Business Analytics in Education

Benchmarking the Analysis of Data To Gain Insight

Benchmark Research
White Paper

Aligning Business and IT To Improve Performance

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Ventana Research performed this research to determine attitudes toward and utilization of business analytics and metrics in education. 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 the business analytics and metrics practices and needs of individuals and organizations and the potential benefits from improving their existing processes, information and systems. This research is not intended for use outside of this context and does not imply that education organizations are guaranteed success by relying on these results to improve planning. Moreover, gaining the most benefit from improving the use of business analytics and metrics requires an assessment of your organization's unique needs to identify gaps and priorities for improvement.

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 analytics and the education sector, and that the analysis and conclusions are entirely our own.

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Executive Summary

Today where business and technology intersect it seems as if everything is about analytics. Why? The key is information. Businesses, especially those in the education sector, have more of it than ever before, stored in more systems and locations, being produced in increasingly varied forms and being used in strikingly varied ways. Advances in information technology, many of them newly developed and involving the Internet, have fueled this explosive growth, creating both opportunity – in new ways for education organization to reach new markets and customers – and complexity – in trying to collect, manage and interpret data and turn it into information that can help guide them to success. Technology, a two-sided coin, also can provide tools to handle the complexity, and that is where analytics come in.

Businesses in education now collect and track information from a wider, deeper array of sources: multiple enterprise systems, real-time external feeds, their own websites and those of others, and even voice recordings and videos. But this is only the first step. Under increasing pressure to operate more efficiently and make better decisions, business people in education need capabilities to analyze information, foresee future outcomes and plan how to take advantage of them. In the past they have relied on their organization's IT department to manage business intelligence (BI) systems that provide insight on processes and performance. Such efforts have made strides in standardizing querying, reporting and the delivery of information, but they cannot provide the complex analytic capabilities that line-of-business analysts and management require today.

Organizations in education must recognize that they cannot take only a general approach to improving business analytics; they must focus on each line of business and its needs.

The upshot is that analysts and managers in education must take more active roles, in collaboration with business management, in defining the analytics they need and the information sources that go into them. To advance efforts in analytics, business people in this sector must take responsibility for improvement and not assume that IT will know how to deliver what they need. Greater collaboration and cooperation between business and IT departments is necessary, as is greater clarity from the business side on what the right analytics are.

Education organizations also must recognize that they cannot take only a general approach to improving business analytics; they must focus on each line of business (LOB) and its needs, which vary from finance and human resources to the supply chain to marketing and sales, and to customer service and contact centers. Just as important is supplying analytics so the internal IT group can improve its own operations and better support the enterprise systems and infrastructure that enable the rest of the organization. In all of these cases a strong foundation of analytics for education can support improvement in the key areas of people, processes, information and technology.

In many cases, however, organizations and individuals focused on education must understand first what analytics can do and ascertain what analytics they need. The

buzz about analytics in education has created confusion in several ways. Not only is the meaning of the term itself misunderstood, so are the definitions of the business tools analytics are used to produce: measures, metrics and key performance indicators (KPIs). Nor is there only one kind of analytics; confusion also surrounds the differences among historical, root-cause, real-time and predictive analytics. And managers, executives and their reports need to understand clearly the practical business value of applying analytics to their own activities.

Ventana Research undertook this benchmark research to acquire real-world information about levels of maturity in this sector, trends and best practices in how organizations use business analytics. It explores how they do this now, how their personnel feel about the current processes and tools, plans they have to change or improve them, and benefits they hope to gain by doing so. We conducted comprehensive benchmark research into the nature, use and value of analytics in business. As well as extensive research across all industries and lines of business worldwide, an undertaking that analyzed input from more than 2,600 participants, we did focused analyses of seven key lines of business and IT. We also examined in depth analytics use in small and midsize businesses and in 11 vertical industries. This report summarizes the state of business analytics in the education sector.

Almost as many organizations are not satisfied with the process currently used to create analytics (34%) as are satisfied with it (40%).

This research in education found that the most important categories of metrics (which we define as measures of business performance) are central to business: cost (identified by 59% of participants), financial (49%), performance (42%) and customer (40%). These priorities understandably varied by line of business: Financial metrics rank first for those in finance and for executives, but cost is the first priority for those directly involved in an educational function. Performance metrics were the top choice for those in training, and customer for those who support the clients.

Issues also arise in providing current metrics and KPIs to people. Although 40 percent of education organizations do so within one week after the end of the month, quarter or year, the rest take longer than that; substantially more organizations (56%) in all industries combined can do this within a week, as our overall research on business analytics shows. The timeliness of the source data for metrics and KPIs is a related challenge: For half of these organizations, some or most of the data is stale or outdated. Similarly, more than half (57%) said the data they use for business analytics is only somewhat accurate. Having outdated or inaccurate data is likely to undermine confidence in the metrics it is used to produce, and the research also shows that 46 percent are only somewhat confident or not confident in the quality of the information being generated by their analytics.

In broader terms, only 6 percent fewer education organizations are not satisfied with the process currently used to create analytics (34%) as are satisfied with it (40%). Regarding the current technology for creating and applying analytics, those only somewhat satisfied with it outnumber those who are satisfied (by 36% vs. 32%), and at the extremes, more are not satisfied than very satisfied (19% vs. 9%).

The findings about which technologies education organizations currently use shed some light on these numbers. The only tool used by more than half of these organizations (59%) to generate analytics is spreadsheets. Nearly half (46%) of these organizations use spreadsheets regularly for business intelligence and analytics, and 37 percent more use them universally for those purposes – a total of more than 80 percent who use them at least regularly. We have found repeatedly that spreadsheets are not well suited for complex analytics and recurring analytical and reporting tasks. We often find excessive spreadsheet use associated with negative impacts on accuracy and timeliness, which this research confirmed. Overall, we find that companies that use spreadsheets universally or regularly take about two days longer to provide metrics and KPIs than those that use spreadsheets occasionally or rarely. Those that seldom use them are more likely to describe the data they use in metrics and KPIs as accurate.

Companies that use spreadsheets universally or regularly take about two days longer to provide metrics and KPIs than those that use spreadsheets occasionally or rarely.

For these and other reasons, our Maturity Index analysis concludes that only 7 percent of all education-focused corporations attain the highest Innovative level of maturity in their use of analytics. Maturity requires a balanced focus on people, process, information and technology; the research found issues in each category and also concerns about progress in addressing them. Although 43 percent of these participants (as opposed to 58% in our overall research) said that it is very important to their business goals to simplify making analytics and metrics available, only one-fourth (26%) plan to take the Innovative step of changing the way they generate and apply analytics in the next 12 to 18 months. The dominant reasons for making changes are to improve decision-making (for 68%) and business processes (64%) and to increase workforce productivity (60%).

When we analyzed seven line-of-business reports in which government, education and nonprofit organizations participated and were aggregated as one of four industry sectors, this category had the smallest percentage of companies at the two highest maturity levels in five of the LOBs (and was tied for the fewest in one other). Thus, these organizations are in a sector that is one of the least mature in business analytics.

Fundamental barriers block the road to improvement for many education organizations. The absence of a budget, of resources, of priority and of awareness of the need to change all were identified as issues by at least 39 percent of these participants. To overcome these barriers will require first understanding the business benefits of investing in an initiative and then choosing the right tools to help deliver them. Among our standard seven technology and vendor considerations, 47 percent of education organizations said that the most important is reliability and performance; second-most important is usability – being able to apply the tool readily to business needs (cited by 43%). Executives in this sector rated both of these more highly than did the average of all job titles. We note also that in today's environment in which nontechnical users must be able to benefit from a tool as much

as analysts, both ease of use and a gamut of capabilities from the simple to the sophisticated are necessary.

Thus, education organizations are maturing only slowly in their use of analytics despite the fact that they view them as valuable and important. This benchmark research indicates that usability and flexible functionality are important criteria in their search for the right analytics, that failing to examine timely availability, broad access and efficient handling can obstruct analytics use, and that in technology terms spreadsheets should be replaced with more appropriate tools. When business users of analytics are clear about their needs, analytics can be developed and tuned more efficiently and they can explore new approaches such as predictive analytics and the availability of analytics on mobile devices. But investments in analytics must still be sold, using arguments about improving business processes, decision-making and operational efficiency.

About This Benchmark Research

Methodology

Ventana Research conducted this benchmark research over the Web from March through December 2010. We solicited survey participation via e-mail blasts, our Web site and social media invitations. E-mail invitations were also sent by our media partners and by vendor sponsors.

We presented this explanation of the topic prior to entry into the survey:

> There isn't an aspect of business today in which people don't claim they use analytics to generate information, typically in the form of metrics and key indicators. But there is much confusion about their usefulness and value to the business and about how best to select and implement historical, root-cause, real-time and predictive analytics. The uncertainty this causes poses a challenge for organizations.
>
> Management and managers need advice on how to select the measures most useful for them and guidance about best practices and common mistakes in choosing business and operational measures, metrics and key indicators. They also need more reliable information than is currently available about integrating historical and predictive analytics into systems and processes so they can make better use of existing investments and plan new ones that provide deeper insight from multiple systems using more sophisticated analytical methods. This benchmark research is designed to generate that advice and guidance by examining the use of metrics across the entire business. It also will determine the maturity distribution of organizations in their use of analytics.

We included the following definitions:

> Analytics – Programs or algorithms that derive meaning from data
> Metric – A measure of business performance
> Performance indicator – A specific metric chosen to measure the performance of an organization or some component of it.

The following promotion incented participants to complete the survey:

> All qualified participants will receive a report on our research findings that you can apply to your organization's efforts and a quarterly membership to the Ventana Research Community valued at US$125 or €92. In addition, all qualified participants will be entered into a drawing to win a benchmark research report of your choice valued at US$995 or €732. Thank you for your participation!

Qualification

We designed the research to assess the use of and plans for deployment of business analytics across organizations and industries. We described qualification to participate as follows:

> The survey for this benchmark research is designed for business and IT managers who develop, deploy or use analytics or are involved with the purchasing of analytics technology. Others such as consultants and

systems integrators may participate in the survey but are not eligible for incentives and will be used in the analysis only if they meet the qualifications. Incentives are provided to qualified participants in the research and also are conditional on provision of accurate contact information including company name and company e-mail address that can be used for fulfillment of incentives.

Further qualification evaluation of participants was conducted as part of the research methodology and quality assurance processes. It entailed screening out responses from companies that are too small, questionnaires that were not materially complete, or those where the submission is from an inappropriate submitter or appears to be spurious.

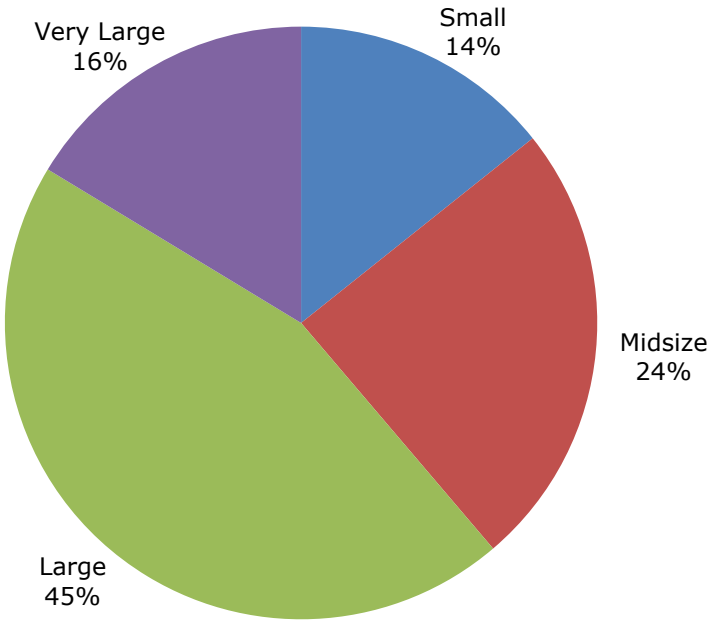
Demographics

We designed the survey used for this research to be answered by executives and managers across a broad range of roles and titles working in educational organizations. We evaluated the qualifications of those who clicked through to the survey and included the answers of all qualified respondents. In this report, the term "participants" refers to that group, and the charts in this section characterize various aspects of their demographics and qualifications.

Company Size by Number of Employees

We require participants to indicate the size of their entire company. Our research repeatedly shows that size of organization is a useful means of segmenting companies because it correlates with the complexity of processes, communications and organizational structure as well as the complexity of the IT infrastructure. In this research, when measured by number of employees more than half of education participants (61%) are larger organizations: That is, about one-sixth are very large companies (having 10,000 or more employees) and the largest group are large companies (with 1,000 to 9,999 employees). Also about one-fourth are midsize companies (with 100 to 999 employees), and almost one in seven are small companies (with fewer than 100 employees). This equal distribution is consistent with our research objectives and provides a suitably large sample from each size category.

Figure 1
Participants by Company Size (Number of Employees)

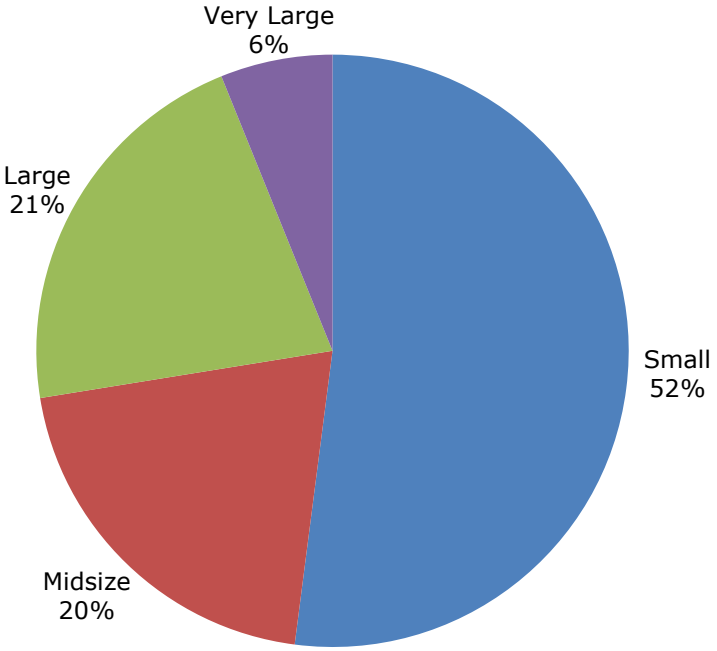


Source: Ventana Research

Company Size by Annual Revenue

When we measured size by annual revenue, the distribution of categories shifted downward, with small companies gaining dramatically. By this measure, 10 percent fewer are very large companies (having revenue of more than US$10 billion), less than half as many are large companies (having revenue from US$500 million to US$10 billion), 4 percent fewer are midsize companies (having revenue from US$100 to US$500 million), and half (more than three times as many) are small companies (with revenue of less than US$100 million).

Figure 2
Participants by Company Size (Annual Revenue)

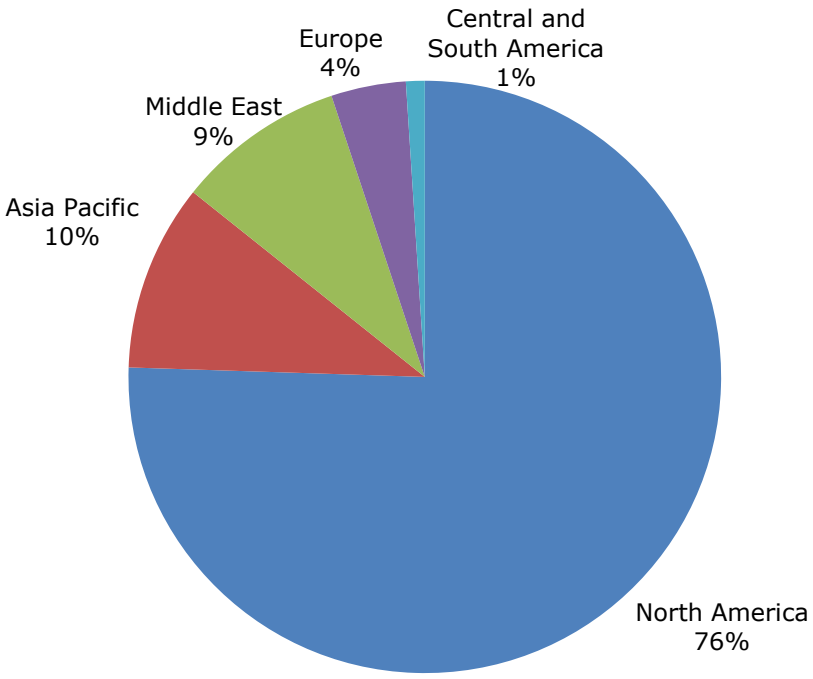


Source: Ventana Research

Geographic Distribution

Three-fourths of participating education companies are located or headquartered predominantly in North America. Those based in Asia Pacific formed the second-largest area at 10 percent, followed by those in the Middle East (9%), Europe (4%), and Central and South America (1%). This result was in keeping with our expectations at the start of this investigation, since organizations participating in our research most often are headquartered in North America.

Figure 3
Participants by Region

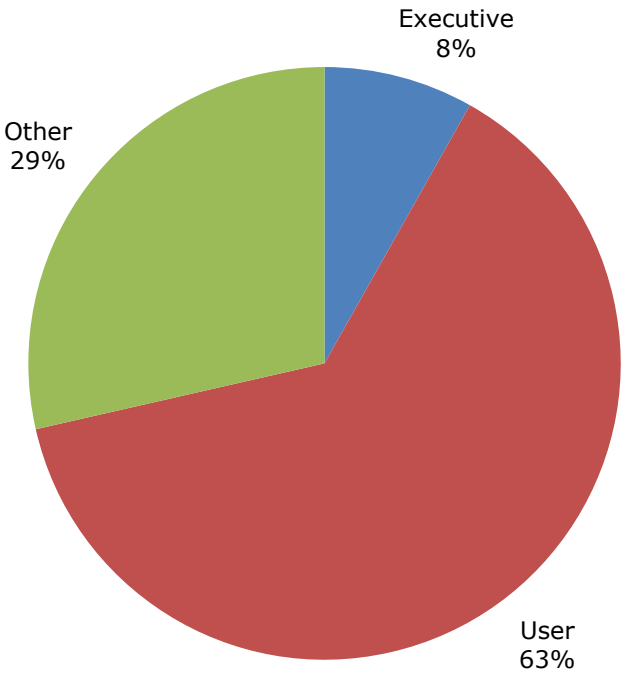


Source: Ventana Research

Job Title

We asked participants to name the job title that best describes theirs. We sorted these responses into three categories: executives, users and others. Nearly two-thirds identified themselves as having titles that we categorize as users, a grouping that includes senior manager or manager (35%), director (7%), analyst (10%) and staff (11%). Those with executive titles accounted for 8 percent of the total. A variety of other titles, often specific to the education sector, added up to 29 percent: The largest portion are professors or teachers (18%), and 5 percent are students.

Figure 4
Participants by Job Category



Source: Ventana Research

This is how we aggregated the core title response options:

Executive
CEO, President
Other CxO

User
Senior Manager or Manager
Director
Analyst (Business, Financial, etc.)
Staff

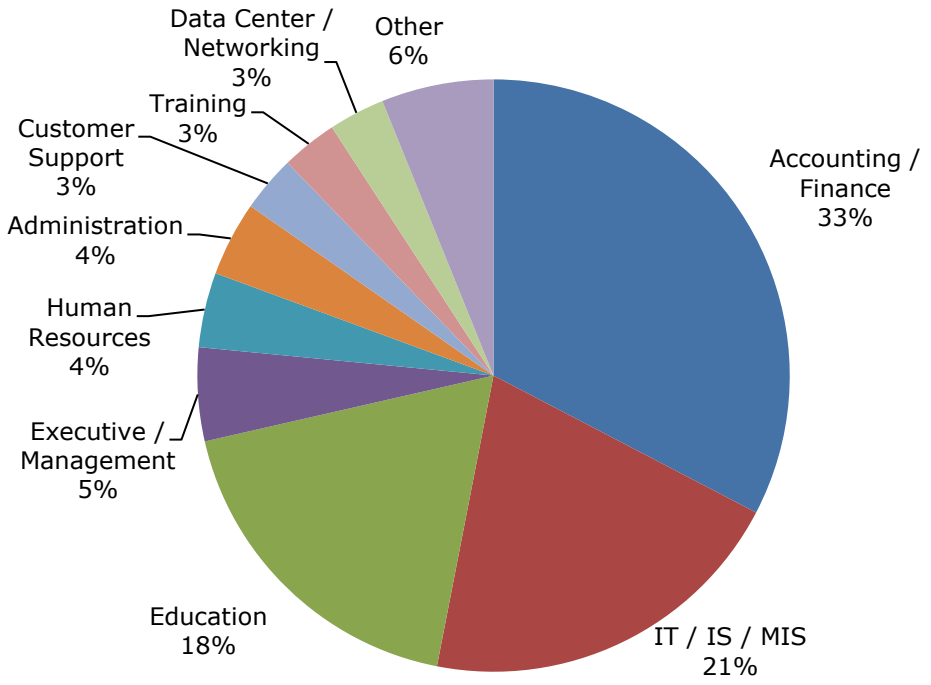
Other
Professor/Teacher
Student
Consultant
HR Project Manager

We concluded after analysis that this response set provided a meaningfully broad distribution of job titles.

Role by Functional Area

We asked participants to identify their functional area of responsibility as well. One-third have finance jobs, the largest grouping. IT comprised the second-largest group, followed by those with direct educational responsibilities. Six areas with 3 to 5 percent each accounted for about one-fifth (21%) of the total, as shown below, and four other areas each with only 1 to 2 percent comprised the Other category; combined they contribute to a diversity of functions among participants in the various aspects of education.

Figure 5
Participants by Functional Area



Source: Ventana Research

Key Insights: Education Analytics

Our benchmark research yielded the following important general findings and key insights regarding the use of analytics in education organizations. (We discuss maturity levels in the Maturity Index portion of the full research report; the actual questions asked in our survey are in the Appendix to the research report.)

Education organizations are maturing slowly in their use of analytics.

This benchmark research found that many education organizations are struggling to apply analytics and have substantial room for improvement. The Ventana Research Maturity Index places only 7 percent of them at the highest Innovative level in their use of analytics; that is tied (with Government) for the fewest of any industry sector in this research. Education has the most organizations at the lowest Tactical level and the most at the two lowest levels combined.

These organizations are held back in the maturity of their business analytics by a variety of factors. In people-related issues our analysis identified lack of skilled resources and lack of executive support. Process-related issues include taking longer than a week to provide metrics from analytics, formally reviewing metrics no more often than quarterly or annually and low prioritization and lack of budget. In information-related issues negatively impacting business analytics use the research identified stale, outdated and inaccurate information as well as failing to prioritize basic informational needs. In the category of technology the research found immature technology that is not working, unsophisticated technology that is known to be ineffective and a failure to prioritize forward-looking and predictive analytics.

All these shortcomings impede an education organization's effectiveness and performance. The research confirms our long-established hypothesis that maturation in business analytics requires a balanced focus on people, process, information and technology and a dedication to methodical improvement.

Education organizations generally make less use of analytics than others.

Findings of our line-of-business reports on business analytics reveal that organizations in education trail many others in the use of analytics. For example, in dealing with finance, 45 percent of organizations in the category of Government, Education and Nonprofit (of which Education comprises 42% of participants) spend less than one-fourth of their time working with analytics, while 64 percent of those in the private sectors spend more time than that. They also are less likely to consider the data they use accurate (26% vs. 32% of all industries). Understandably they are much less focused on issues such as competitive advantage or return on investment and not nearly as concerned with the time it takes to prepare management reports or close their books.

The most important categories of business metrics for education are cost, financial and customer.

Among the categories of metrics, participants identified cost metrics most often (59%) as important or very important to their role in their business; this was the only option selected by more than half. Financial, performance and customer metrics each were cited by 40 percent or more. Education is one of only four (of 11) vertical industries in which financial metrics do not top the list. This is understandable; many educational institutions are continually challenged to rein in costs as sources of

funding fluctuate. As well, accounting data has been available for the longest time and in the greatest depth, and people's performance assessments typically involve financial targets and their ability to control costs. Operational metrics (in fifth place at 38 percent) ranked lower for education than for all industries combined; there it placed third, chosen by 54 percent. The least important metrics categories currently are sustainability and risk exposure (9% each), likely because most education organizations lack the ability to measure these elements.

In our research on the importance of the types of data that underlie metrics, the employee and workforce category topped the list (chosen by 66%), followed by financial (60%) and customer (58%). Here again, education bucked the trend of industries as a whole by not citing financial data as most important. However, executives ranked customer data first most often and financial second. The Other category, of which more than half are professors and teachers, chose employee data first, as did the staff and analyst components of users. In any case, users need important data to be integrated efficiently into their business analytics, but the research indicates that education organizations face impediments: Almost three-fourths (72%) spend most of their time in unproductive tasks – waiting for data, preparing data and reviewing it for quality and consistency. Complicating integration is the finding that more than just traditional data from databases is important: text, unstructured data, events and even voice recordings have become needed input for business analytics.

Business analytics users in education require dependable tools.

The research investigated from several perspectives the qualities organizations seek in business analytics. In our overall research, of the seven categories of product and vendor considerations we use to evaluate analytics products, organizations ranked usability highest, with 57 percent rating it very important; all but one of the individual industry sectors followed suit. Education, however, rated usability second, with 41 percent calling it very important; instead most (47%) chose reliability. This likely correlates with the sector's strong concern with cost – education organizations may need to make do with what they have longer than most. More than 40 percent also rated functionality very important. Even the lowest-ranked factors – return on investment and vendor validation – were considered important or very important by more than 70 percent of the participants. That the least important category is validation of vendor references, viability and commitment suggests one of two possibilities: that users generally assume vendors are viable and stand by their software or that they have become wary of vendor references and do not consider them reliable.

To be usable and functional, analytics systems also must have the right presentation components; while charts, reports and tables are the presentation vehicles most often selected, documents, visualizations such as gauges and sliders, Web pages, text and maps were also identified as important by one-quarter to more than one-half of education organizations.

Analytics tools must support a range of roles in an education organization.

The benchmark research examined analytics needs in the lines of business as well as by analysts in this sector. Much of analytics use is to measure and monitor specific conditions; doing so can, for example, enable management by exception. Such periodic, repetitive analyses (in contrast to one-off data discovery efforts) are

fundamental to deriving value from data. Not surprisingly, then, the research finds that the most important capability for an analytics system is to make it possible to search for specific existing answers; this was rated very important by one-fourth of education participants and important by another half. Sharing the results of searches is a natural follow-up, and the ability to publish analytics and metrics was the second-most frequently chosen, deemed very important by 20 percent and important by 38 percent more. When an anomaly is discovered (a routine occurrence in business), individuals need to be able to drill down to find underlying causes, and tied for third place is the ability to explore data underlying analytics, deemed very important by 18 percent and important by half more, as was being able to collaborate in the review of analytics, which participants in the overall research placed sixth out of seven capabilities. Rated of least importance was to access analytics and metrics via a mobile device, selected as very important by just 2 percent and important by 28 percent; we anticipate that this will grow in importance as more users come to rely on these devices to do their jobs, but it may be less in demand in the less rapidly paced education environment.

Analysts need more sophisticated analytics. All of the nine capabilities we suggested were rated important or very important by analysts in at least two-thirds of education organizations. The most important, with about three-fourths rating it very important, is being able to source data for the analytics; without this capability it's difficult to put together meaningful analytics. The next-highest rated was to be able to design measures and metrics for analytics, very important for two-thirds. Surprisingly, applying predictive analytics to project future outcomes (56%) placed third; this innovative capability ranked eighth of nine in our overall research, very important to only 37 percent in all industries. Taking action based on the outcome of the analytics and designing and maintaining a business model, the second and third choices in the overall research, here finished fourth and fifth, respectively, although being deemed very important nearly as often.

Business analytics should be more accessible in education.

Analytics are not always at hand when people need them, the research shows. Among all our research participants, only one-third of senior executives and one-fourth of vice presidents, directors and managers have them always available. While it is true that a large majority of executives have most of what they need, this is insufficient for optimally effective performance. All organizations pursuing excellence need programs and processes to continuously evaluate the adequacy of the analytics and metrics available to executives and managers and to quickly and efficiently address gaps that they find.

Education participants said making analytics more accessible is a priority: Eight in 10 regard making it simpler to provide analytics and metrics to those who need them as important or very important. The implication of this finding is clear: These organizations must focus on making it easier for employees to access useful and relevant analytics and metrics. The research found that the tools that are used most often for analytics are Microsoft Office and spreadsheets, which often produce individual silos of data and analysis.

Issues of timeliness and readiness impede productive use of business analytics and metrics in education.

Business analytics should be about determining what is happening and will happen to an organization. Unfortunately the research shows that people spend more time fiddling with data than analyzing it in education as well as generally. Dividing the process into data preparation (waiting for data, preparing data and reviewing it for quality and consistency), data analysis and working with metrics, we find that the first takes the most time for more than seven in 10 education organizations (72%). Another 3 percent spend most of their time grappling with not-easily accessible metrics. Only about one-fourth (24%) spend most of their time on the analysis portion of the cycle: assembling scenarios, trying to determine root causes and determining how changes will impact current business. There was only a small difference in this pattern between those who spend 75 percent or more of their time working with analytics and those who spend less. If these issues could be addressed, the amount of time people work with analytics could be reduced; currently 43 percent are spending more than 25 percent of their time with them.

The time required to prepare data for analytics is not the only challenge the research found. The timeliness of the data to which analytics are applied is critical if organizations are to be able to discover and act on metrics and key indicators to improve the performance of processes and people. Less than one-third (31%) of education organizations work with data that they receive in real time or close to real time; this is many fewer than the 46 percent of all organizations that receive data quickly. Half of those in education said that some or most of the data they get is stale or outdated. Time is the enemy of data and business effectiveness. If it takes too long to produce or present the data needed to do analyses and assessments, the results will have less relevance and credibility. Similarly critical is the accuracy of the data, which if it is dubious will require more time to review and ensure consistency and quality. The challenge here also is similar: Just 19 percent said the data they use for business analytics is accurate, while more than half (57%) characterized it as only somewhat accurate. In other words, it falls short of what it should be: utterly reliable. While it's hard to gauge the seriousness of the accuracy shortfall, persistent small errors in data detract from the perceived validity of assessments and leave room to argue that the data, not the performance it measures, is at fault.

Spreadsheets are not appropriate for business analytics in education.

Spreadsheets are ubiquitous, and the research shows that along with business intelligence technologies (for querying, reporting and performing analysis) and analytic warehouses and databases, they are the tools most commonly used to generate analytics. The research found that Microsoft Office, with its spreadsheet, presentation and electronic mail components, is used for business analytics in 59 percent of education organizations. In addition spreadsheets are used universally in more than one-third (37%) and regularly in 46 percent of them.

However, our analysis shows that organizations that use spreadsheets least have more accurate, timely data and deliver periodic reports about 30 percent sooner. This finding leads us to repeat one of our most persistent admonitions: While spreadsheets are appropriate for ad-hoc analysis and for information used by a limited number of people, organizations must limit their use of them as data stores and for repetitive analyses, particularly in cases where the results are reported to and used by more than a few people. Although many people are comfortable with spreadsheets, their failings, limitations and necessary work-arounds undermine the

needs identified by this research to simplify analytics and metrics and ensure technology usability in for the process of producing business analytics within education.

In education, IT and the lines of business only occasionally work together on analytics.

The research found that most people who have primary responsibility for designing and deploying analytics typically have experience with sophisticated tools. In two-thirds of education organizations (66%) analytics are designed and deployed by the business intelligence or data warehouse team or by general IT resources. Line-of-business (LOB) analysts are involved in a bit more than one-fourth of companies; 8 percent use LOB analysts alone and another 18 percent have IT analysts and LOB analysts collaborate. We believe that a deep understanding of a company's specific operations and requirements is critical to the analytics creation process. But the research shows that to define and deploy analytics for their contact centers, organizations in this sector turn more often than others to external consulting resources (13% vs. 4%) or outsourcing (13% vs. 3%).

The research also finds some cooperation of business analysts with IT in business analytics for education. In 28 percent of these organizations the two work together to design and deploy analytics, while business units do that for themselves in 32 percent. In the process of making new analytics available, only 24 percent will have the IT organization alone build them. Purchasing prebuilt analytics could be a quick way to deploy analytics when resources are scarce, but only 12 percent plan to do that. In about one-third of all organizations, other business units are uninvolved or only marginally involved in the process of defining IT analytics. Even more in government, education and nonprofits (41%) indicated that other business units are not significantly involved. In 36 percent of education organizations the general business budget provides the funds for analytics technology investment; next-most prevalent is the general IT budget (20%), while 12 percent use the general business IT budget.

Predictive analytics generate surprisingly high interest in education.

Technology has advanced to a stage where it is feasible to enable a variety of users to harness the potential that predictive analytics offer. Yet in our overall research predictive analytics are not high-priority analyst capabilities for the lines of business, nor are what-if and planning-based analytics. Exceptions were contact centers, in which predictive analytics ranked second-most important, and supply chains, where they are third-most important. Some industries (for example, telecommunications, medicine and financial services) and some roles (such as IT or R&D) are heavier users of these analytics, but even there no more than 20 percent said they employ them. Finance departments are the least likely to use predictive analytics, even though they could be widely applicable within this function.

Thus we found it noteworthy that education participants rated predictive analytics third-most important among analyst capabilities for business analytics. But the research also shows that this is more desired than possessed: Only 11 percent currently use predictive analytics and modeling to generate analytics. The somewhat related capabilities of what-if and planning-based analytics are much less evident on education's radar; they ranked next-to-lowest even though they could help to advance maturity in business processes. We consider both of these types of forward-

looking analytics to be hallmarks of maturity, and these findings contribute to the prevalence of immaturity our Maturity Index analysis found in education organizations.

Although organizations in education realize they need to improve business analytics, many are not ready to act.

Overall, only about one-third (32%) of education organizations are satisfied with their current analytics efforts. Moreover, three-fourths of executives said that their company can significantly improve its use of analytics and performance indicators, compared to 40 percent overall. Companies that have issues with the timeliness and accuracy of their data are more likely to say that improvement is necessary, and that their efforts to do a better job must address these issues and their underlying causes. Yet while more than half (54%) of education organizations recognize a need to make changes, just one-fourth (26%) are planning to make them in the next 12 to 18 months. A similar number (28%) acknowledge the need to make changes but don't view this as a sufficiently high priority on which to take action.

The research shows that the most significant barriers to making changes in analytics are fundamental: lack of resources, no budget, a business case that is not strong enough and too low a priority assigned to the effort. In our experience these barriers are interrelated: Failure to provide a compelling business case results in a project receiving a low priority and therefore not being allocated the resources or budget sufficient to implement the changes. Resources must be adequate to enable investment in technology to make analytics easy to access and use; lack of resources is the foremost process and technology barrier in half of the lines of business. Driving change and addressing barriers require understanding the benefits of investments; the research found that the factors most often driving change in education organizations are seeking to improve decision-making (in 68%) and business processes (64%) and to increase workforce productivity (60%). As well as these three choices, improving operational efficiency, gaining a competitive advantage and creating new revenue opportunities each were cited by at least 40 percent of these organizations.

Cloud computing is on the rise for business analytics in education.

Installation on-premises remains the most popular option for deploying business analytics, with slightly more than half of education organizations preferring this method to purchase and maintain them. However, the research found that 17 percent prefer software as a service (SaaS), an on-demand approach commonly called cloud computing, and 8 percent prefer software hosted by the supplier. A significant number (20%) expressed no preference for any of these approaches and so may be open to new methods to acquire business analytics. We conclude that SaaS is no longer a marginal preference and can provide affordable, rapid deployment to enable any size of education organization to gain access to business analytics. Participants with IT titles in this sector do not prefer on-premises significantly more often than business people do, although IT groups traditionally have wanted systems installed under their control. It is interesting that while these IT people are far less willing to consider SaaS (only 4% vs. 22% of business), they are much more willing to have analytics hosted by the supplier (17% vs. 4%). Analyzed by size, two-thirds of large and very large education organizations prefer on-premises, and the very large are least disposed toward on-demand or hosted deployment, while small ones most often expressed no preference.

What To Do Next

Participants in this benchmark research expressed a number of common concerns regarding the need for and use of business analytics. We found that organizations in education view some issues differently than most other sectors. The metrics they most often identified as important across their varying roles are related to cost. Education is one of only a few vertical industries in which financial metrics do not top the list. The research makes clear that many are concerned about how well they handle their metrics; fewer than half (40%) of participants are satisfied with their current analytics efforts. For organizations in education wishing to improve their performance through business analytics, we offer the following recommendations.

Assess the maturity of your business analytics.

This benchmark research found that education organizations are held back in the maturity of their business analytics by a variety of factors. The Ventana Research Maturity Index places only 7 percent of them at the highest Innovative level in their use of analytics (tied for the fewest of any industry), and the most of any (71%) are in the bottom half of the maturity hierarchy. In people-related issues our analysis identified lack of skilled resources and lack of executive support. Process-related issues include taking longer than a week to provide metrics from analytics, formally reviewing metrics no more often than quarterly or annually and low prioritization and lack of budget. In information-related issues that negatively impact business analytics use, the research identified stale, outdated and inaccurate information as well as failing to prioritize basic informational needs. In the category of technology the research found immature technology that is not working, unsophisticated technology that is known to be ineffective and a failure to prioritize forward-looking and predictive analytics. These shortcomings all impede an education organization's effectiveness and performance and all need to be addressed. We advise those seeking to mature in business analytics to take a thorough and balanced approach to their people, process, information and technology issues.

Look for business analytics tools that are reliable and easy to use.

The research investigated qualities education organizations seek in business analytics. Of the seven product and vendor considerations we use to evaluate analytics products, these organizations ranked reliability highest, with 47 percent rating it very important. This likely correlates with the sector's strong concern with cost – education organizations may need to make do with what they have longer than most. All other industries chose usability first, and it was second for education (41% said it is very important). More than 40 percent also rated functionality very important. Even the lowest-ranked factor – vendor validation – was considered important or very important by more than 70 percent of the participants.

In general, usability and functionality – that is, business capabilities – stand out as important considerations in selecting business analytics regardless of company size, industry, individual role or functional area. These should be central focuses in evaluating tools. To be usable and functional, analytics systems must provide a range of options for how to include the information in presentations, and these are increasing; education participants indicated an interest most often in the standard charts, reports and tables, but documents, visualizations such as gauges and sliders, Web pages, text and maps were also identified as important by one-third to more

than one-half of these organizations. Determine which of these are important to you today and may be tomorrow.

Look for tools that support a range of roles in an educational environment.

The benchmark research examined analytics needs of people in the lines of business as well as analysts in education. The most important capability for an analytics system is to make it possible to search for specific existing answers; this was rated important or very important by three-fourths of participants, as was sharing the results of searches by publishing analytics and metrics. Because anomalies are common in business, individuals need to be able to drill down to find underlying causes, and tied for third-most frequently chosen capability is to explore data underlying analytics, also deemed important or very important by nearly three-fourths, along with being able to collaborate in the review of analytics. When you evaluate products, ask about these capabilities for business users and also about the more sophisticated analytics needed by your analysts. The most important capability for them, rated by about three-fourths as very important, is being able to source data for the analytics; without this capability it's difficult to put together meaningful analytics. The next-highest rated was to be able to design measures and metrics for analytics, very important for two-thirds.

Ensure that business analytics are widely accessible.

Analytics are not always at hand when people need them. In our overall research on business analytics, only one-third of senior executives and one-fourth of vice presidents, directors and managers have them always available. While it is true that a large majority of executives have most of what they need, this is insufficient for optimally effective performance. Eight in 10 education organizations regard making it simpler to provide analytics and metrics to those who need them as important or very important. We urge such companies to focus on making it easy for employees to access relevant analytics and metrics. In your efforts to improve accessibility of analytics and metrics, keep in mind that doing this from mobile devices such as smartphones and tablet computers will increase in demand; already 28 percent of participants said this is important.

Don't let inferior data undermine use of business analytics and metrics.

Business analytics should be about determining what is happening and will happen to an organization. But the research shows that people spend more time preparing data than analyzing it. In more than seven in 10 education organizations they spend the most time waiting for data, preparing data and reviewing it for quality and consistency. Conversely only about one-fourth (24%) spend most of their time on true analysis processes such as assembling scenarios, trying to determine root causes and determining how changes will impact current business. If these preparation obstacles could be addressed, the amount of time people work with analytics could be reduced; currently 43 percent are spending more than 25 percent of their time with them.

A related issue is the timeliness of the data to which analytics are applied. Fewer than one-third (31%) of education organizations work with data that they receive in real time or close to real time, and half said some or most of the data is stale or outdated. Analyses and assessments based on such data will have less relevance and credibility. Similarly critical is the accuracy of the data; if it is dubious more time will be required to review it and ensure consistency and quality. Just 19 percent said the

data they use for business analytics is accurate, while more than half (57%) characterized it as only somewhat accurate. Take steps to ensure that your source data for analytics is both fresh and correct; if it isn't, you risk undermining the use of metrics and KPIs as business improvement tools.

Replace spreadsheets as tools for business analytics.

Spreadsheets are well-established as a tool for analysis in organizations of all kinds and sizes, but they are ineffective for repetitive analyses shared by more than a few people. Yet the research shows that along with business intelligence technologies (for querying, reporting and performing analysis) and analytic warehouses and databases, spreadsheets are the tools education organizations use most commonly to generate analytics. Indeed, spreadsheets are used universally in more than one-third (37%) and regularly in almost half of these organizations. While they may be familiar, our research shows that organizations that use spreadsheets least have more accurate, timely data – and they deliver periodic reports about 30 percent sooner. This and similar findings lead us to urge all organizations to limit the use of spreadsheets as data stores and for repetitive analyses, particularly in cases where the results are reported to and used by more than a few people. Their failings, limitations and necessary work-arounds undermine the needs identified by this research to simplify analytics and metrics and ensure technology usability in the process of producing business analytics.

It helps when IT and the lines of business work together on analytics.

The research found that most people who have primary responsibility for designing and deploying analytics have experience with sophisticated tools. In two-thirds of education organizations (66%) analytics are designed and deployed by the business intelligence or data warehouse team or by general IT resources. Line-of-business (LOB) analysts are involved in a bit more than one-fourth of companies; 8 percent use LOB analysts alone and another 18 percent have IT analysts and LOB analysts collaborate. The research also finds some cooperation of business analysts with IT in education analytics. In 28 percent of organizations the two work together to design and deploy analytics, while business units do that for themselves in 32 percent. Investigate working relationships between those on the business side and IT and explore how strengthening them can help make your analytics more useful.

Understand the value of predictive and forward-looking analytics.

Predictive analytics can give a business glimpses of what may happen, the consequences of actions and scenarios for how to respond to change. Technology has advanced to a stage where it is feasible to provide them to a variety of business users. Yet our overall analytics research shows predictive analytics are not yet high-priority analyst capabilities for the lines of business. But education participants rated predictive analytics third-most important among analyst capabilities for business analytics (56% said this is very important). However, the research also shows that this is more desired than possessed: Only 11 percent currently use predictive analytics and modeling to generate analytics. These forward-looking analytics can help advance maturity in business processes; consider what they could do for your organization.

Address barriers standing in the way of improving business analytics and performance.

The research shows that the most significant barriers to making changes in analytics are fundamental: lack of resources, no budget, a business case that is not strong enough and too low a priority assigned to the effort. In our experience these barriers are interrelated: Failure to provide a compelling business case results in a project receiving a low priority and therefore not being allocated the resources or budget sufficient to implement the changes. Resources must be adequate to enable investment in technology to make analytics easy to access and use; lack of resources is the foremost process and technology barrier in half of the lines of business. Driving change and addressing barriers require understanding the benefits of investments; the research found that the factors most often driving change in education organizations are seeking to improve decision-making (in 68%) and business processes (64%) and to increase workforce productivity (60%). Other drivers were identified as well: improving operational efficiency, gaining a competitive advantage and creating new revenue opportunities each were cited by at least 40 percent of these organizations. Demand that vendors show how their products deliver clear benefits such as these and address issues such as total cost of ownership and return on investment that can help lower the barriers in your organization.

Consider cloud computing for deploying for business analytics.

Slightly more than half of education organizations still prefer on-premises deployment for business analytics, but the research found that 17 percent prefer software as a service (SaaS), an on-demand approach commonly called cloud computing, and 8 percent prefer software hosted by the supplier. A significant number (20%) expressed no preference for any of these approaches and so may be open to new methods to acquire business analytics. SaaS can provide affordable, rapid deployment to enable any size of organization to gain access to business analytics. We advise you to evaluate it if your organization is looking to avoid the effort and expense of having in-house technology resources manage your business analytics.

How Ventana Research Can Help

Ventana Research helps organizations develop, execute and sustain business and technology programs that align people, processes, information and technologies essential for success. As an objective and trusted advisor, we are your insurance that your business and IT initiatives deliver both immediate and long-term improvements to your business.

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 assessment services to help you connect the business and technology phases of your project by leveraging our research foundation and methodologies. 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 report 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.

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

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To learn more about Ventana Research services – including workshops, assessments and advice – please contact clientservices@ventanaresearch.com.

** Additional services are available for solution providers, software vendors, consultants and systems integrators.*

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