

Analytics and Business Intelligence Value Index

2019 Vendor and Product Assessment

EXECUTIVE
SUMMARY



**Bend, Oregon
December 2018**

Ventana Research performed this research and analysis independently. Our goals were to determine the Value Index for Analytics and Business Intelligence and to evaluate vendors and products in accordance with the Ventana Research analytics and business intelligence blueprint. We charged no fees for this research and invited to participate all vendors that are delivering relevant applications to enable analytics and business intelligence. This report includes products generally available as of August 2018.

Our purpose in conducting this research was to evaluate the maturity of software vendors and products and their value for enterprise use in analytics and business intelligence. Nothing in this report of our research is intended to imply that one vendor or product is the right choice for any particular organization. Rather, it provides a baseline of knowledge that organizations can use to evaluate vendors and products to manage and improve analytics and business intelligence. Unlike IT analyst firm reports that use subjective factors to score vendors, our research is based on thorough research-based analysis of customer assurance and product categories that best represent how an organization should evaluate its technology supplier.

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

We certify that Ventana Research performed the research to the best of our ability; that the analysis is a faithful representation of our knowledge of vendors and products; and that the analysis and scoring are our own.

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Analytics and Business Intelligence

Ventana Research provides unique insight into the analytics and business intelligence (BI) industry. This is important, as its processes and technology play an instrumental role in enabling an organization's business units and IT to utilize its data in both tactical and strategic ways to perform optimally. To accomplish this, organizations must provide technology that can access the data, generate and apply insights from analytics, communicate the results and support collaboration as needed.

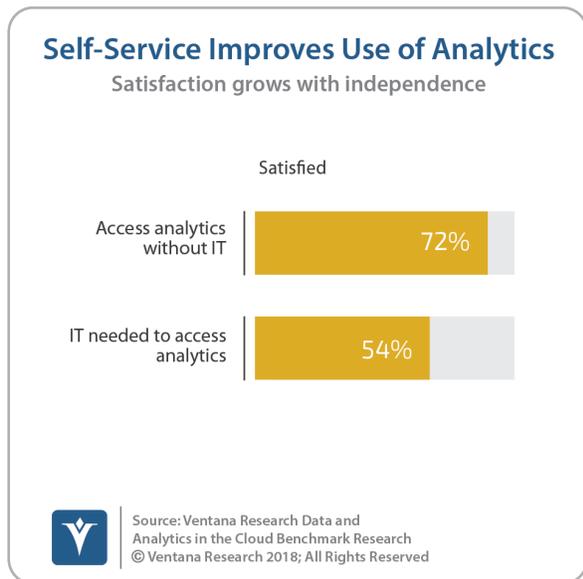
Analytics and BI utilize mathematics to create measurements and metrics that enable data to be visualized in whatever form, in whatever tool or application is needed to provide insights and guide decision-making. In today's data-driven world, organizations must use BI to understand and plan the details of their operations. BI can be used across every department in an organization, across the lines of business and IT, and can guide employees at all levels to understand and act on data. Organizations also use BI to track costs, create staffing plans, assess employee and supplier performance, identify variances and plan corrective actions. BI also helps inform employees and facilitate communication throughout the organization to coordinate actions toward a common mission and specific objectives. Operating without BI would be like flying a plane without an instrument panel.

While BI as a modern business tool dates back some three decades, the elements of business intelligence today have expanded well beyond query, reporting, analysis and publishing. The tools have expanded to include the sourcing and integration of data and the use of analytics for planning and forecasting. They also include dashboards that present analytics in a variety of visualizations. BI today also enables presentation of analytics in the form of natural-language narratives. And the collaborative sharing of insights is helping to reduce the time to take action and make decisions. Recently, artificial intelligence and machine learning have begun to extend BI, enabling it to classify, predict and suggest behaviors that will help improve business operations.

Ventana Research has conducted market research in a spectrum of related areas including Data Preparation, Machine Learning, Data and Analytics in the Cloud, Next-Generation Predictive Analytics and Big Data Analytics and Integration. We have examined the expansion of business intelligence through the use of cloud computing, mobility and advanced analytics as well as how BI products use collaboration capabilities, social media techniques and location-related analytics. The findings of these research undertakings guide our comprehensive approach to our Value Index for Analytics and Business Intelligence.



Self-service analytics continues to be a goal for most organizations and those that can achieve it report greater satisfaction with their use of analytics and BI.

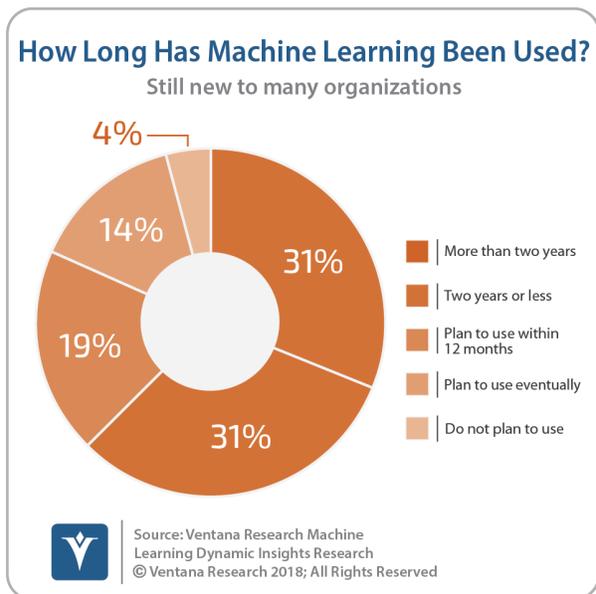


Nearly three-quarters (72%) of those who can access analytics without the assistance of IT said they are satisfied while slightly more than half (54%) of those who require the assistance of IT said the same.

Organizations seeking to provide self-service analytics also need to provide self-service data preparation. In many of our research studies, preparing data is reported as the most time-consuming part of the analytics process. However, that preparation, and thus the involvement of IT, appears sometimes to be necessary; our research finds that fewer than half (42%) of organizations

are comfortable allowing business users to work with data that has not been integrated or prepared for them by IT.

Interest in advanced analytics, including artificial intelligence and machine learning, continues to grow and its availability is an important consideration in examining analytic platforms. Organizations that analyze their data using machine learning technology state that they gain a competitive advantage, improve customer experiences, increase sales and respond faster to opportunities. In light of these benefits it is no surprise that nearly two-thirds (62%) of organizations report using machine learning today and nearly all (96%) organizations participating in our research said they plan to use machine learning eventually.



We also see a growing interest in – and a growing set of capabilities for – the use of collaboration in conjunction with analytics. Two-thirds of organizations report they are using or plan to use collaboration with analytics. Collaboration provides a way for organizations to derive more value from their analytics by sharing and interacting on the results with others who can put the information to use in the operations of the business. Collaboration also helps



making it easier for individuals to find the information or analyses that they need more quickly.

For analytics to be effective, they need to be available to line-of-business personnel as needed in their normal course of conducting business, which today means providing rich mobile access to analytics to support a mobile workforce seeking to conduct business in any location at any time. Workers today expect these mobile capabilities, which means organizations must make choices to provide analytics and BI platforms that can deliver them.

Many organizations want analytics embedded into their operational systems, which typically requires custom development. Embedded analytics make it easier for line of business workers to access the information they need without having to access a different system and also reduce the need for additional training. Vendors have made significant progress in building out rich APIs that provide access to nearly all the functionality of their products. Ventana Research



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Over time, two categories of vendors emerged, those offering interactive visualization and data discovery capabilities and those offering more static query, reporting and dashboarding. Initially these were separate categories, but as organizations realized that both sets of capabilities were important to the process of BI, vendors in each category began expanding their capabilities to include both sets of capabilities. Vendors who came to market with visualization and discovery capabilities have been adding traditional query, reporting and dashboarding. And traditional query, reporting and dashboarding vendors

have been adding visualization and discovery of analytics. The challenge for both sets of vendors is to deliver breadth of capabilities while maintaining ease of use. This Value Index takes all of these factors into consideration across the evaluation categories.

The Value Index for Analytics and Business Intelligence uses the Ventana Research methodology, a framework that evaluates application vendors and their products in seven categories of requirements. Five are product-related, assessing usability, manageability, reliability, capability and adaptability, while two quantify the customer assurance issues of vendor validation and total cost of ownership and return on investment (TCO/ROI).



This Value Index report evaluates the following vendors that offer products that deliver analytics and business intelligence as we define it: BOARD International, Domo, Infor, Information Builders, IBM, Looker, Microsoft Corporation, MicroStrategy, Oracle Corporation, Qlik, Salesforce.com, SAP, SAS, Tableau Software and Yellowfin.

We urge organizations to do a thorough job of evaluating analytics and business intelligence systems and tools and offer this Value Index as both the results of our in-depth analysis of these vendors and as an evaluation methodology. The Value Index can be used to evaluate existing suppliers and also provides evaluation criteria for new projects; applying it can shorten the cycle time for an RFP.

Unlike many IT analyst firms that rank vendors from an IT-only perspective or that focus on a specific type of analytics and BI, Ventana Research has designed



This Value Index is an analytic representation of how well vendors' offerings meet buyers' analytics and BI requirements.

the Value Index to provide a balanced perspective of vendors and products that is rooted in an understanding of business drivers and needs. This approach not only reduces cost and time but also minimizes the risk of making a decision that is bad for the business. Using the Value Index will enable your organization to achieve the levels of efficiency and effectiveness needed to optimize analytics and business intelligence.

Value Index Overview

This report on the Ventana Research Value Index: Analytics and Business Intelligence in 2019 is the distillation of a year of market and product research efforts by Ventana Research, the premier benchmark research and advisory services firm. Built on a foundation of 16 years

of business and technology research, this unbiased, fact-based index is the first such industry undertaking to assess the value of software designed specifically for enabling analytics and business intelligence.

This Ventana Research Value Index is an analytic representation of our assessment of how well vendors' offerings meet buyers' requirements for software that enables and supports analytics and business intelligence. The Index evaluates the software in seven key categories that are weighted to reflect buyers' needs based on our expertise and research. Five are product-related: Usability, Manageability, Reliability, Capability and Adaptability. In addition, we consider two customer assurance categories: Vendor Validation and Total Cost of Ownership and Return on Investment (TCO/ROI). To assess



functionality, one of the components of capability, we applied the Ventana Research analytics and business intelligence methodology and blueprint, which links the personas and processes for analytics and business intelligence to an organization's requirements.

We use our research-based analytics and methodology to generate the Value Index percentages. We then build them into a set of indicators that we present graphically as pie charts that express levels of performance. The extent to which each pie chart is full reflects our assessment of value to you, the potential buyer, on a scale also expressed in percentages. Thus, we present the Value Index in both analytic and graphic form, each depicting the value of a specific vendor's offering in terms of what it can deliver that is relevant to your analytics and business intelligence needs.

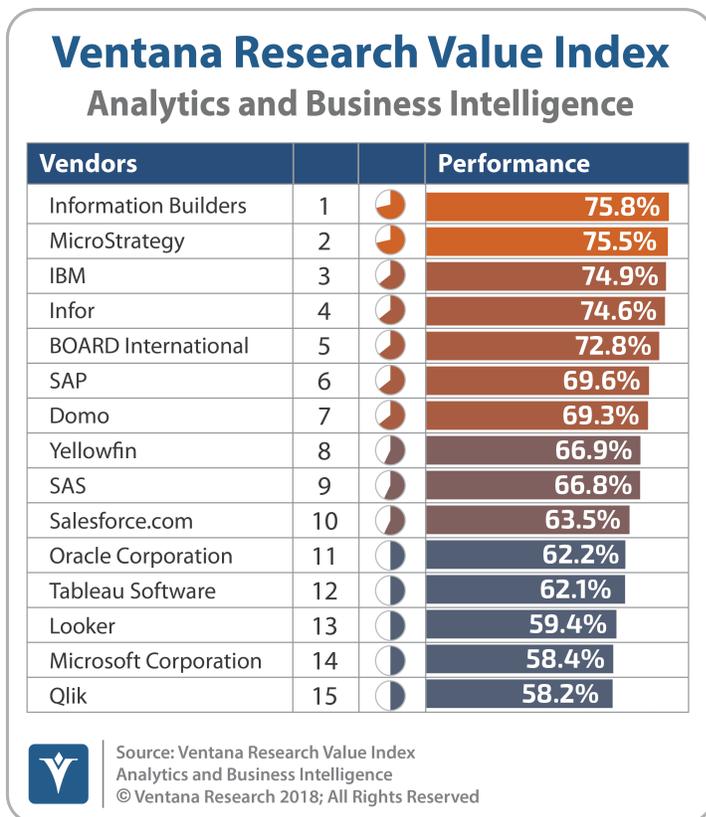
The Value Index is not an abstraction; Ventana Research uses a carefully crafted best practices-based methodology to represent how organizations actually will assess vendors and products. We have designed the Value Index to ensure that it provides objective research and guidance to organizations looking to assess and evaluate their applications for business and IT needs. The structure of the Value Index reflects our understanding that the proper evaluation of vendors and products involves far more than just examining product features or potential revenue or customers generated from marketing and sales. We believe it is important to take this approach, since making the wrong decisions can raise the total cost of ownership, lower the return on investment and hamper an organization's ability to reach its performance potential. In addition, this approach can reduce the project's development and deployment time and eliminate the risk of determining a short list of vendors that does not represent a best fit for your organization.

To ensure the accuracy of the information we collected, we required participating vendors to provide evaluation data across the aforementioned seven categories designed to reflect the concerns of a well-crafted RFP. Ventana Research then validated the information, first independently through our database of product information and extensive web-based research, and then in consultation with the vendors. The majority of selected vendors participated in one-on-one consultative sessions, after which we requested them to provide additional documentation to support any new inputs.



The Findings

The Value Index for Analytics and Business Intelligence in 2019 finds Information Builders first on the list with MicroStrategy second and IBM third.



Companies that score in the top three in any category earn the designation Value Index Leader. IBM has done so in four of the seven categories; Infor, Information Builders and MicroStrategy are Value Index Leaders in three categories; and BOARD, Domo, SAP and SAS in two categories.

Our Value Index methodology determines the weighting for each of the seven categories to best represent the needs of buyers. The Capability category makes up 20 percent of the Value Index rating. It is designed to assess the product across a broad range of business intelligence capabilities, including data modeling and access, analytic discovery,

analytic integration, predictive capabilities, collaboration and support for communicating and acting upon analytics. Ventana Research evaluates more than 500 different function points in 50 different categories to assess capabilities. In this category, MicroStrategy, Information Builders and IBM are Value Index Leaders.

Usability is also critical for meeting the needs of all, including executives, management, managers, workers, analysts and those responsible for administration of analytics and BI. Due to this level of importance the weighting for this category is 20 percent of the Value Index score. Vendors' products are evaluated in this category on the support they provide for the range of roles in the analytics process – executives, managers, analysts, users and IT administration. Domo, MicroStrategy and SAP are the top three vendors in this category with Yellowfin very close behind. This category had the least variation between the best and poorest performing vendors.

For analytics processes to operate efficiently, the software on which they run must be able to scale and perform reliably on existing architectures; thus



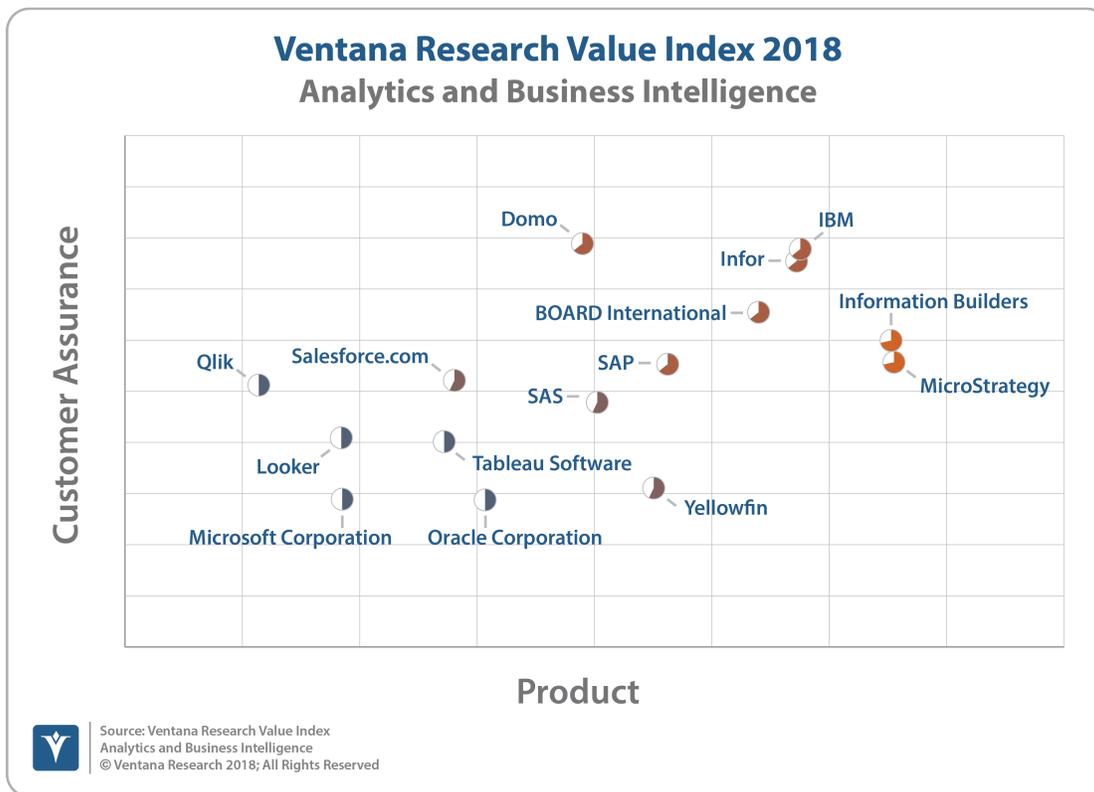
reliability is weighted at 15 percent of the Value Index. MicroStrategy, Infor and Information Builders are the Value Index Leaders in this category. Adaptability is also weighted at 15 percent; this category assesses support for configuration and development and integration across usage, processes, applications and data. Infor, IBM and SAS are the highest-rated vendors in this category.

Manageability, which includes administration, security and licensing, is weighted at 15 percent of this Value Index. Manageability proved to be a challenging category for some – vendors either performed well or struggled to meet business and IT needs for effective installation, deployment and administration. Information Builders, BOARD and SAP are the top three vendors in this category.

In TCO/ROI, a category that evaluates vendor support for buyer investment evaluation through information, tools and services to help with the business case, makes up 10 percent of the Value Index score, leaders Domo, Infor and IBM are well prepared. However, many of the others struggled to provide the tools and information organizations need to make a sound buying decision that is based on the product's benefits and costs.

The Validation category contributes 5 percent to the overall Value Index score. The leaders here are BOARD, IBM and SAS, but this assessment finds wide variation in the level of detail that vendors provide regarding many areas including services and support. A lack of information about a vendor's product support is a challenge that no organization looking to evaluate and select an analytics and BI product simply should have to face. After all, a vendor's success is about not just technology but also its relationship with the customer and the support it provides.

As noted above, this Ventana Research Value Index evaluates the software in seven key categories. The chart below places the product-related and customer assurance scores on the X and Y axes respectively to provide a visual representation of our Value Index scores. Vendors whose products scored higher in aggregate in the five product categories place farther to the right; the combination of scores for the two customer assurance categories determines their placement on the vertical axis. In short, vendors that place closer to the upper-right on this chart scored higher than those closer to the lower-left.



We warn that close vendor scores should not be taken to imply that the packages evaluated are functionally identical or equally well suited for use by every organization or for a specific process. Although there is a high degree of commonality in how organizations handle analytics and business intelligence, there are many idiosyncrasies and differences in how they do these functions that can make one vendor’s offering a better fit than another’s with a particular organization’s needs.

After more than a decade of technology advances, all the products we evaluated are feature-rich, but not all the capabilities they offer are equally valuable to users. Moreover, the existence of too many capabilities may be a negative factor for an organization if it introduces unnecessary complexity. Nonetheless, one company may decide that a larger number of options is a plus, especially if some of them match its established practices or better support a new initiative that is driving the purchase of new software.

Other factors besides features and functions or assessments about the vendor can turn out to be a deciding factor. For example, a company may face budget constraints such that the TCO evaluation can tip the balance to one vendor or another. This is where the Value Index methodology and the appropriate weighting can be applied to determine the best fit of vendors and products to your specific needs.



Products Evaluated

Vendor	Product Names	Version	Release Year
BOARD International	Board	10.3	2018
Domo	Domo	August	2018
IBM	Cognos Analytics Planning Analytics ILOG CPLEX Optimization Studio SPSS Statistics	11.0.12 2.0.4 12.8 25	2018
Infor	Birst Enterprise	5.31	2018
Information Builders	WebFocus iWay Omni-Gen	8.2.04 8.0.1 3.2	2018
Looker	Looker	5.8	2018
Microsoft Corporation	PowerBI	2.61.5192.321	2018
MicroStrategy	MicroStrategy	10.11	2018
Oracle	Analytics Cloud Business Intelligence Enterprise Edition BI Mobile Version	July 12.2.1.3 20.0.0.2	2018
Qlik	QlikSense QlikView	June November	2018 2017
Salesforce	Einstein Analytics Platform (Includes Sales and Service Analytics) Einstein Discovery	Summer Summer	2018
SAP	SAP Analytics Cloud SAP Lumira	Continual 2.1	2018
SAS	SAS Visual Analytics SAS Visual Data Mining and Machine Learning SAS Enterprise Miner	8.3 8.3 14.3	2018
Tableau	Tableau Server Tableau Desktop Tableau Online Tableau Prep	2018.2	2018
Yellowfin	Yellowfin BI	7.4	2018



How To Use This Value Index

This research on tools and systems can provide you with insight into the value of your existing and new investments and a framework to assess your initiatives and programs. Business and IT improvement efforts should be based on best practices and research that deliver value quickly. Ventana Research recommends that you organize your efforts around our blueprint for this topic and use the Value Index to determine which vendors will best satisfy your needs for analytics and business intelligence.

Be sure to define both business and IT requirements as part of an improvement process based on these research results. We advocate a structured approach such as our DecisionCycle™, an eight-step process for choosing and deploying analytics and business intelligence. You can incorporate these steps into a program document that will both summarize and detail your initiative or project. Then consult the Value Index to ensure you make choices that will yield the results you want.

The DecisionCycle™ steps detailed below provide a framework for assessing the maturity of your business and IT efforts and determining how to align your people, processes and technology investments.

1. Define the business goal and purpose.
2. Define the business requirements.
3. Define the user community and usage requirements.
4. Establish the functional requirements and capabilities.
5. Evaluate the organizational maturity.
6. Determine the technology approach and master list.
7. Define the business and technology evaluation criteria.
8. Evaluate and select a vendor.



Appendix: Vendor Inclusion

All vendors that offer relevant analytics and business intelligence products and meet the inclusion requirements were invited to participate in the Value Index evaluation process, at no cost to them. If a vendor did not respond to or declined the invitation, a determination was made whether to include it in our analysis based on our defined set of inclusion criteria. These criteria are designed to ensure we include in our evaluation vendors' geographic operations, customer base and revenue as well as all relevant aspects of the products' fit for the particular category being evaluated. If a vendor is actively marketing, selling and developing a product as reflected on its website that is within the scope of the Value Index, it is automatically evaluated for inclusion. We have adopted this approach because we view it as our responsibility to assess all relevant vendors whether or not they choose to actively participate.

Eleven of the 15 suppliers responded positively to our requests for information and provided completed questionnaires and demonstrations to help in our analysis of their analytics and business intelligence products. The following vendors declined to participate or did not respond to our invitation: Microsoft, Oracle, Qlik and Tableau. To organizations evaluating these vendors, we recommend extra scrutiny as part of the software assessment because they did not make their technology available for the Value Index evaluation process; all online material that was generally available was used for the analysis along with briefings and information provided. This report includes products generally available as of August 2018.

We did not include a number of other vendors in this Value Index evaluation because they did not satisfy the criteria that our methodology for this research requires.

This Executive Summary is drawn from the full Ventana Research Value Index report, which lays out in detail the analysis underlying the Value Index, lists the products evaluated, and suggests a methodology for preparing for a related RFP. The full report is available for purchase, payable by check or credit card. For more information about the full Value Index report or assessment of your organization using the Value Index, please contact us at sales@ventanaresearch.com.



About Ventana Research

Ventana Research is the leading benchmark research and business technology advisory services firm. We provide insight and expert guidance on trends and mainstream and disruptive technologies. Our unparalleled insights and best practices guidance are based on our rigorous research-based benchmarking of people, processes, information and technology across business and IT functions worldwide. The combination we offer of benchmark research, market coverage and in-depth knowledge of hundreds of technology providers means we can deliver business and technology education and expertise to our clients where and when needed to reduce the time requirements, cost and risk of technology investments. The Ventana Research Indexes – the Value Index and the Benchmark Index family – have redefined the research industry by providing accessible, easy-to-use research-based business and technology guidance to businesses. Ventana Research provides the most comprehensive analyst and research coverage in the industry; the many business and IT professionals worldwide who are members of our community 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](#) and [LinkedIn](#). Ventana Research was ranked the #1 analyst firm you can trust in enterprise software for 2009 for its relevance to the industry. To learn how Ventana Research advances the maturity of organizations use of information and technology through benchmark research, education and advisory services, visit www.ventanaresearch.com.

We offer a variety of customizable services to meet your specific needs including workshops, assessments and advisory services. Our education service, led by analysts with more than 20 years of experience, provides a great starting point to learn about important business and technology topics from compliance to business intelligence to building a strategy and driving adoption of best practices. We also offer tailored Value Index Assessment Services to help you define your strategy, build a business case and connect the business and technology phases of your project. And we can provide Ventana On-Demand access to our analysts on an as-needed basis to help you keep up with market trends, technologies and best practices.

Everything at Ventana Research begins with our focused research, of which this Value Index is a part. We work with thousands of organizations worldwide, conducting research and analyzing market trends, best practices and technologies to help our clients improve the efficiency and effectiveness of their organizations.

Through the Ventana Research community we also provide opportunities for professionals to share challenges, best practices and methodologies. Sign up for Individual membership at www.ventanaresearch.com to gain access to our



weekly insights and learn about upcoming educational and collaboration events – webinars, conferences and opportunities for social collaboration on the Internet. We offer the following membership levels:

Individual membership: For business and IT professionals* interested in full access to our website and analyst team for themselves. The membership includes access to our library of hundreds of white papers and research notes, briefings and telephone or email consulting sessions to provide input and feedback.

Team membership: For business and IT professionals* interested in full access to our Web site and analysts for a five-member team. The membership includes access to our library of hundreds of white papers and research notes, briefings, telephone/e-mail consulting sessions to provide input and feedback and the use of Ventana Research materials for business purposes.

Business membership: For business and IT professionals* interested in full access to our website and analyst team for their larger team or small business unit. The membership includes access to our library of hundreds of white papers and research notes, briefings, telephone or email consulting sessions to provide input and feedback, use of Ventana Research materials for business purposes and additional analyst availability.

Business Plus membership: For business and IT professionals* interested in full access to our website and analyst team for larger numbers of company employees. The membership includes access to our library of hundreds of white papers and research notes, briefings, telephone or email consulting sessions to provide input and feedback, quotes and validation for media, use of Ventana Research materials for business purposes, additional analyst availability and access to our team for scheduled strategy consulting sessions.

This Value Index report is one of a series that are available for purchase. Also available are any of our extensive library of Benchmark Research reports. To purchase a report or learn more about Ventana Research services – including workshops, assessments and advice – please contact sales@ventanaresearch.com.

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