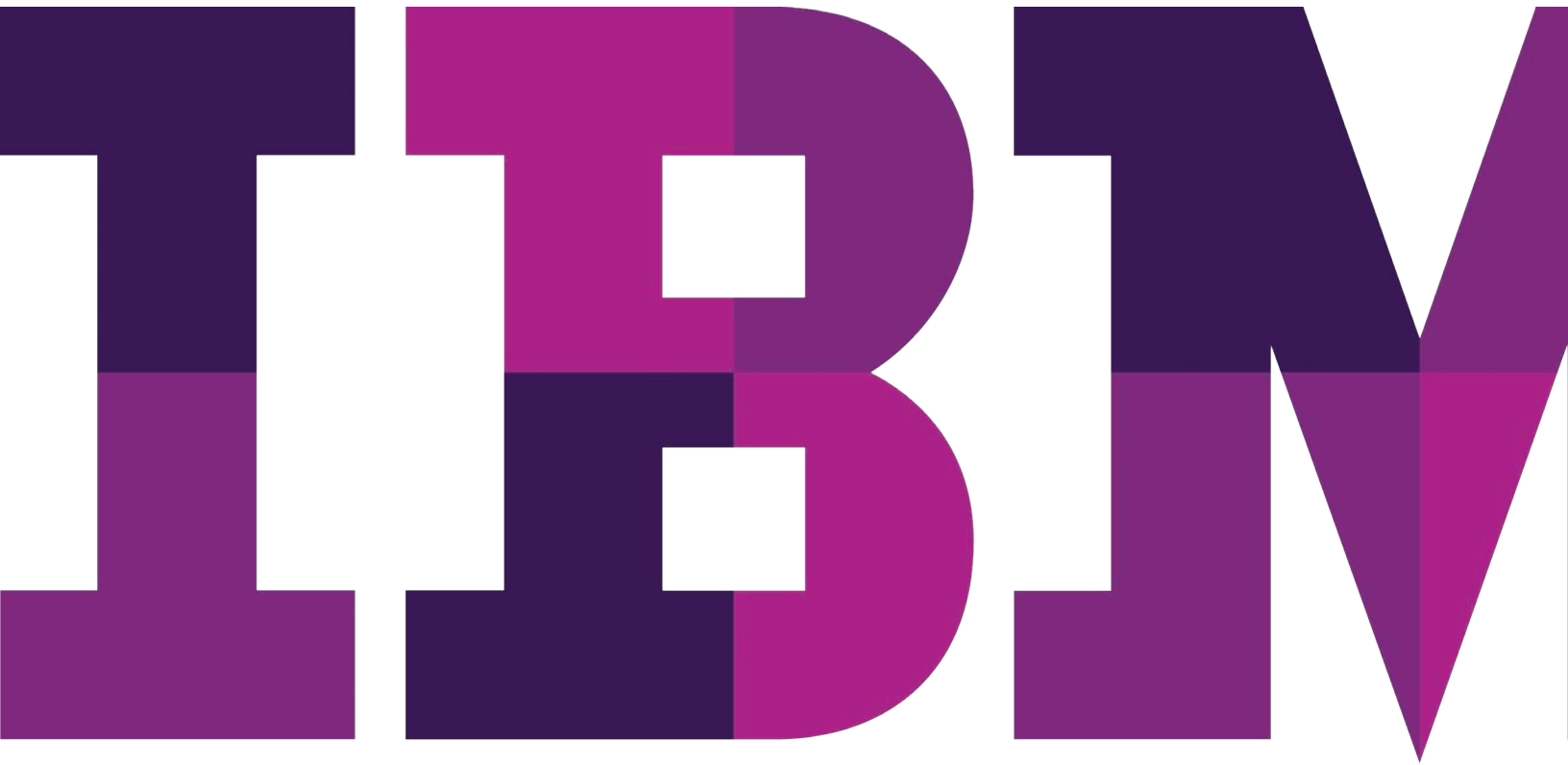


# Business Analytics and Optimization: The new competitive edge

*Using the power of insight to shape business outcomes*



## Introduction

When IBM introduced its view of an instrumented, interconnected and intelligent world—a smarter planet—it outlined how data-driven insight is fundamentally changing the way the world works. The evidence is turning up everywhere, from the priorities of business leaders to creative new technology solutions, to the transformation of entire industries—a smarter planet is becoming reality.

One of the best examples is the technology behind the IBM Watson computer and its victory on the American game show *Jeopardy!*, which made news around the world. Watson beat the game's two all-time champions by solving difficult natural-language problems covering a wide range of topics faster than its human opponents. It was able to parse each problem across thousands of processors, evaluate a nearly infinite number of options, make relevant correlations and arrive at the most likely correct answer with a high level of confidence... all in less than three seconds.

This landmark performance represented much more than an impressive display of computing power and the ability to simulate human reasoning. Watson revealed a glimpse into the important potential of analytics—for people, businesses and society.

The discipline of analytics opens the door for businesses seeking a way to navigate the turbulence brought on by recent economic and global events. It allows them to see the world as a landscape of untapped opportunity to be identified and seized, rather than a collection of daunting problems. Hidden patterns in data are revealed and questions that could not even be asked before can be answered. When leveraged to optimize decision making, this capability can become a formidable force for differentiation and success: **Business Analytics and Optimization (BAO)**.

The ultimate promise of BAO is the ability to anticipate and shape business outcomes, and make more informed, confident choices. What could be accomplished if your organization had all the answers *before* anyone else? What if you knew exactly how you were doing and precisely why things were taking place? And, what if you could reliably determine the best course of action at any point in time? When you can make the right decisions based on true insight, you can drive meaningful change, accelerate growth and outperform competitors.

## Informed insight: the foundation of success

For the past 30 to 40 years, businesses have sought to differentiate themselves based on process efficiency. Those with more streamlined supply chains, better customer service and quicker turnaround times saw higher profit margins that enabled them to invest in business growth. But today, while a focus on efficiency remains essential, it is no longer sufficient to create lasting differentiation.

In this day and age, most, if not all, competitors have invested in improving automation and efficiency. They are using similar systems and processes, and are achieving comparable results. That's why insight into the business and potential outcomes is so important. True insight allows organizations to better understand customer needs, manage risk and deploy assets in ways that can't easily be copied by competitors. It is the hallmark of organizations that have managed to both survive and thrive in today's volatile business climate.

A look at these successful businesses shows that they have much in common. To them, information is a vital asset. They master information and employ analytics across the organization to drive meaningful action. Because of this, they are able to make decisions from the most mundane daily operational choices to the most far-reaching strategic moves more effectively than their peers. They are, in short, *driven* by analytics and insight.

Together, pervasive business analytics and a robust, supporting information management platform are the keys to acting with confidence and driving the best business results. This is the principle on which BAO is built. When information is leveraged as a strategic asset and analytics are embedded into the organization's culture and processes, the potential for positive impact is tremendous.

According to a recent study of nearly 3,000 executives by the *MIT Sloan Management Review* and the IBM Institute for Business Value, analytics-driven organizations do, in fact, see greater success in the market! These companies have the ability to get a clear view of the situation from a common, connected source of information. As a result, they can anticipate and shape business outcomes to consistently outperform their competitors.

Considerable research bears out this observation. The joint IBM/MIT *Sloan Management Review* study and others have found that:

- Companies that invest in BAO have better insight and hence are better able to manage business performance. They lead their peers with 33 percent higher revenue growth, 12 times more profit growth, and 32 percent higher return on invested capital.<sup>2</sup>
- Those that perform well are able to leverage analytics to know the odds *before* they place their bets. Top performers are 15 times more likely to predict and prepare for the future by evaluating trade-offs proactively.<sup>3</sup>
- Basing decisions on facts, not instinct, creates tangible returns. Organizations that have well-established analytics capabilities are three times more likely to be outperforming their peers than those who are just getting started.<sup>1</sup> CIOs at high-growth companies proactively craft data into actionable information 61 percent more often and are 29 percent more likely to ensure that data is reliable and secure.<sup>4</sup> And, as shown in Figure 1 (on the next page), top performers are, on average, 5.4 times more likely to use an analytic approach across a broad range of business activities, rather than intuition.

The research also points to the value of applying a comprehensive set of BAO capabilities to improve business outcomes. The companies that have done so are no longer focused on answering “what’s my hardest problem,” but instead are asking “what is our greatest possibility?” They are driving forward, while their competitors are left to wrestle with difficult issues. They are able to see patterns, correlations and outliers in data of all kinds, understand the history and context of events and outcomes, and anticipate changes to come. The leaders are achieving growth, competitive differentiation and cost management by making good choices. They have the knowledge they need to make the best decisions about what markets to pursue, how to configure and price offerings, and how to make operations more effective and efficient.

### New approach, new possibilities

Research has shown the value, but what exactly is the nature of BAO? How does it differ from business intelligence or other decision support systems that may currently be in use? The implications for the way the business runs are far-reaching and deserve careful consideration.

At its core, BAO is about connecting people throughout the organization with trusted, relevant information and giving them the ability to uncover hidden patterns, relationships and dependencies. It helps them apply context and insight so they understand not just what is happening, but *why* it is happening. Employees also get a clearer idea of what they need to do next, so they can act with confidence to optimize results. When fully implemented, BAO can permeate the entire organization, optimizing every significant business process and guiding important actions, every day.

### Analytics: The mark of top performers<sup>5</sup>

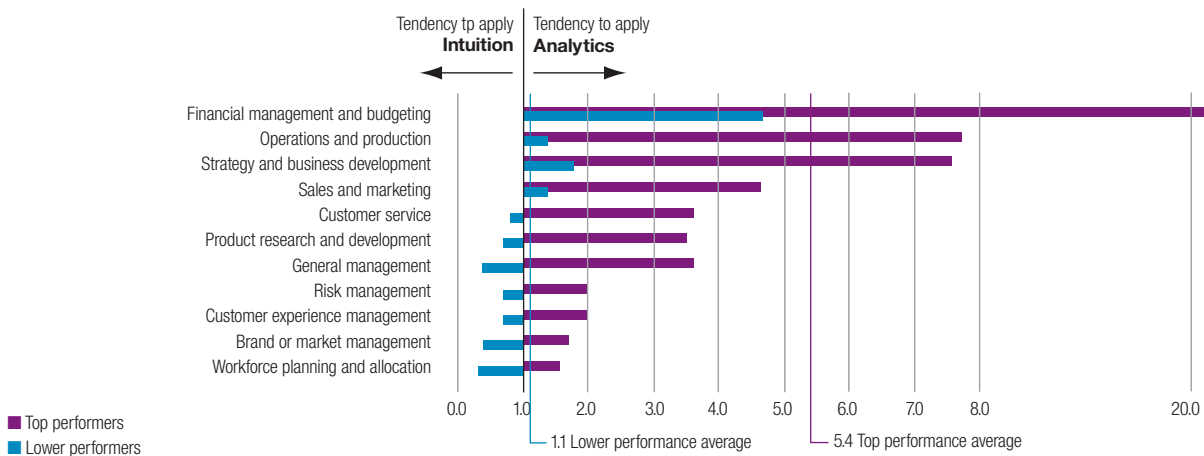


Figure 1: The tendency for top-performing organizations to apply analytics to particular activities across the organization, as compared to lower performers.

Business Analytics and Optimization as a whole is a new way of viewing, and enhancing, the value of existing, well-established and widespread management disciplines. Existing technologies such as data warehousing, content management and business intelligence are valuable in their own right, but it's their potential for synergy that makes the difference. Much greater business benefit is possible if they are combined into an integrated, comprehensive BAO capability.

Just as enterprise resource planning (ERP) systems are more than a collection of accounting, human resources and operational applications, BAO is more than the sum of its parts. It addresses a critical challenge facing today's organizations: an explosion of raw information that can overwhelm existing systems and processes. Today, there is so much data to consider that it's almost impossible to know where to begin. Business Analytics and Optimization goes beyond existing capabilities by not only answering known questions, but determining the right questions to ask in the first place.

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*Southwest Texas Medical Associates used analytics to help identify the causes of return patient visits and design interventions – and reduced hospital admissions by 22 percent in just six months.<sup>6</sup>*

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### Putting insight at the core

A key differentiator for BAO is the extent to which it is integrated into the business. To produce the desired results and uncover the wealth of actionable information hidden in data, it is necessary to find a way to gain insights in real time. The organization needs to not only process information, but also identify the appropriate data and content to analyze, place it in context and govern it throughout its lifecycle. That requires embedding analytics capabilities and optimization techniques into management processes and operations throughout the enterprise.

Even more important than addressing everyday operations is the incorporation of information and analytics into the fundamental strategy and culture of the business. When employees at all levels can gain insights based on trusted, useful information, the organization changes in a fundamental way. From sales clerks to customer service representatives to executives, all can act with the knowledge that they are being guided towards the best course of action. This empowers employees with facts and gives them a clear context for making better business decisions that help achieve strategic and operational goals.

This integration of BAO into the fabric of the business itself is what enables remarkable, real-time agility. It allows the organization to focus on results and dynamically adjust what it does to achieve them. By closely tying information requirements to business requirements, business outcomes can be fully optimized across the enterprise, at all levels. Every move is based on available information, not uninformed intuition or fixed policies that may have unintended or even unknown consequences.

## Building BAO capabilities

Business Analytics and Optimization is best thought of as a management discipline supported by a core set of complementary capabilities, rather than a single solution. It is not necessary to implement all components at once. In fact, many organizations have already started down the path by deploying best-of-breed analytics point solutions or trusted data warehouses. These initiatives can deliver compelling business benefits on their own. However, those benefits are compounded when the organization continues in its pursuit of full BAO capabilities.

The ability to understand, anticipate and shape real-time business outcomes can be reached only through a fully realized range of capabilities. These need to be supported by an information agenda specific to the company's industry and unique situation, and aligned with its business strategy. The record of success shows the companies that have progressed farthest down the path are the ones reaping the greatest benefits. They have become organizations grounded in and driven by analytics.

Building a robust BAO capability entails making information analysis and management an integral part of the business strategy, elevating it above its traditional support role in order to allow information to be treated as a critical asset.

The organization needs to carefully define its business optimization needs, understand how analytics will influence the enterprise on a day-to-day basis and specifically design its IT strategy and systems to support the new capability. That requires a highly integrated information platform to ensure accurate, relevant and governed information, delivered when and where it's needed.

## Pathways to an analytics-driven organization

The goal of BAO is to allow businesses to follow the optimum course of action, based on timely, relevant insight and solid information. A look at leading companies clearly shows how BAO enables them to differentiate themselves. They are applying these capabilities to understand customers better, drive real-time decisions, foster informed and collaborative decision making, and enable organizational visibility. These are critical focus areas for success.

### Enhance understanding of customers

Deeper insight into customer behavior, interactions, preferences and profiles is critical to sustaining profitable growth. The ability to generate and leverage this knowledge is greater now than ever before. In addition to understanding purchasing trends and cross-sell opportunities, today's technology permits sophisticated content and social media analytics not possible—or even relevant—a few years ago. What once took surveys, market research and weeks of effort can now be accomplished in near real time. Indeed, content analytics is part of what allowed Watson to perform so well at tasks that until now have been far more effectively performed by humans.

Greater knowledge can help the company anticipate its customers' needs to make its offerings more attractive. Beyond this, people now expect companies to know who they are and what they want, on an individual basis. Today's customers are sophisticated and savvy. They know what technology can do and prefer to do business with companies that can leverage it to make their lives easier.

Getting closer to customers by capturing prompt, accurate information—and correctly interpreting it—allows companies to change the course and outcome of interactions. For example:

- *Reduction of customer churn*—Using analytics to anticipate what might cause customers to defect can allow the company to proactively engage with them to rectify issues before they become problems. For example, patterns in caller and billing records can alert a communications provider to reach out to an at-risk customer with a compelling new offer, even before the customer expressed dissatisfaction.
- *Optimization of marketing spending*—In today's marketplace, one size no longer fits all and customization can be a critical differentiator. Knowing the customer can enable the creation of more effective, personalized promotions based on their individual needs and wants, and can reduce the wasteful spending associated with untargeted offers. Behavioral analytics can further increase impact by improving the timing of promotions through a deeper understanding of market trends.
- *Improved sales productivity*—On any given day, a sales representative might have hundreds of prospects to call. Organizations are using analytical models to identify which prospects to call first, enabling them to get an appointment in a few calls instead of dozens. Focusing on the most likely prospects can make the difference between making and losing a sale.

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#### Identifying the next likely purchaser

Even the best sales reps may not always be able to spot every opportunity. Sometimes the information needed to open new markets is right there in front of them, but it remains hidden in a mass of customer data. What's needed to open the door to more sales is clarity and understanding.

ADP, the largest provider of payroll and human resources services in the world, is using predictive analytics to find new opportunities through its holistic Client 360 program. By gaining insight into buying behaviors, previously untapped opportunities to up-sell are now regularly uncovered. The new ability to pursue specific opportunities based on data patterns and trends gives ADP's sales force a much greater chance of success. In a business environment where it may take 100 to 200 calls to get a single appointment with a prospect, ADP sales reps have been able to get appointments with less than 10 calls in many cases.

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### Drive real-time decision optimization

Most companies today rely on well-established decision processes based on reporting and analysis of data after the fact. The spreadsheet, quarterly performance report and business forecast are standard tools of the trade for any organization, but these create a lag between insight and action. By definition, management is always using old information and addressing issues that have come and gone.

This kind of retrospective information analysis is no longer adequate to ensure the best business decisions. The world is moving too fast and there is too much information streaming into the organization. BAO allows companies to make sense of the flood of data to create differentiation and competitive advantage by enabling them to plan better and be proactive when addressing issues and opportunities.

Acting in real time by integrating analytics into day-to-day operational and IT processes can create unprecedented business agility. For example:

- *Trading advantage* – Having better and fresher information than competitors can provide a critical edge in business transactions with supply chain partners. A company that knows market conditions and customer demand ahead of anyone else can use that information to get better prices or ensure supply.
- *Fraud protection* – Understanding all interactions with customers, as they happen across the enterprise and value chain, can reveal abuse that might otherwise go unnoticed. Using pattern analysis and predictive analytics, companies can detect suspicious activity and act even before a loss has occurred.

- *Real-time decision making* – Finding the right answer when timing is critical, such as enabling doctors to leverage remote monitoring data for critical patient care, or using late-breaking news information to drive purchase decisions, can have a major impact on outcomes. The faster an organization can make sense of information and act on it, the more competitive and agile it can be.

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### Seeing the whole picture, in real time

In social services, beneficiaries often face a bewildering maze of agencies, programs, rules and benefits, some of which overlap or do not work. It's a wasteful situation that frustrates both providers and those they assist.

California's Alameda County Social Services Agency turned this state of affairs around with the first-of-its-kind Social Services Integrated Reporting System (SSIRS), which helps the agency understand the full range of its interactions with beneficiaries. SSIRS better enables caseworkers to optimize the mix of services delivered to each client, reducing overpayments, controlling waste and improving productivity.

The benefits achieved are impressive. Reporting that once took days now happens in real time – and saved US\$7 million in the first year. US\$11 million was saved by eliminating 14,000 cases of double billing, over 600 instances of multiple customer records and 22,000 cases of incorrect service delivery. SSIRS also led to a 50 percent improvement in customer service productivity and a further US\$3 million savings. But most important, the agency's timely new knowledge is helping people get the services they truly need.

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### Foster informed and collaborative decision making

The ability to get key information into the hands of all stakeholders in a timely manner is a major benefit of BAO. This is what allows better decision making to become part of the corporate fabric. Employees at every level gain the ability to act based on real, relevant, timely and trusted information. They can see the results of their actions and work together to create positive outcomes much more effectively.

Integrating BAO across the organization allows decisions that do not require human intervention to be automated. Processes can be sped up and people freed to focus on those cases that need their attention. BAO also enables workers to take a more active role in decision making, using actual knowledge rather than fixed rules or estimations. At the same time, it lets the business take more information into account to support those decisions. In this way, the likely outcome of any given move can be determined with far greater accuracy.

The larger and more complex the organization, the greater the potential for improvement through collaboration. For example:

- *Improved customer service* – Creating a single and consistent “version of the truth” in real time can lower the cost of serving customers and reduce the number of interactions needed to resolve a problem. For example, if a customer calls with an issue, all parts of the company can know about it and what’s been done at the very next interaction. The customer can be treated as an individual and won’t have the frustration of having to repeat the details all over again.
- *Channel management* – Aligning information across channels allows customers to interact with the business when and how they wish, and always receive the same high-quality experience. A retail customer can make a purchase at one of

the company’s brick-and-mortar stores, for example, and the information captured can drive a personalized offer the next time they visit the web site.

- *Loan origination* – Costs and processing time can be dramatically reduced, especially for complex multi-party transactions like mortgages. Information can be shared among value-chain partners and decision results propagated throughout the team in real time, avoiding delays, disconnects, duplicated effort and misunderstandings.

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### Connecting with customers

It’s hard to pin down what makes for a successful customer service interaction. Perhaps it’s personal chemistry, or the ability to resolve an issue quickly. Yet, there’s no question that a caller who connects with the right agent will be more satisfied.

Assurant Solutions, a provider of subscription-based insurance products to credit card issuers, is very interested in keeping its callers happy. In its world, customer retention is critical and churn is a major issue. The company has created an innovative way to keep the customer satisfied in RAMP, an analytics-based routing solution for its call centers.

RAMP uses in-depth information about customers and agents to automatically match, with a high likelihood of success, each caller to the agent that can best serve them. Its high level of sophistication allows continuous optimization, selecting the caller and agent attributes that matter most to a successful interaction, covering everything from personal affinity factors to agent expertise. This makes for more satisfied callers and less stressed agents – and has increased customer retention revenue by as much as 119 percent and contact center-based sales revenue by as much as 29 percent. Assurant Solutions also improved the total number of saved customers by as much as 49 percent.

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### Enable enterprise visibility

With full transparency across the organization, it becomes possible to take into account the broadest possible range of factors that can impact business optimization. Comprehensive information management and business analytics capabilities at all levels, from the CEO to end users, allow the best decisions to be made. When knowledge is isolated in silos, one cannot truly understand all of its implications, relationships and dependencies.

What BAO provides is the ability to not only see, but make sense of this information. That's a critical differentiator, because in an environment awash in raw data it can be virtually impossible to focus on what's most important.

End-to-end visibility promotes greater confidence in the validity of business information and enhances the ability to stay ahead of changing conditions. For example:

- *Strategy alignment*—A clear view of the current and ongoing state of the business allows business strategies to be fine-tuned rapidly, based on the real outcome of decisions. By using key real-time performance indicators as input for business processes, they can be given the ability to self-adjust and optimize on a continuous basis.
- *Risk management*—Generating complete and accurate reports on short notice—something difficult to do without integrated, enterprise-wide analytics—can help ensure regulatory compliance. With full, timely visibility, there are no hidden surprises; the company knows what is happening as it happens.

- *Demand visibility*—Matching production with demand as closely as possible allows more accurate forecasting, helps reduce inventory costs and optimizes resource allocation. With shorter time horizons, a company can respond much more quickly to emerging market trends than its competitors.
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### Aligning the business on a global scale

Business agility is critical today, but for large organizations geographical, functional and divisional fragmentation may stand in the way. One international food conglomerate rose to the challenge by consolidating all operational data on a single, 60TB business intelligence system—the first in the world—for viewing on demand.

Commonality is at the heart of the new system. Using one language and one set of definitions, tools and measures removes unnecessary complexity. This helps the enterprise work in a coordinated fashion; it can use real-time information to optimize actions across the globe.

Thanks to increased visibility, siloed customer service functions in Central American countries have become a single regional operation, improving retail chain fill rates by 26.2 percent. In Mexico, direct store delivery efficiency is up by 89 percent and in France, the company has reached 99 percent customer service levels.

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## Why BAO? Why now?

Where will businesses find differentiation in years to come? That's one of several key questions facing today's leaders. Is the organization reaching the limits of operational savings? Is the company prepared to move faster and work smarter than its peers? Is it able to effectively use all the information available to it?

BAO represents the next frontier in creating competitive advantage. It is the way to leverage untapped information resources and unlock their true potential, moving beyond problem solving to finding and capturing a new world of opportunity.

Watson gave the world a look into the future of analytics and showed in dramatic fashion how it can be leveraged to make a real difference in outcomes. The same IBM research that created Watson is driving the creation of new BAO capabilities. Consider what your organization could do with that kind of technology.

The time is right to take the next step and move from traditional ways of doing business to infusing your organization with insight and knowledge. Information is more pervasive than ever, and the ability to productively analyze it—absent only a few years ago—is now in place.

To find out more about how Business Analytics and Optimization can reveal a new world of opportunity to your organization, contact your IBM representative or visit us at

[ibm.com/BAO](http://ibm.com/BAO)

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## Partnering to take you there

When seeking to become a true analytics-driven organization, it pays to team with a partner who has the demonstrated ability to help you complete the journey by addressing its every aspect. IBM is an established leader in all of the relevant disciplines and solutions, from strategic planning services to information management and business analytics solutions.

IBM has more than 7500 dedicated consultants who can draw on extensive industry expertise and best practice methodologies to guide and help execute your adoption of BAO. There is also a highly developed services portfolio to address everything from maturity assessments and strategy to solution design and implementation. The company has made more than US\$14 billion in business analytics and optimization-related acquisitions since 2005, complementing its robust set of solutions and service offerings. Moreover, IBM has decades of experience in successful business transformation initiatives around the world, across all industries.

In addition to industry leading knowledge and services, IBM offers the key components that comprise a powerful BAO capability. The portfolio includes best-of-breed solutions for all aspects of BAO, including information management, enterprise content management and business analytics.

The key differentiator, however, is its unparalleled combination of expertise, methodology and product offerings. IBM is ideally positioned to help enable your organization to leverage comprehensive Business Analytics and Optimization for long-term competitive advantage.

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<sup>1</sup> *Analytics: The New Path to Value*. Joint study by the MIT Sloan Management Review and the IBM Institute for Business Value. Copyright © Massachusetts Institute of Technology, 2010.

<sup>2</sup> IBM CFO Study, 2010

<sup>3</sup> *Breaking away with business analytics and optimization*. IBM Institute for Business Value study, 2009.

<sup>4</sup> IBM CIO Study, 2009

<sup>5</sup> Respondents were asked about their organization’s application of analytics to the activities listed on the chart. A score of 1.0 indicates an equal likelihood of applying either analytic or non-analytic methods, while a score of 0.0 indicates a tendency to use non-analytic methods. Source: *Analytics: The New Path to Value*.

<sup>6</sup> *Southwest Texas Medical Associates Building Strong Post Treatment Care Programs with IBM Business Analytics Software*. IBM press release. March 23, 2011. <http://www-03.ibm.com/press/us/en/pressrelease/34077.wss>



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