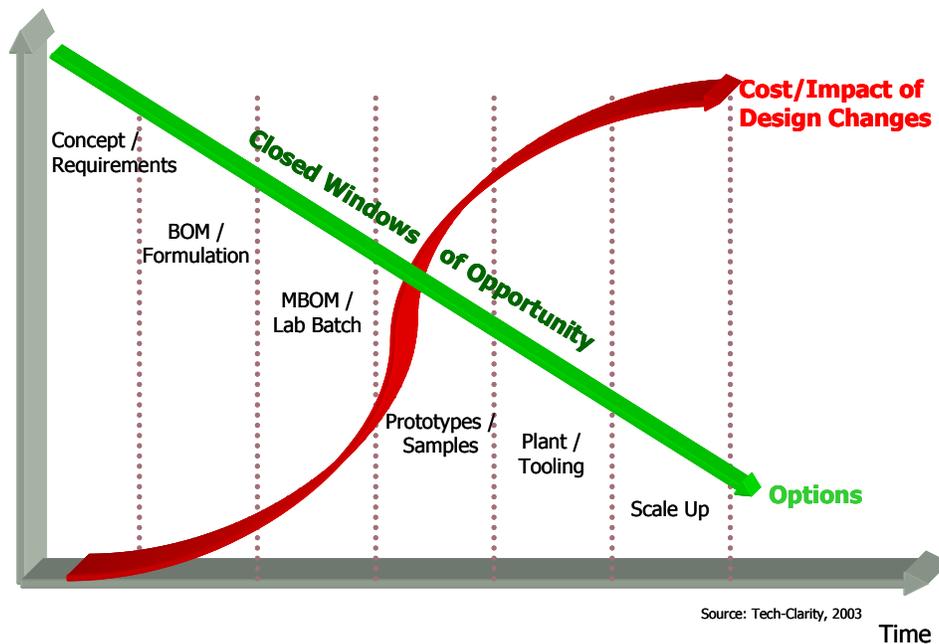
Source: Tech-Clarity, 2004

Furthermore, when supply "surprises" occur at a late date in initial product development (for example, if suppliers can't deliver an adequate number of components), then late-phase procurement decisions entail tradeoffs among cost, performance, and time. These tradeoffs may result in one or more negative consequences, all of which may decrease profitability or increase time to market (Figure 2). Specifically, the substitute item may cost more, decreasing margins; may delay the product launch, narrowing the window of opportunity and, thus, decreasing revenues; or may affect product performance (with a sub-optimal component), limiting sales. Even post-launch, changes to a product, made without considering costing information and professional Procurement input, can have similar negative affects on product lifecycle profitability.

The reason that professional Procurement input is critical early – or at any stage – is that product cost isn't a simple matter. There is no single cost for materials and components – no straightforward figure that can be found in a catalog and entered into a spreadsheet under "cost." Rather, cost depends on purchase volumes; includes tariffs, taxes, and transportation (i.e., is a landed cost); varies in different geographies – and reflects any or all of these factors as they impact the pricing of the supplier's suppliers as well.

Just as important, Procurement personnel must consider other factors besides cost in making sourcing decisions: for example, supply stability and risk, supplier performance, quality, and compliance, geographic restrictions, and component obsolescence. These factors can necessitate procurement changes late in development, causing increased direct costs as well as delays in product launch, which, in turn, impact product revenues. Aberdeen*Group* research indicates that the trend towards low-cost country sourcing increases the potential for supply risk, leading to more stress on Procurement to carefully evaluate these "other" factors.

Furthermore, Procurement performs commercial as well as technical evaluations of sourcing decisions. This evaluation can extend beyond the component to include the supplier – because supplier performance plays a significant role in determining the total effectiveness of a supply relationship. Assessing a supplier's performance in regulatory matters, delivery performance, quality performance, and business flexibility is important – and Procurement can play a valuable role in finding and evaluating appropriate suppliers in addition to the appropriate parts.

In summary, early, professional Procurement input is strategic to control product cost and meet launch dates. Involving Procurement too late can lead to lower product innovation profitability because of:

- Increased direct material cost
- Unacceptable risk of supply issues
- Unexpected component obsolescence
- Missed regulatory compliance
- Inability to expand products to new geographies
- Lack of ability to take advantage of sourcing leverage
- Increased incoming inspection costs
- Raised manufacturing cost
- Missed product launch date.

Chapter Two:
Key Business Value Findings

Fortunately, a large number of manufacturers surveyed by Aberdeen*Group* are not leaving margins and profitability to chance. They are considering or already making changes to business processes, technology, and human resources to include Procurement early in the product development process in order to make design for profitability a reality.

According Aberdeen*Group*'s The CPO's Agenda benchmark, only 12% of manufacturers currently involve Procurement or supply chain functions in the design process prior to the prototype phase. However, 68 % of manufacturers surveyed in a later study said that they are pursuing the capability to manage total product costs early in the design phase or integrating sourcing into design. This is the number one response to questions about business processes that manufacturers are adopting to improve product innovation revenues (Figure 3).

Figure 3: Product Innovation Capabilities to Decrease Product Cost

Percent Pursuing Capabilities
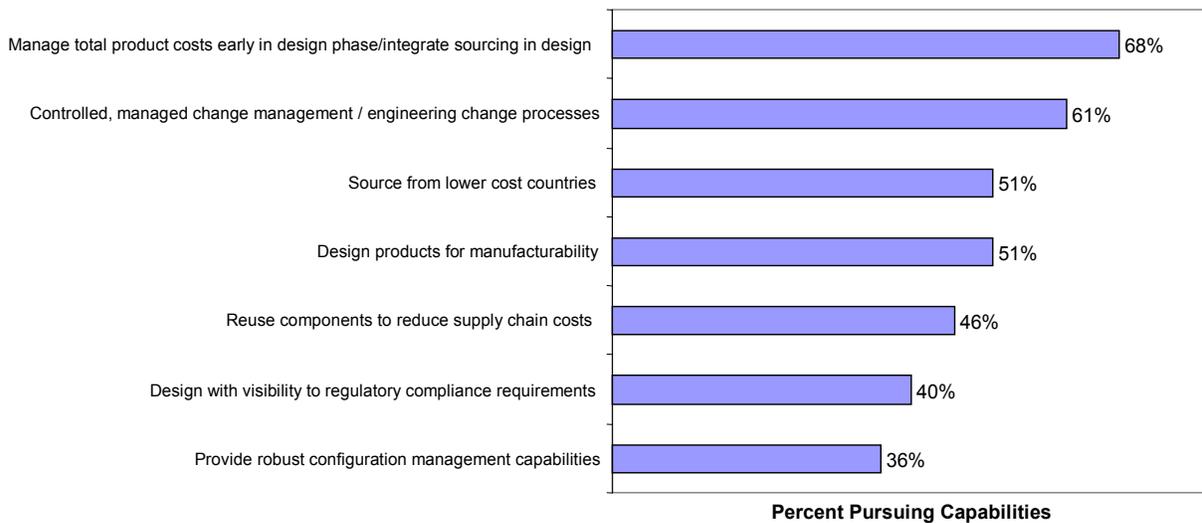
Source: Aberdeen*Group*, September 2005

These changes also include incorporating suppliers into the team. Recent Aberdeen*Group* reanalysis of over 100 Procurement and supply management executives found that more than 60% of manufacturers report initiatives to involve Procurement, suppliers, and other relevant stakeholders, such as the CFO, earlier in product development.

In addition to adopting new business processes, many manufacturers are implementing technologies to enable early Procurement and supplier collaboration in design. Specifically, in *The Product Innovation Agenda* survey, 49% of manufacturers say that product cost management / integrated sourcing technology is a very important requirement for reducing the cost of products.

Finally, including Procurement early in design decisions is also a "people" issue. CPOs are "up-skilling" their Procurement teams with resources knowledgeable in finance, logistics, and supply chain issues. According to an Aberdeen*Group* survey for *The CPO's Agenda*, more than half of surveyed participants are recruiting engineers to work in their purchasing department.

In fact, changes such as these do make a difference. Leading companies that have made these changes are receiving benefits that include, but go beyond, meeting cost and time targets. Leading companies are now collaborating with Procurement earlier in the design process, and making sourcing decisions a major focus during early phases of the product lifecycle. This approach is paying dividends:

- Aberdeen*Group* found that companies involving suppliers and Procurement groups at design inception and development were able to reduce costs by nearly 18% compared to companies delaying such collaboration until the product prototype phase.

- Early involvement of Procurement in new product development also yielded 10% to 20% improvements in time-to-market cycles, allowing companies to capture greater market share and profit margins for being an early mover.

In these companies Procurement plays an increasingly important role in creating value in the form of new revenue opportunities, improved profitability, and competitive differentiation. As reported in Aberdeen*Group*'s *The CPO's Agenda*, procurement executives are leading their organizations to support product innovation and development, regulatory compliance, and expansion into new markets (Figure 4). Procurement organizations are now focusing beyond cost reduction to ensure supply availability and support supplier innovation as a key to their products' competitive differentiation and profitability.

Figure 4: Role of Procurement in Strategic Business Initiatives

		Leading Role	Some Role
Managing supply availability	Leading Role	82%	
	Some Role		17%
Managing supply costs	Leading Role	81%	
	Some Role		18%
Combat price depreciation	Leading Role	52%	
	Some Role		36%
Maintaining product/service innovation	Leading Role	43%	
	Some Role		44%
Managing energy costs	Leading Role	32%	
	Some Role		37%
Combat foreign competition	Leading Role	29%	
	Some Role		39%
Meet regulatory requirements	Leading Role	20%	
	Some Role		61%
Expanding into new markets	Leading Role	20%	
	Some Role		57%
Predicting customer demand	Leading Role	20%	
	Some Role		49%

Source: Aberdeen*Group*, March 2005

Chapter Three:
Analysis and Implications

AberdeenGroup analyzed the performance of survey respondents to *The Product Innovation Agenda* and *The CPO's Agenda* benchmark studies to determine the common characteristics and approaches of top-performing companies. Here's a closer look at what these best-in-class companies are doing to incorporate Procurement early in product development in order to achieve these results:

Organization and Metrics

Many of these leading companies have made significant organizational changes to support early Procurement collaboration. These included hiring engineers to serve in Procurement positions, co-locating Procurement with design and engineering groups, and even changing function boundaries to include both Procurement professionals and engineers.

In addition, best-in-class companies are measuring product development performance more frequently – for example, monthly -- and at a more global level. These measures include total material cost reduction, process cost reduction, time to market, and percent parts reuse – all of which can be improved through early Procurement involvement.

Processes

Leading companies are making Procurement and sourcing decisions a key part of product development processes by including Procurement and suppliers in the early phases when requirements are defined. They are also making product cost targets a key requirement. Early collaboration ensures all team members understand key cost drivers and goals – so they can make future decisions in the context of cost (as well as other factors such as product performance).

These companies are also involving Procurement in the engineering change process post-launch to manage the impact on direct material cost and supply considerations such as logistics, risk, and other contributing cost drivers. The purpose is to ensure that hard-earned cost savings don't vanish during the engineering change process.

Of course, including Procurement and suppliers – in other words, more people inside and outside of the organization including people in far-flung locations – creates new communication, collaboration, and control challenges. These process changes have been supported by formal project management and collaboration technologies that serve to counter the added complexity and allow benefits to be achieved.

Technology

Best-in-class companies are using PLM-related solutions that integrate data from diverse sources and provide both centralized data repositories with change management and version and authorization controls and applications that automate and manage processes that reach beyond Engineering (Figure 5). These solutions are ideal for ensuring communication, collaboration, and control across dispersed teams and can help capture knowledge and learning that enable process improvement.

Figure 5: Enabling Product Innovation Success
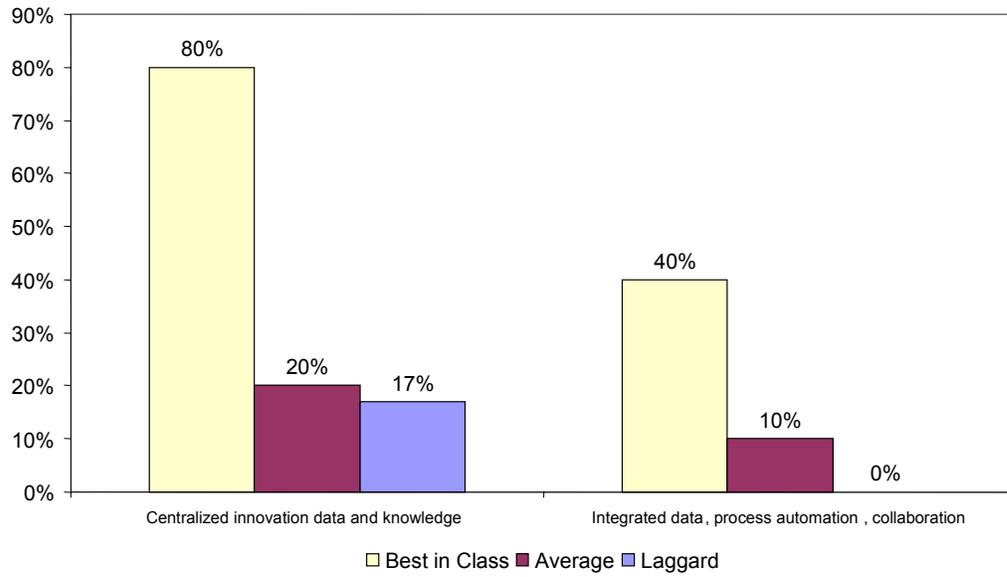
Source: Aberdeen*Group*, September 2005

Chapter Four:
Recommendations for Action

P roduct innovation is a team sport in which Procurement plays an important part in ensuring the profitability. As a result, manufacturers should align processes, technology, organizations, and metrics to bring sourcing knowledge and decision-making closer to the point of design. To do so, they need to:

- Address sourcing decisions early in the NPD process

- Include sourcing decisions in engineering change processes

- Align and integrate design and procurement resources

- Align and integrate design and procurement processes and supporting software

- Make target product costs a core product requirement, keeping this requirement visible throughout the NPD process

- Model product cost at a more realistic level, including an understanding of the impact of purchase volumes, tariffs, taxes, transportation

- Recognize that sourcing decisions do not rest on cost alone – because cost structures are put at risk if supply problems are not addressed.

- Monitor products costs and sourcing performance on an ongoing basis to ensure product profitability does not erode, and incorporate supplier performance in design decisions

- Look for continuous improvement of product costs to compensate as product maturity lowers price points

Author Profile

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Jim Brown leads Aberdeen*Group*'s Global Product Innovation and Engineering research. Its goal is to provide fact-based research and experienced analysis that advises executives on how to achieve maximum product profitability and corporate value by using the right approaches and enabling technology to identify, specify, engineer, develop, and continuously improve innovative, high-value products.

Jim founded research and consulting firm Tech-Clarity, acquired by Aberdeen*Group* in May 2005. Tech-Clarity focused on making the value of PLM and enterprise software solutions clear to manufacturing business leaders. Jim began his professional experience with roles in manufacturing engineering and software systems at General Electric before joining Andersen Consulting (Accenture), where he focused on enterprise software applications. He has also served as an executive at several software companies and as the PLM analyst for Technology Evaluation Centers and The PLM Evaluation Center. Jim is a frequent author and speaker on applying software technology to achieve tangible business benefits.

Appendix A:
Research Methodology

The *Product Innovation Agenda* Benchmark

Between July and August 2005, Aberdeen*Group* examined the product innovation, product development, and innovation processes, experiences, and intentions of more than 125 enterprises in various manufacturing industries.

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

- The link between the company's corporate strategy and its product innovation goals

- The importance of specific operational improvements that could be employed to reach companies' strategic product objectives

- The business capabilities companies are pursuing to achieve operational improvement and strategic, financial goals

- Current and planned use of automation and technology enablers to foster innovation capabilities and activities

- The benefits, if any, that have been derived from improving product innovation, product development, and engineering processes

The *CPO's Agenda* Benchmark

Between January and March 2005, Aberdeen*Group* surveyed and interviewed chief officers, vice presidents, and directors of procurement at 100 global enterprises. These inquiries were designed to determine the following:

- The degree to which procurement's role in their company's strategic operations has changed over the past five years

- How procurement is supporting company financial and performance goals

- Leading strategies procurement organizations are employing to transition to a value creation function

- Current and planned use of automation to aid these activities

- The benefits, if any, that have been derived from these strategies to date

Further Analysis

In February of 2005, the data from these two benchmark reports was further analyzed to determine how companies could protect product innovation value by focusing on product compliance issues.

Appendix B:
Related Aberdeen*Group* Research & Tools

Related Aberdeen*Group* research that forms a companion or reference to this report in

- *The Product Innovation Agenda Benchmark* (September 2005)
- *The CPO's Agenda* (March 2005)
- *New Product Development: Profiting from Innovation* (December 2005)
- *Product Compliance: Protecting the Value of Innovation* (December 2005)
- *Enabling Product Innovation: Roles of ERP and PLM* (November 2005)
- *Product Development in Consumer Industries Benchmark* (June 2004)

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

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Aberdeen*Group*

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To be the trusted advisor and business value research destination of choice for the Global Business Executive.

Our Approach

Aberdeen delivers unbiased, primary research that helps enterprises derive tangible business value from technology-enabled solutions. Through continuous benchmarking and analysis of value chain practices, Aberdeen offers a unique mix of research, tools, and services to help Global Business Executives accomplish the following:

- IMPROVE the financial and competitive position of their business now
- PRIORITIZE operational improvement areas to drive immediate, tangible value to their business
- LEVERAGE information technology for tangible business value.

Aberdeen also offers selected solution providers fact-based tools and services to empower and equip them to accomplish the following:

- CREATE DEMAND, by reaching the right level of executives in companies where their solutions can deliver differentiated results
- ACCELERATE SALES, by accessing executive decision-makers who need a solution and arming the sales team with fact-based differentiation around business impact
- EXPAND CUSTOMERS, by fortifying their value proposition with independent fact-based research and demonstrating installed base proof points

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Aberdeen's integrity has always been and always will be beyond reproach. We provide independent research and analysis of the dynamics underlying specific technology-enabled business strategies, market trends, and technology solutions. While some reports or portions of reports may be underwritten by corporate sponsors, Aberdeen's research findings are never influenced by any of these sponsors.

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