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Breaking away with business analytics and optimization

New intelligence meets enterprise operations

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By Steve LaValle

In top-performing organizations, analytics has replaced intuition as the best way to answer questions about what markets to pursue, how to configure and price offerings, and how to identify where operations can be made more efficient in response to cost and environmental constraints. Yet, as much as business leaders are eager to capture the benefits of new intelligence, they need to take analytics the full distance. Top performers are enacting their business analytics and optimization (BAO) vision, making it possible to operationalize decisions and optimize business performance across the enterprise. To do this, they are using the most effective toolsets, governance and change management practices.

Organizations today have an entirely new way to compete: business analytics and optimization (BAO). On playing fields in every industry, BAO is allowing organizations to successfully break away from competitors.

Behind rising expectations for dazzling performance is a flood of information that has created an entirely new set of assets just waiting to be applied. Nourished by realtime information streams, organizations soak up information as avidly as tap roots seek water. Business leaders need to know, for example, the precise whereabouts of critical supplies. They want deeper insights on the buying behaviors of their customers. They seek better understanding of their operations and the financial health of their partners, as well as the economic and environmental consequences of both immediate and distant events.

Driven by intelligence rather than intuition, organizations can gain speed, agility and timing to execute winning maneuvers. They learn what's coming at them from myriad directions. They have insight into customer desires. They can better anticipate supply chain constraints and competitors' countermoves. Like winning cyclists, they gain solid distance by moving out of the slipstream and pushing to the forefront. They can quickly decide whether to use a tail wind or to brave resistance at the head of the pack.

In our first BAO study published in April 2009, we found business leaders to be well aware that they were operating with blind spots.[1] One in three executives told us they frequently lacked information needed to make critical decisions. One-half said they didn't have access to information required to do their jobs, or close information gaps to reach business objectives.

To follow up on our original findings, in August 2009 we surveyed nearly 400 business leaders worldwide about their use of information and the application of business intelligence. By comparing the information practices of top and lower performing organizations, we gained insights that we believe can help organizations achieve their business objectives.[2]

The role of BAO in breakaway

What role does analytics play in top-performing, or breakaway, organizations? To start with, it eliminates information overload by making sense of the massive amounts of information now available in the enterprise. With the right questions – and the right capabilities for addressing them – information moves organizations forward instead of holding them back.

A mobile telecommunications operator, for example, might devise entirely new types of calling plans based on social network analysis of actual usage patterns to determine which customers are likely to have the most influence on others.

A hospital could improve the survival rate of premature babies by integrating and analyzing a constant stream of biomedical data, such as heartbeat and respiration rates, along with environmental data gathered from advanced sensors and more traditional monitoring devices. By collecting detailed realtime physiological data, it can detect patterns that signal emerging infections up to 24 hours in advance.

A consumer goods company could boost its brand and sales by reducing its carbon footprint. By reconfiguring distribution centers and incorporating realtime, predictive information about traffic patterns on major arteries, it could analyze its shipping options to select routes and carriers with the lowest carbon emissions – while still meeting inventory and customer service targets.

Decisions resulting from analytic insights bear fruit only when the entire organization gets behind them and makes changes required for breakaway.

Analytics describes the use of information to find patterns, identify new possibilities, create scenarios, make predictions and prescribe actions. But the decisions resulting from those insights bear fruit only when the entire organization gets behind them and makes the changes required to "make the break." Of course, it doesn't happen all at once.

Ultimately, an organization would aim to reach the "Breakaway" level, the highest point of BAO maturity, where realtime, pattern-based strategies merge with situational context. This level of transformation requires a succession of changes in how the enterprise manages information and how it applies that information to achieve its goals (see Figure 1).

On the other side of the coin is optimization, a process that entails analyzing opportunities and constraints, and then driving decisions about them deep into the organization. Using analytics, for example, a retail bank may find patterns that result in new decisions about customer strategy and operations. It may decide to implement new technology that can put profitable customers at the head of the queue without alienating loyal, but low potential, ones. Next, in optimizing its operations, it weighs the trade-offs. Based on the outcomes it foresees, the bank then modifies or changes relevant interactions, such as offers and service levels. Every process is designed to make the greatest possible contribution toward achieving organizational goals for customer loyalty and retention.

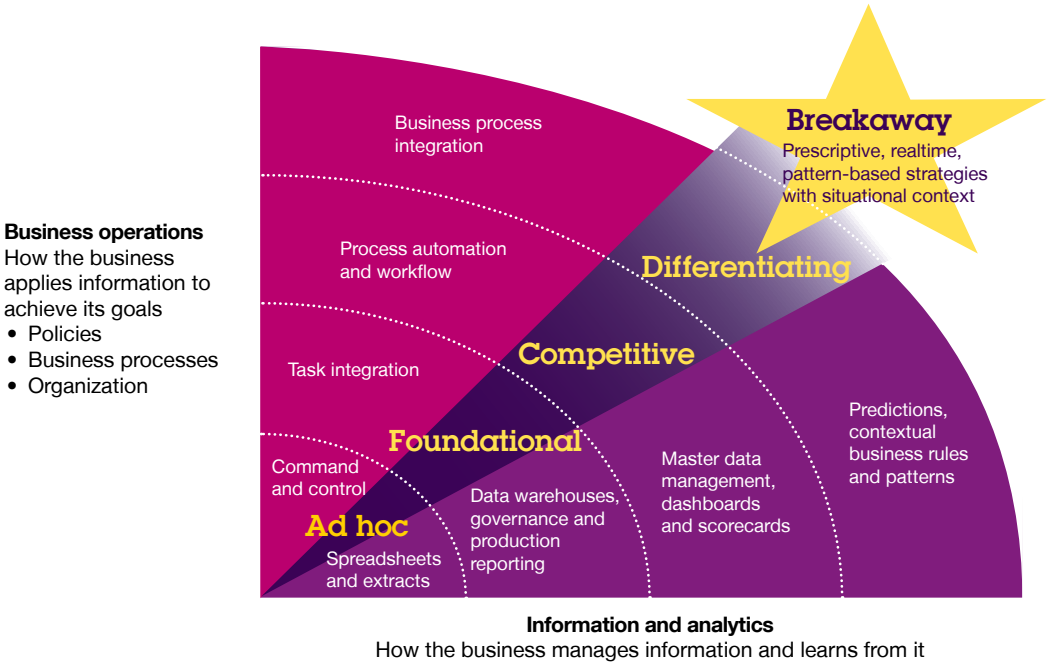


Figure 1: **The Business Analytics and Optimization (BAO) maturity model depicts a succession of changes related to how information is managed and applied.**

Characteristics of the breakaway organization

In our first study, we found a cluster of characteristics that defined the environment needed to support the best use of information. For this study, we delved further to find out which of these characteristics are fundamental prerequisites, and which drive breakaway.

BAO basics: Necessary but not sufficient

Our comparison of organizational characteristics contrasted two groups: "top performers" – high-performing organizations in the top quintile based on self-reported performance relative to industry peers – and "lower performers" – those in the bottom two quintiles. We found that twice as many top performers as lower performers had mastered three basic characteristics that support enterprise intelligence:

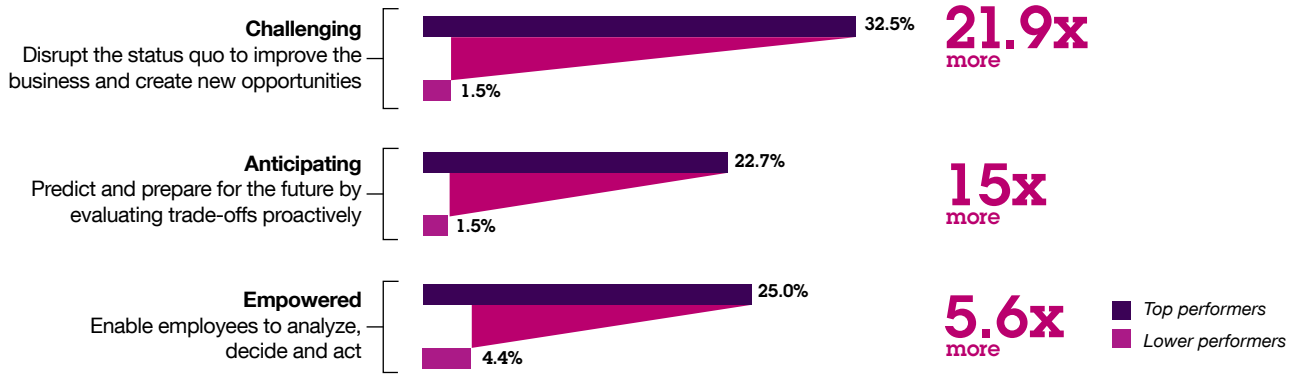
- ***Aware.*** Able to gather and use information from inside and outside the enterprise.
- ***Precise.*** Able to sort through and extract the most relevant aspects of information.
- ***Linked.*** Able to align information with business objectives and across functions.

Organizations that possess these basics are aware of the full scope of information coursing through their operations and how to use it precisely. They actively collect, monitor and use information that comes from supply chain components equipped with electronic tags for providing information about, location, composition and quality, for example. Among the many other sources of information they use extensively are social networks on the Web. Another basic characteristic of high-performing organizations is just as important: data and insights managed and delivered when and where they have the most impact.

Breakaway characteristics: Beyond the basics

As necessary as the basics are, they are not sufficient for breakaway. Top-performing organizations excelled at several key characteristics at much higher rates than lower performing ones (see Figure 2). Top performers displayed three differentiating characteristics:

- ***Challenging.*** Able to disrupt the status quo in their organization, creating an environment more receptive to innovation, and bolder in its application of new insights and intelligence. Top performers rated themselves at the highest level on this characteristic 22 times more often than lower performers.
- ***Anticipating.*** Able to predict and prepare in advance of anticipated events by evaluating business outcomes and trade-offs proactively to optimize their organizations in pursuit of new objectives. Top performers rated themselves at the highest level on this characteristic 15 times more often than lower performers.
- ***Empowering.*** Able to give employees authority to use information, make decisions and act on their insights to drive change. Top performers rated themselves at the highest level 5.6 times more often than lower performers.



Note: Respondents were asked "How well does your organization perform in these areas?" Chart reflects those who chose "exceptionally well."

Figure 2: **Three breakaway characteristics were exhibited at the highest level much more often in top-performing organizations.**

Combined, these three performance drivers constitute a fundamental openness and readiness for change. They lead to new ways of working, and new approaches to innovation of product sets, operations and business models. Together with the BAO basics, they set the course for breakaway.

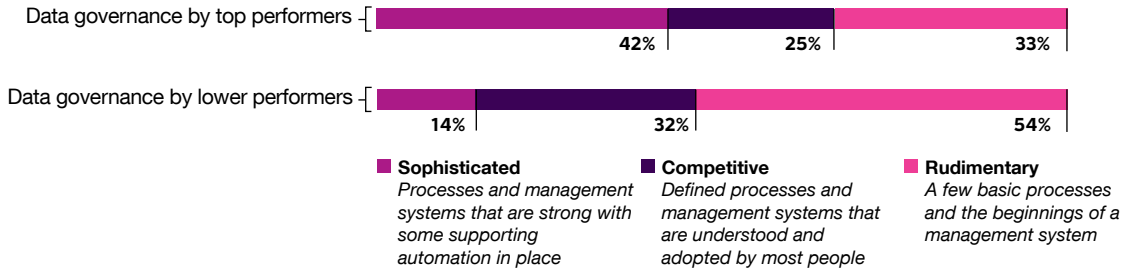
Using analytics productively

Achieving the benefits of breakaway requires a vision about the strategic use of information. To keep implementation on track, organizations also need superior data governance of enterprise information and organizational discipline to make sure intelligence is trustworthy and relevant. Even beyond master data management and other aspects of data governance, operationalizing BAO to become a breakaway organization requires state of the art toolsets and processes to understand, share and analyze information for new intelligence and insight.

Data governance: Breakaway companies do it differently

Like rules of debate, data governance provides a common language that makes it possible to understand and act on information across functions and lines of business. When, for example, various groups define "customer" differently, it's impossible to have a meaningful conversation. The finance people may be talking about groups with current contracts. Marketing may be talking about anyone they've ever done business with and operations only about prospects with proposals pending. When meaning is unclear, analysis is flawed and business objectives suffer. Strong data governance discipline can help organizations move faster and collaborate more easily both within the enterprise and with partners.

Not surprisingly, we found a striking difference between top and lower performing organizations in their level of data governance (see Figure 3). Top performers took a sophisticated approach to governing organizational information three times more often (42 percent versus 14 percent). The most sophisticated had strong management systems in place, including automation of data governance tools.



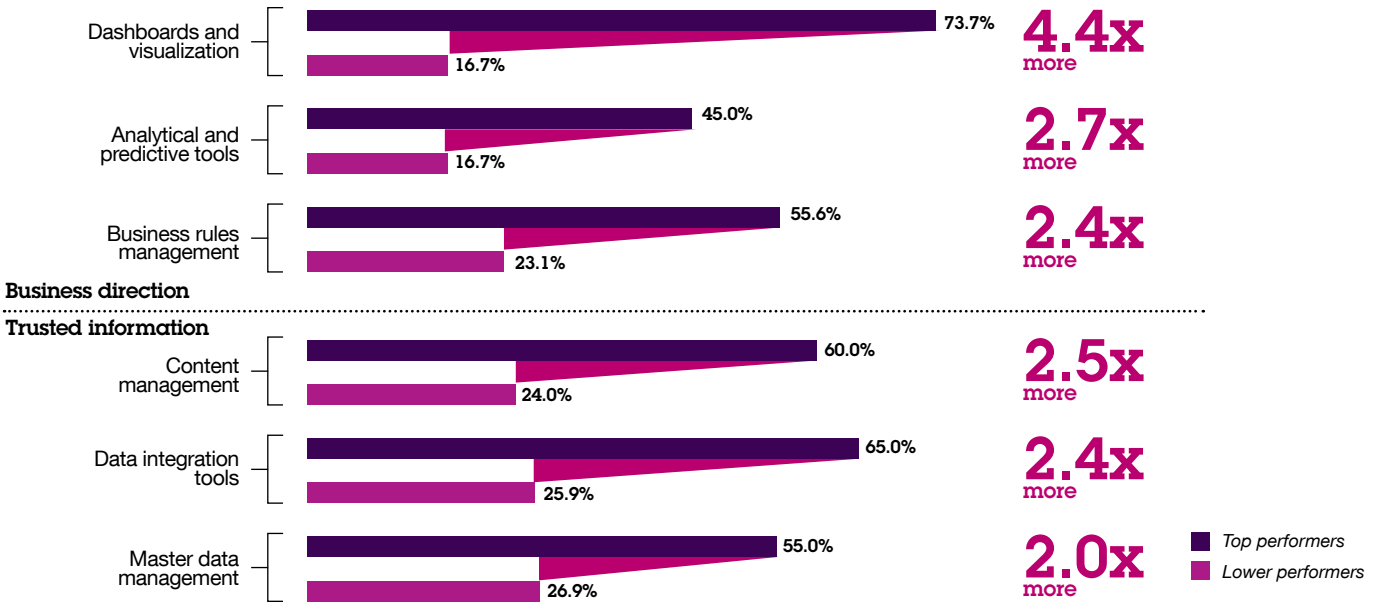
Note: Respondents were asked "How well is organizational information governed in your enterprise?"

Figure 3: **Top performers used "sophisticated" data governance systems three times more often than lower performers, while more than half of lower performers relied on "rudimentary" approaches.**

At the same time, we found that today's breakaway organizations still have work to do overall. They are at the head of the curve, but have only the beginnings of a management system in place. One in three top performing organizations had a rudimentary approach to governance, as did more than half of the lower performers. Massive amounts of information remain ungoverned and unusable for achieving breakaway business objectives.

Why tools matter

Given the nature of change, it takes longer to become a breakaway enterprise than it does to declare new business goals. However, the right toolsets can accelerate that growth. We asked IT leaders to evaluate the state of various BAO toolsets in their organizations – that is, how close they came to best in class (see Figure 4).



Note: IT leaders only were asked "What is the current state of these tools in your organization?" Chart reflects those who rated their BAO platforms and toolsets either "4" or "5," using a scale of 1 to 5, with 5 being the highest.

Figure 4: **Top performers consistently rated their BAO platforms and toolsets as above average.**

We next analyzed the difference in tool usage between top and lower performers and grouped the results:

Tools that establish business direction. How does an organization learn to challenge the status quo based on intelligence it sees in its headlights? Superiority in predictive dashboards and visualization tools, which make it easy to grasp the meaning of information, accounted for the biggest difference between top and lower performers. The top performing group was four times as likely as lower performers to benefit from world-class tools. Also, analytic and predictive tools, which help find patterns and anticipate outcomes, accounted for substantial differences, as did tools that implement business policy and rules.

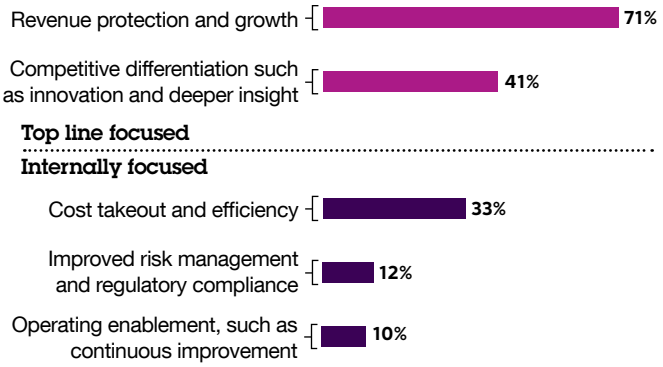
Tools for trusted information. What does it take for an organization to establish cross-functional links and use information from widely diversified sources? Implementation of tools that help assure the quality and usability of information were more than twice as likely to be judged favorably by top performing organizations. These tools added structure to formats and definitions, making it possible to manage and analyze diversified content and provide a single view of the truth. Top performers were more positive than lower performers about their investment in tools for managing classification and distribution of content, and helping get the right information to the right people.

Awareness of new opportunities and focus on the top line are clearly growing.

In short, effective tools – from content management to dashboards to visualization – go a long way in helping to become a breakaway organization. They allow the entire organization to anticipate and challenge – while at the same time providing safeguards for effective management systems.

Gearing BAO activities to the top line

Analytics can optimize organizational structures and processes for best advantage only if the organization has the capacity to orchestrate all players around a common goal. To establish context for BAO, we asked business leaders about their top two business objectives and found that despite conditions of unrelenting economic pressure, *cost takeout and efficiency* ranked a surprising third. *Competitive differentiation*, and *revenue protection and growth* led the list, suggesting that awareness of new opportunities and a focus on the top line is clearly growing (see Figure 5). On the other hand, with cost reduction cited as a major goal by only one in three organizations, it appears that efficiency lessons have already been learned and applied – and that new progress requires new plays.



Note: Respondents were asked "What are the main business objectives of your enterprise over the next two years? Select two."

Figure 5: **Business leaders are increasing their focus on top line improvements.**

A more pervasive external focus has interesting implications for the type of intelligence we expect from organizations of the future. When organizations look outward – toward customers, competitors, and partners – the information they amass is broad, deep and heterogeneous. This information creates a rich foundation for the application of new analytic methods. Further, with large amounts of external data, it is possible to create deeper insights and a wider range of possibilities. Scenarios based primarily on historical and internal information, on the other hand, are more likely to reinforce existing assumptions because they are less likely to include indicators for unexpected events.

By looking at the business objectives that top performing organizations valued and then comparing this with the BAO activities they were actually undertaking, we were able to predict how focus will shift for these activities. (see Figure 6).

Focus will be maintained. We found a somewhat mixed group of activities supporting external and internal focus that we expect will continue based on the ongoing need for the basic benefits they provide: customer segmentation, demand forecasting, enterprise goal setting, and resource allocation. Good times or bad, these activities are always relevant, and require attention. Organizations not currently pursuing these activities should consider doing so, regardless of their views on the current economy.

Focus will be increased. Activities that help organizations achieve top-line objectives are not widespread now, but we expect them to predominate over time. Many organizations, for example, are just beginning to understand the extent to which analytic capabilities for branding and reputation purposes have advanced. Much of this capability has been

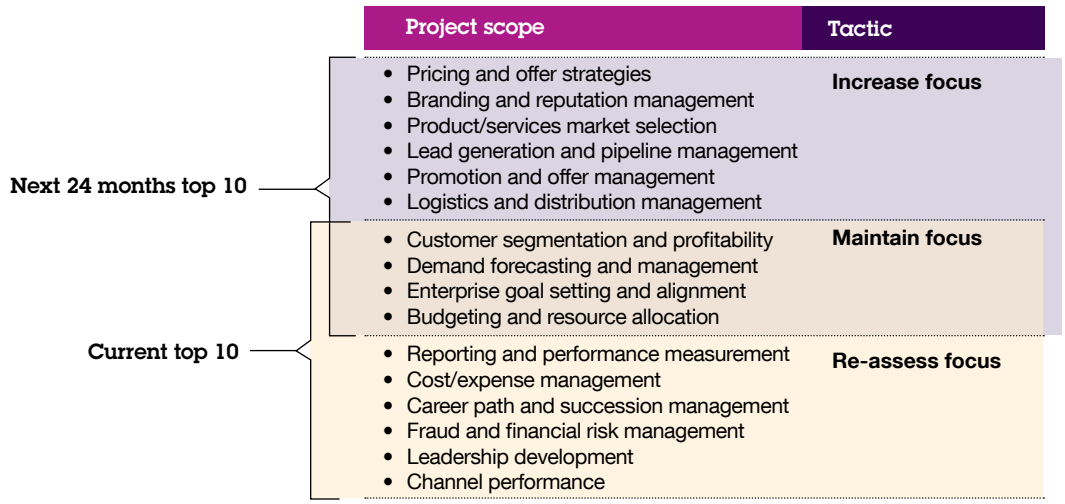


Figure 6: **Over the next 24 months, project scope will shift to align with emerging business objectives.**

Analytic activities that impact the topline will become more common in the next two years.

based on large quantities of customer-generated content on the worldwide Web. And while it's always been easy to see when a brand takes a hit, it's harder to detect emerging trends that will have an impact on the brand in the future.

Other top-line activities that are likely to receive more attention include: pricing and offer strategies, selecting markets for products and services, lead generation and pipeline management, promotion and offer management, as well as logistics and distribution management.

Focus will be re-assessed. Another group, focused almost entirely inward, will take a back seat or be absorbed into programs with greater impact on business objectives. These are: reporting and performance measurement, cost/expense management, risk management, career path and succession management, leadership development, channel management, operational enablement and cost take-out.

Communicating value across the enterprise

In examining the perceived value of enterprise intelligence as applied to the variety of activities listed in Figure 6, leaders – both functional and line of business (LOB) – often disagreed among themselves about which activities reaped the greatest benefits to the organization overall. *Fraud and financial risk management*, for example, was an area where human resource and finance leaders saw significantly more benefit than general management, or even operations leaders.

Likewise, leaders in finance and human resources, as well as sales, supply chain and operations were more positive than general management about enterprise benefits to be gained from *budgeting and resource allocation* activities. These findings indicate a disconnect among business leaders in the same organization, who have yet to forge common agreement on what they believe to be the most important activities for achieving common business objectives.

So have business leaders done a poor job of communicating the value of activities that they sponsor? Or are they unaware of what their peers elsewhere believe to be most valuable to their company? In either case, it is apparent that organizational leaders aren't yet synchronizing BAO activities across the enterprise. In our previous study, we found that most organizations had analytic projects underway, but they were working on them in silos. Top performers, however, were eight times more likely to implement analytic projects at the enterprise level than lower performers.[3]

Business leaders, we conclude, are best able to help their organizations operationalize BAO when they:

- Communicate the value of analytic activities led by their function or LOB and understand the value of activities led by other domains
- Design information and analytic activities to support common enterprise objectives.

Knowledge workers and the information culture

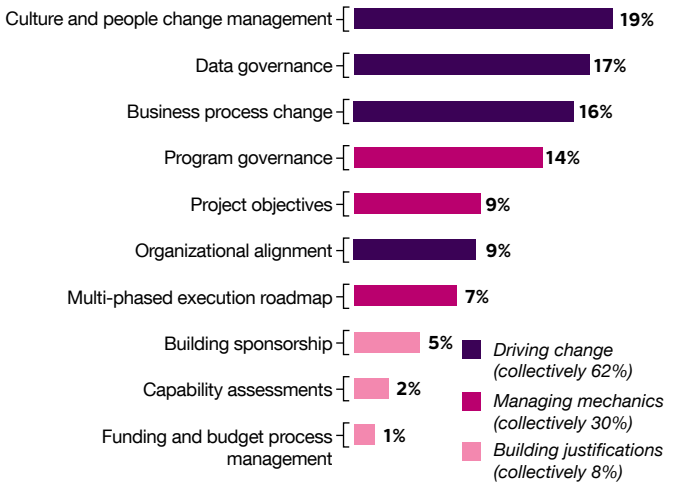
In a world of intelligent enterprises, everyone is a knowledge worker. And while it's never been easy to change the way people work, transforming an entire culture of knowledge workers is even harder. Becoming an intelligent enterprise multiplies the opportunities for reaching business goals, but it also increases the challenges.

Call center work is an example. Metrics about call duration and resolution are readily captured in existing systems. New BAO programs, however, are likely to require that unstructured information – sourced from voice, e-mail and text chats – is gathered, analyzed and integrated to create a continuously updated view of the customer. This view must be current and available whenever and wherever it can support business objectives, whether in sales and marketing, product development, business operations or finance.

Truth be told, new processes for integrating customer information won't be used unless knowledge workers believe their information has real value to the enterprise – and that they, in turn, will be valued for their contributions. Business leaders can accomplish this by setting an example in their own use of information and making sure that incentives, measurements and rewards accurately reflect the value that knowledge workers provide.

Moving toward breakaway

To better understand how organizations might best implement BAO, we looked at the impact of various approaches to change. We asked business leaders about a number of change-related activities and, by analyzing their answers against their performance levels we were able to determine which activities were the biggest contributors to, and the most predictive of, breakaway performance (see Figure 7).



Note: Percent contribution to top performance predicted by the BAO project activities.

Figure 7: **Activities in support of driving change contributed most to a breakaway performance.**

We found the following:

- *Building justification* for new projects was the most common group of activities – getting sponsorship, working the budget process and assessing the gap between what's needed and what's available. These activities, while necessary, do not differentiate top performers. They need to be done, but they don't add unique value.

- *Managing mechanics* of projects provided some differentiation, making focus on them a good predictor of performance. Activities included roadmaps to get from current to desired states, articulating value propositions and establishing governance over the project itself.
- Together, activities focused on *justification* and *managing mechanics* accounted for 38 percent of the contribution *to industry top performance*.
- Activities for *driving change* in the business, however, were the biggest predictor of performance – they accounted for a full 62 percent of the contribution to *industry top performance*. These activities included managing change of people and processes while strengthening integration capabilities through data governance and organizational structure.

In our work with clients, we sometimes find project leaders working hard to assess capabilities and manage their budgets. But when they lose sight of the real business change their projects are chartered to create, they risk stopping short of driving needed structural and cultural changes. To increase the likelihood of long-term success, they need to take deliberate measures to re-balance their activities for increased focus on business objectives. That requires proactive change management, data governance and organizational alignment. Progress needs to be measured in terms of financial outcomes, as well as employee adoption and behavioral change.

Financial metrics by themselves are not sufficient – they are lagging indicators to adoption. By the time these sirens go off, the opportunity to drive behavioral changes may be long gone.

A focus on driving change – in people, business processes, organizational structures and management systems – has the greatest impact on achieving breakaway performance.

It's important to note that operationalizing analytics and optimizing organizational structures is not a one-time challenge. As the environment around an organization shifts – and as new analytic tools detect finer and finer patterns on increasingly distant horizons – there is greater need to re-evaluate the business rules behind existing processes. Scheduled health checks and course corrections based on dynamic feedback are essential.

When to make the break

In the past, organizations have invested extensively in applications such as ERP and CRM without connecting them effectively. An information agenda that builds on those investments by linking applications and data is foundational to any BAO program. Top performing enterprises have a BAO strategy, a flexible information platform and a way to apply business analytics to business processes. This allows them to achieve both top and bottom line impact – especially important in the current economy.

The sequence in which these requirements are addressed depends entirely on an organization's business objectives, history of information and intelligence deployment, organizational culture and competitive environment.

Is the enterprise suffering from an overly complex information environment? It may be recovering from a string of acquisitions or paying the price for allowing information projects to proliferate without a unifying strategy. If so, there may be substantial value in simplifying the data and analytic environment; efficiencies and improvements gained from even limited consolidation efforts can fund future analytic programs.

Is information consistent but devoid of business relevance? The organization may need to determine how information processes support the overall business objectives, as well as LOB and functional goals. A well-designed analytics pilot program may be able to find useful correlations and prescriptive value in the data on hand.

Is there a glut of recognized opportunities from enterprise information with no plan of action? Both information flexibility and process optimization need to be addressed and prioritized simultaneously via a BAO strategy that can tie all programs to relevant business objectives.

Does the organization have a BAO strategy without sufficient funding to implement programs? Capture value from one or two tightly-scoped projects that can be used to fund the next ones – and be sure to apply comparable processes, definitions and best practices from one set of projects to the next. Current attitudes and approaches toward information, however flawed they may be, are deeply embedded in an organization's culture. Without a compelling case for change and an active change program, habits of thought and action are difficult to dislodge. For that reason, the importance of operationalizing BAO needs to be communicated and demonstrated to business leaders.

Conclusion

Together, today's economic climate and information environment create a powerful case for business analytics and optimization. While information overload was once a barrier to good decision making, today's technology and analytics expertise make it a real benefit. The denser and more varied information is, the better organizations can foresee what's likely to happen in the future and take effective action for seizing the opportunities they anticipate.

What's more, breakaway organizations are more likely to challenge the status quo, anticipate future events and provide employees with information tools to make effective decisions. These tools make it possible to visualize information and predict outcomes of alternative scenarios.

Finally, while analytic techniques can support business decisions at many levels, they do not succeed without an organizational commitment to drive BAO into day to day operations. That takes leadership, governance and cross-enterprise conversations. Pairing the proper foundation with breakaway capabilities makes it possible to operationalize BAO and achieve enduring competitive advantage.

To learn more about this IBM Institute for Business Value study, please contact the author or e-mail us at iibv@us.ibm.com. For a full catalog of our research, visit:

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Related publications

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Steve LaValle, an IBM services partner, is the global leader of Strategy services within the IBM Business Analytics and Optimization service line. In this role, he leads a global team of consultants and practitioners who provide advisory services across geographies and industries, focused on helping clients optimize their results through the application of insight, analytics and business process improvement. He is one of the founding members of the IBM Business Analytics and Optimization service line. Steve earned his Bachelor of Science in Economics from the Wharton School and his Masters in Business Administration from Harvard Business School.

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Notes and sources

1 LaValle, Steve. "Business Analytics and Optimization in the Intelligent Enterprise." IBM Institute for Business Value. April, 2009. www.ibm.com/gbs/intelligent-enterprise

2 In our followup study, respondents classified themselves on a five-point scale as outperforming, on par or underperforming their industry peers. We used this self-reported performance to identify the upper 20 percent and the lower 40 percent groups, which we labeled "top performers" and "lower performers," respectively. Our decision to compare the top 20 percent to the bottom 40 percent was made to enable meaningful comparisons not dominated by the extremes.

3 LaValle, Steve. "Business Analytics and Optimization in the Intelligent Enterprise." IBM Institute for Business Value. April, 2009. http://www-935.ibm.com/services/us/gbs/bus/html/gbs-business-analytics-optimization.html?cntxt=a1008891. In our first study, we compared respondents in top and bottom quintiles based on self-rated performance compared to competitors. For this followup study, we again looked at self-rated performance and compared the top 20 percent ("top performers") with the bottom 40 percent ("lower performers").

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