



VENTANA RESEARCH



Next-Generation Predictive Analytics

Using Forward-Looking Insights
to Gain Competitive Advantage

Research Report Executive Summary

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June 2015



Ventana Research performed this research to determine attitudes toward and utilization of predictive analytics. This document is based on our research and analysis of information provided by organizations that we deemed qualified to participate in this benchmark research.

This research was designed to investigate predictive analytics practices and needs and potential benefits. It is not intended for use outside of this context and does not imply that organizations are guaranteed success by relying on these results to improve the results of analytics. Moreover, gaining the most benefit from predictive analytics requires an assessment of your organization's unique needs to identify gaps and priorities for improvement.

The full report with detailed analysis is available for purchase. We can provide detailed insights on this benchmark research and advice on its relevance through the Ventana On-Demand research and advisory service. Assessment Services based on this benchmark research also are available.

We certify that Ventana Research wrote and edited this report independently, that the analysis contained herein is a faithful representation of our evaluation based on our experience with and knowledge of predictive analytics, and that the analysis and conclusions are entirely our own.

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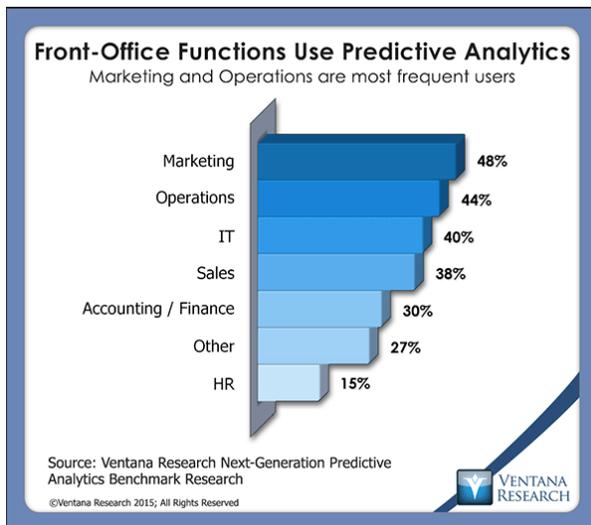


Executive Summary

Our benchmark research consistently shows that business analytics is the most significant technology trend in business today. It also finds that using effective predictive analytics is organizations' top priority in this category. In our benchmark research on big data analytics, for example, organizations ranked predictive analytics as the most important analytics category for working with big data. Yet a majority also indicated that they do not have enough experience in applying analytics to business problems and lack training on using the tools. Organizations will need to make decisions about investment priorities to have the skills and technology needed to apply predictive analytics effectively to their business.

Ventana Research defines predictive analytics as the application of mathematical computation and models to generate forward-looking insights that can be used to optimize business and IT processes and decisions. Predictive analytics improves the organization's ability to understand potential future outcomes; its results enable decision-makers in key areas of the business to choose the best courses of action.

Ventana Research undertook this benchmark research to determine the attitudes, requirements and future plans of those who use predictive analytics and to identify the best practices of organizations that are most proficient in it. We set out to examine both the commonalities and the qualities specific to major industry sectors and across sizes of organizations. We considered how organizations perform predictive analytics, what they use if for, issues they encounter in the process and the information technology they use.

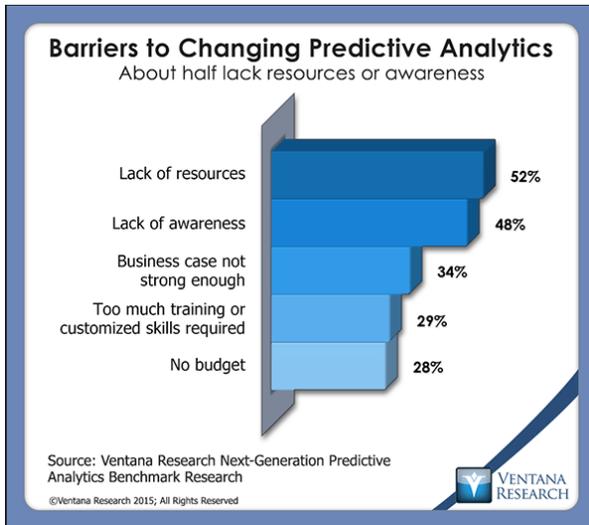


The research shows that the business units that most often apply predictive analytics are marketing (48%) and operations (44%). Organizations most commonly apply predictive analytics to customer (50%) and marketing (44%) information,



followed by product (43%), financial (40%) and sales (36%) information. The findings of predictive analytics are most commonly used for forecasting (currently used by 56%), marketing analysis (46%), customer service (41%) and product recommendations or offers (35%). Thus, the research finds, predictive analytics is being used in areas critical to revenue and profitability. More than seven out of 10 participating organizations already use predictive analytics, and the remaining 28 percent plan to.

However, the research also finds persistent barriers to making changes in the use of predictive analytics. More than half (52%) of organizations lack the resources they'd need to do so, and nearly as many (48%) lack awareness of the need for changes.



One-third said that the business case is not strong enough, and 29 percent said too much training is required. These issues contribute to a perceived difficulty in gaining support for predictive analytics systems and underscore the importance of building a strong business case for investment.

Analysis of the research findings shows that issues of expertise and

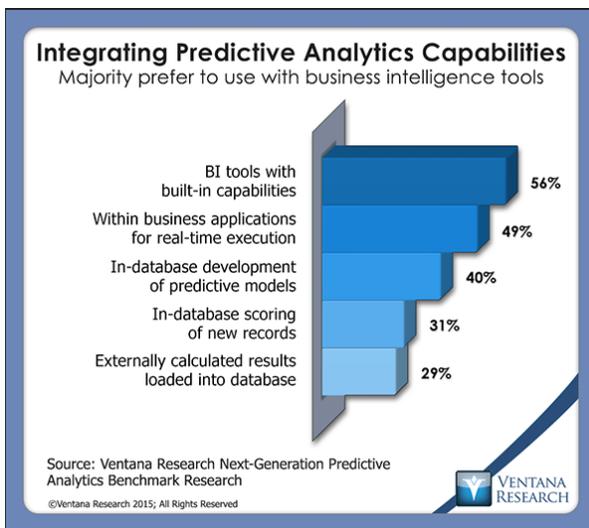
training are critical considerations in adopting and using predictive analytics effectively. Those most often primarily responsible for designing and deploying predictive analytics are data scientists (in 31% of organizations), followed by the business intelligence and data warehouse team (27%). Yet in only about half (52%) of organizations are the people who design and deploy predictive analytics the ones who utilize the output of the predictive analytics processes. The most common reasons that users don't design analyses themselves are that they don't have enough skill training (79%) and don't understand the mathematics involved (66%).

Those nontechnical executives, managers and users involved with predictive analytics must know something about the mathematical algorithms used to build statistical models and transform data into predicted outcomes. To make an informed purchase decision for



predictive analytics tools it is necessary to understand the impact of algorithmic techniques available and to identify those best suited to developing the kinds of insights an organization hopes to achieve. In working with predictive analytics, training pays off: While only half of those who said they received adequate training in applying predictive analytics to business problems also said they are very satisfied with their predictive analytics, fewer than one in 12 of those who viewed their training as somewhat adequate or inadequate said that. These findings make clear that organizations must acknowledge the technical nature of predictive analytics and invest in hiring and training people to have the skills that ensure success in using it.

The good news is that organizations need not be overcome by complexity. Almost half (48%) of those participating in the research said they can address all of their business issues with 10 or fewer algorithms. Very large companies, however, most often said they need 20 or more algorithms, likely because they apply predictive analytics in more ways, but they also are more likely to have enough resources to deal with the complexity. The most commonly used types of mathematical algorithms use regression techniques, specifically decision trees and linear regression, pivot tables, logistic regression and generalized linear models, all used by at least 70 percent of participants.

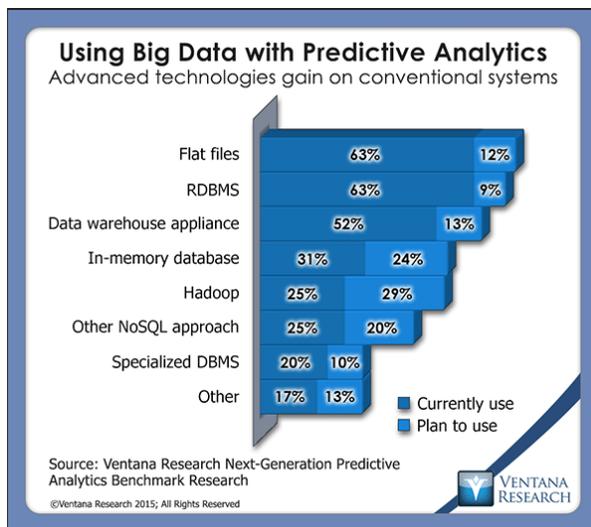


As for simplifying use, the research uncovers a trend to blend predictive analytics with more established tools, a choice that can bring the technology closer to mainstream use and help businesses respond faster to challenges and opportunities. Participants most often said they would like predictive analytics integrated with business intelligence (56%) and within business applications (49%), and a majority of these want it embedded in both. The research also finds demand for integration with databases. In-

database capabilities allow combining of predictive analytics at the source so advanced users can both build and deploy models in one system.



Integrating data is essential for predictive analytics, but the research shows that preparing data for analysis (40%) and accessing data (22%) are the parts of the predictive analysis process that create the most challenges. To allow more time for actual analysis, organizations must reduce the time spent in these tasks. The reasons most often cited for moving storage of data from on-premises to cloud-based systems are to improve accessing data (49%) and preparing data for analysis (43%). Organizations are using another innovative technology, big data, to manage access to and processing of the ever



larger volumes of incoming data. The research shows that while the conventional tools of flat files and relational databases on standard hardware are still the most commonly used for predictive analytics with big data, more than half (52%) now use data warehouse appliances and 31 percent use in-memory databases. Within a year another 19 percent plan to use in-memory databases and the use of Hadoop, the open source big data technology, will nearly double, from 25 to 49 percent. Hadoop also is the technology being evaluated by the

most organizations. We expect use of the combination of big data and predictive analytics to expand rapidly.

As noted, use of predictive analytics is moving into the lines of business to provide insights that help decision-makers achieve the organization's business goals. In our view, therefore, predictive analytics should be viewed as a business investment rather than an IT investment. The research confirms this by finding a shift in funding sources for these technology purchases. Since our previous research on this topic in 2012, funding authority has shifted from general business budgets (from 44% to 29% now) to line of business IT budgets (from 19% to 27% now).

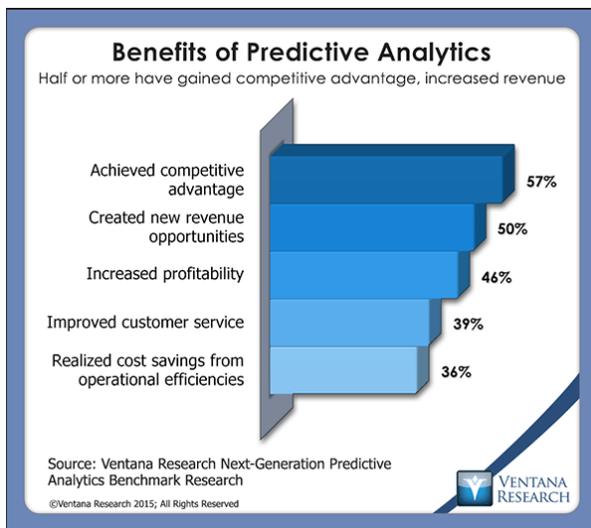
Nonetheless, IT, technical and data experts are still indispensable for the evaluation and use of predictive analytics. In fact, data scientists or the head of data management are most often involved in



recommending (52%) and evaluating (56%) predictive analytics technologies. Reflecting the need to deploy predictive analytics to business units, analysts and IT staff are the next-most influential roles for evaluating and recommending.

The key point is that the business units and IT should work together with the common goal of making predictive analytics deliver value to the enterprise, and the research finds evidence of this happening. For example, they agree about how best to deploy the tools. Within two percentage points, both expressed a greater preference to deploy on-premises (business 53%, IT 55%) and were even closer among those who prefer to do it on demand through cloud computing (business 22%, IT 23%). More than 90 percent on both sides said the organization plans to deploy more predictive analytics, and they also were in close agreement (business 32%, IT 33%) that doing so would have a transformational impact, enabling the organization to do things it couldn't do before.

Some distinctions remain. For example, those on the business side said that predictive analytics is very important to the organization



more often (52%) than did those in IT (38%). This finding further underscores the involvement of business participants in this technology, although IT (40%) ranks third among functions currently using it. Business users also more often said that the organization has achieved competitive advantage (60% vs. 50% of IT) and created new revenue opportunities (55% vs. 41%), which were the two benefits most often cited overall. On the other hand, IT professionals more often reported the benefits of in-

creased upselling and cross-selling (53% vs. 32%), reduced risk (26% vs. 21%) and better compliance (26% vs. 19%); the last two reflect key responsibilities of the IT group.

Our Performance Index analysis of the research produced a snapshot of the findings overall. In the four dimensions (People, Process, Information and Technology) into which we segment performance,



participating organizations perform best in Technology dimension, where 38 percent reach the top Innovative level of our four-stage hierarchy. Interestingly, when participating organizations were asked to identify barriers to improvement, technology that is not suitable was mentioned least often (by only 16%). In the Performance Index only about one in 10 reach the Innovative level in the People and Process dimensions; the general findings repeatedly show lack of skills, training, resources and awareness as impediments to using predictive analytics effectively. It is clear that nearly all organizations have work to do to train people in predictive analytics and improve their processes to benefit fully from this difference-making technology.



About Ventana Research

Ventana Research is the most authoritative and respected benchmark business technology research and advisory services firm. We provide insight and expert guidance on mainstream and disruptive technologies through a unique set of research-based offerings including benchmark research and technology evaluation assessments, education workshops and our research and advisory services, Ventana On-Demand. Our unparalleled understanding of the role of technology in optimizing business processes and performance and our best practices guidance are rooted in our rigorous research-based benchmarking of people, processes, information and technology across business and IT functions in every industry. This benchmark research plus our market coverage and in-depth knowledge of hundreds of technology providers means we can deliver education and expertise to our clients to increase the value they derive from technology investments while reducing time, cost and risk.

Ventana Research provides the most comprehensive analyst and research coverage in the industry; business and IT professionals worldwide are members of our community and benefit from Ventana Research's insights, as do highly regarded media and association partners around the globe. Our views and analyses are distributed daily through blogs and social media channels including [Twitter](#), [Facebook](#), [LinkedIn](#) and [Google+](#).

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Appendix: About This Benchmark Research

Ventana Research designed this benchmark research for business analysts, data scientists, IT personnel and others involved with the purchasing of technology for this area. The research was conducted from March through May 2015. Applying our standard methodology and quality assurance criteria, we identified 193 qualified participants. They represent a range of organization sizes: 33 percent from very large companies (having 10,000 or more employees), 28 percent from large companies (with 1,000 to 9,999 employees), 18 percent from midsize companies (with 100 to 999 employees), and 21 percent from small companies (with fewer than 100 employees). A large majority (67%) of these companies are located or headquartered in North America, although many of these are global organizations operating worldwide. Among industry categories, companies that provide services accounted for 38 percent, those in manufacturing for 34 percent and those in finance, insurance and real estate for 15 percent. Government, education and nonprofits accounted for the remaining 12 percent. Categorized by their job title, 17 percent are executives, 9 percent are in management, and the majority (62%) are what we term users in the lines of business. By functional area, 28 percent work in IT and 14 percent in research and development. (More demographic detail about the participants is available in the full research report.)

This Executive Summary is drawn from the full Ventana Research Benchmark Research report. The full report is available for purchase, payable by check or credit card. Advice and focused guidance based on this benchmark research can be purchased through our Ventana On-Demand service. For more information about the full Benchmark Research report or assessment of your organization using our Performance Index methodology, please contact us at sales@ventanaresearch.com.