Business Analytics in Telecommunications

Benchmarking the Analysis of Data To Gain Insight

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Benchmark Research
White Paper

VENTANA
R E S E A R C H

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Ventana Research performed this research to determine attitudes toward and utilization of business analytics and metrics in the telecommunications industry. 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 telecommunications 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 telecommunications 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 telecommunications 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 telecommunications companies 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 telecommunications 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 telecommunications 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.

> **Telecommunications organizations 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 telecommunications 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.

Telecommunications 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 can support improvement in the key areas of people, processes, information and technology.

In many cases, however, telecommunications-focused companies and individuals must understand first what analytics can do and ascertain what analytics they need. The buzz about analytics in telecom 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 telecommunications sector.

> **More of these organizations are not satisfied with the process currently used to create analytics (47%) than are satisfied with it (45%).**

This research in telecommunications found that the most important categories of metrics (which we define as measures of business performance) are central to business: operational (identified by 58% of participants), business process (56%) and cost (55%). These priorities understandably varied by line of business: Financial metrics rank first for those in finance and business departments but sales is the first priority for the marketing and sales areas. Operational metrics was the first choice for those in the contact center, human resources, operations and R&D, business process metrics came first for administration and IT. By role, executives were more likely than the average to mention customer, operations, process and performance metrics.

Issues also arise in providing current metrics and KPIs to people. Although 57 percent of telecommunications organizations do so within one week after the end of the month, quarter or year, the rest take longer than that. The timeliness of the source data for metrics and KPIs is a related challenge: For 39 percent of these organizations, some or most of the data is stale or outdated. Similarly, nearly half (48%) 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 41 percent are only somewhat confident or not confident in the quality of the information being generated by their analytics; however, 21 percent are very confident in it, which is 5 percent more than in our overall business analytics research.

In broader terms, more telecommunications companies are not satisfied with the process currently used to create analytics (47%) than are satisfied with it (45%).

Regarding the current technology for creating and applying analytics, almost as many are only somewhat satisfied or not satisfied with it as are satisfied or very satisfied (48% vs. 50%). Those who spend 75 percent or more of their time with analytics registered both the most dissatisfied (23%) and very satisfied (12%).

The findings about which technologies telecommunications organizations currently use shed some light on these numbers. The only tools used by more than half of these organizations to generate analytics are business intelligence systems (57%) and spreadsheets (55%). A full 60 percent of all organizations use spreadsheets regularly for business intelligence and analytics, and 28 percent more use them universally for those purposes. 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 21 percent of all telecommunications-focused corporations attain the highest Innovative level of maturity in their use of analytics; however, this is the most Innovative organizations of any vertical industry. 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 a majority of these participants (64%) said that it is very important to their business goals to simplify making analytics and metrics available, fewer than one-third (29%) 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 business processes (for 77%), operational efficiency for cost savings (69%) and decision-making (62%).

When we analyzed the maturity of companies' individual lines of business by aggregated industry sectors, Services (which includes Telecommunications) had the greatest percentage of companies at the two highest maturity levels in the product and supply chain LOBs and was tied for the most in two others, IT and the contact center. Thus, although telecommunications companies have plenty of room for improvement in business analytics, in some areas they are in one of the most mature industries.

On the other hand, fundamental barriers block the road to improvement for many telecommunications organizations. The absence of a strong business case, of resources, of a budget and of awareness of the need to change all were identified as issues by more than 35 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, 60 percent of telecommunications organizations said that

the most important is usability – being able to apply the tool readily to business needs; second-most important are the functional capabilities of the analytics (cited by 51%). 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, telecommunications companies are maturing 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, operational efficiency and decision-making.

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 telecommunications 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 telecommunications participants (55%) are larger organizations: That is, not quite one-third are very large companies (having 10,000 or more employees), and almost one-fourth are large companies (with 1,000 to 9,999 employees). Somewhat more than one-fourth are midsize companies (with 100 to 999 employees), and less than one in five are small companies (with fewer than 100 employees). This rather 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)**
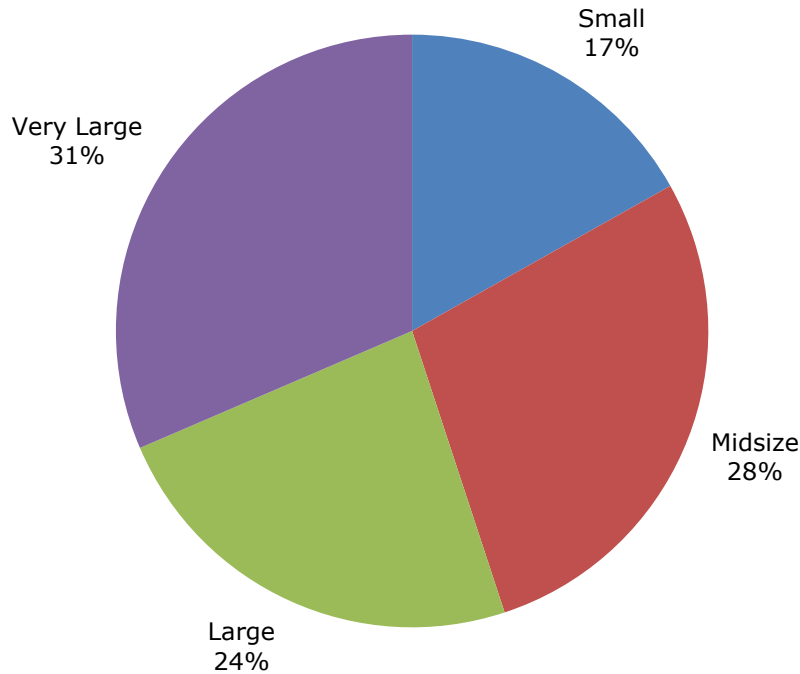
Source: Ventana Research

Company Size by Annual Revenue

When we measured size by annual revenue, the distribution of categories shifted downward, with the larger group in each half losing share. By this measure, fewer than one-fifth are very large companies (having revenue of more than US$10 billion), a drop of 12 percent, but 6 percent more are large companies (having revenue from US$500 million to US$10 billion). The number of midsize companies (having revenue from US$100 to US$500 million) fell by two-thirds, and more than twice as many are small companies (with revenue of less than US$100 million).

Figure 2
Participants by Company Size (Annual Revenue)
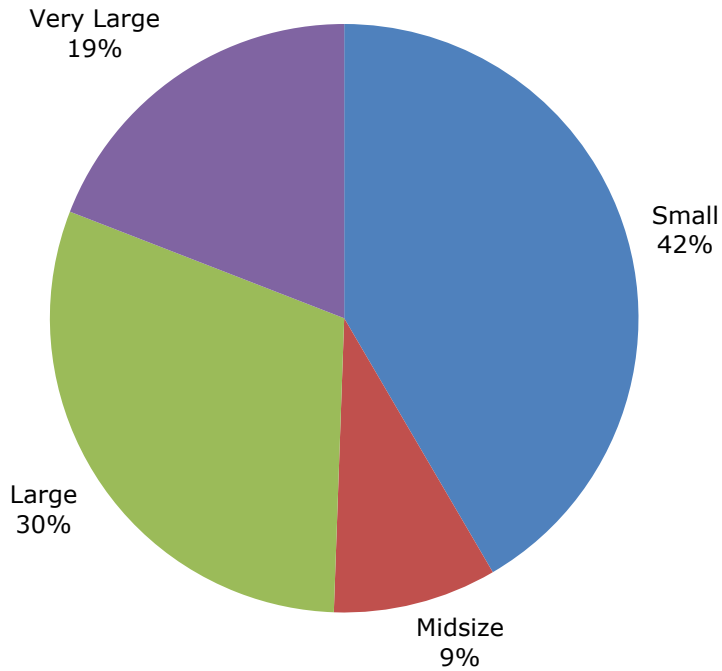
Source: Ventana Research

Geographic Distribution

Slightly less than three-fourths of participating companies are located or headquartered predominantly in North America. Those based in Europe formed the second-largest area at 12 percent, followed by those in the Middle East (8%), Asia Pacific (6%) and Africa and Central and South America at 1 percent each. 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. However, many of these are global organizations operating worldwide. The portions of the telecommunications industry from these continents are similar to those in our overall analytics research except that Europe has a larger share.

Figure 3
Participants by Region
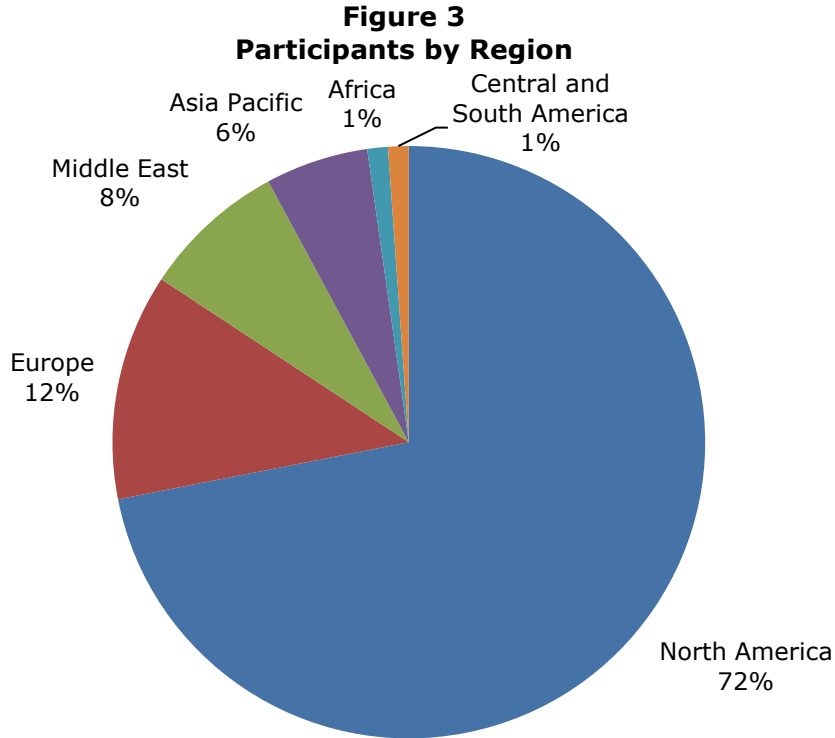
Source: Ventana Research

Job Title

We asked participants to name the job title that best describes theirs. We sorted these responses into four categories: executives, management, users and others. More than two-thirds identified themselves as having titles that we categorize as users, a grouping that includes senior manager or manager (33%), director (19%), analyst (13%) and staff (4%). Those with vice president titles constitute the management category, which amounts to 8 percent of the total, and 17 percent are executives. A variety of other titles, each with small numbers of participants, added up to 6 percent.

Figure 4
Participants by Job Category
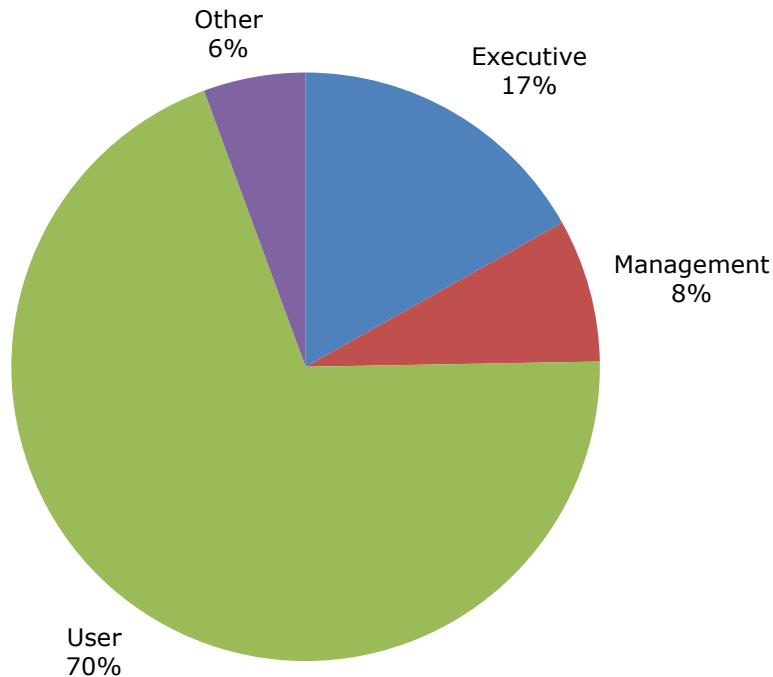
Source: Ventana Research

This is how we aggregated the core title response options:

Executive
CEO, President
Other CxO

Management
EVP or SVP
VP

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

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. About one-fourth have jobs in the contact center. IT, finance and marketing were the other categories accounting for at least 10 percent of the total. Telecommunications differs from most other industry sectors in that finance does not comprise the largest grouping; the prevalence of participants from the contact center is not surprising given its central role in this industry. Seven areas with 3 to 7 percent each comprised one-third (34%) of the total, and a handful of other areas each with only 1 to 2 percent comprised the Other category; combined they contribute to a diversity of functions among participants in this sector.

Figure 5
Participants by Functional Area

Business Development / Corporate Planning 3%
Sales 3%
Other 6%
Product Planning 3%
Operations 5%
Human Resources 6%
Customer Support 7%
Executive / Management 7%
Marketing 10%
Call or Contact Center 26%
IT / IS / MIS 13%
Accounting / Finance 11%

Source: Ventana Research
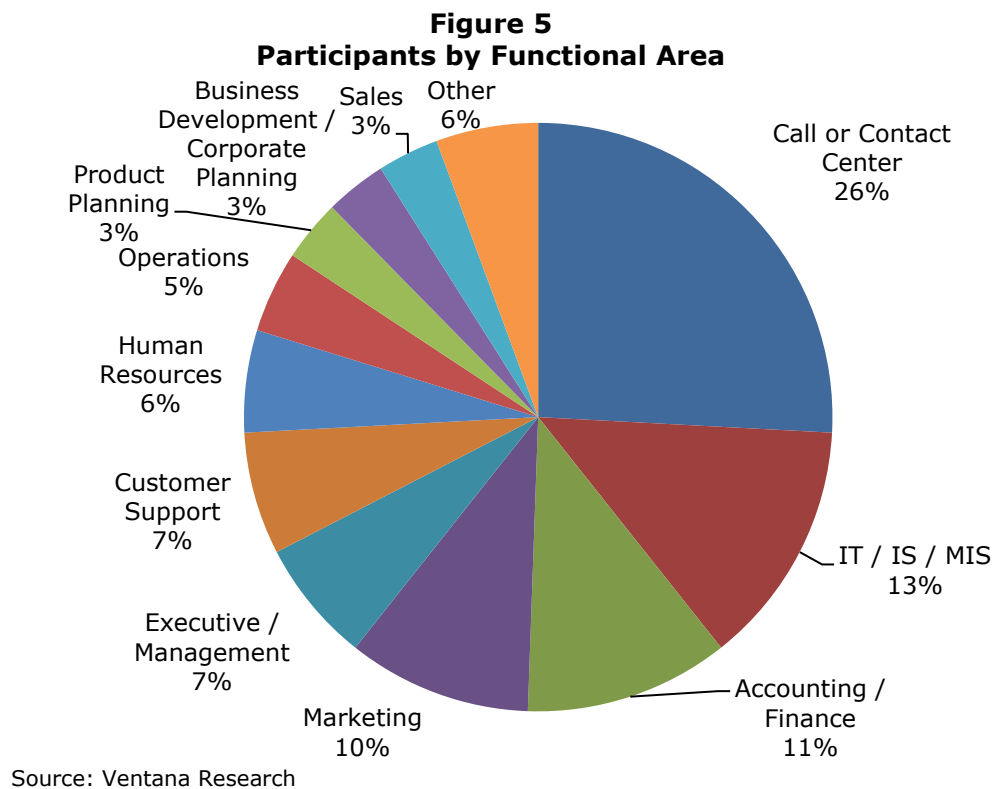
Key Insights: Telecommunications Analytics

Our benchmark research yielded the following important general findings and key insights regarding the use of analytics in telecommunications 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.)

Telecommunications organizations are maturing in their use of analytics.

This benchmark research found that telecommunications companies are advancing in their ability to apply analytics. According to the Ventana Research Maturity Index, this industry sector has the most (21%) of any at the highest Innovative level in their use of analytics, and it is the only one in which half of organizations reach the top two levels. That said, the other 50 percent are in the bottom half of the maturity hierarchy and thus have substantial room for improvement.

Telecommunications 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 a telecommunications 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.

The most important categories of business metrics for telecommunications are operational, process and cost.

Among the categories of metrics, in our overall analytics research participants identified financial metrics most often (63%) as important or very important to their role in their business; in the analysis by vertical industries seven of 11 also rated financial first. Cost metrics (61%) and operational metrics (54%) followed overall. Telecommunications bucked this trend more than any other sector, choosing operational first (58%, the only one to do so), process metrics second (56%, which no other had among the top three) and cost third (55%); financial metrics rated seventh. The least important metrics categories currently are risk exposure (16%) and sustainability (17%), likely because most companies lack the ability to measure these elements in telecommunications.

In our research on the importance of the types of data that underlie metrics, the financial category did better, chosen by 63 percent and ranking second to customer data (76%). Employee and sales data followed, each with 60 percent or more. Users need important data to be integrated efficiently into their business analytics, but the research indicates that telecommunications companies face impediments: More than half (58%) 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 telecommunications require flexible, capable tools.

The research investigated from several perspectives the qualities telecommunications organizations seek in business analytics. Of the seven categories of product and vendor considerations we use to evaluate analytics products, organizations ranked usability highest, with 60 percent rating it very important. More than 40 percent each rated functionality, manageability, reliability and adaptability very important. Even the lowest-ranked factor – vendor validation – was considered important or very important by more than two-thirds 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.

Usability stands out as the most important of seven categories of consideration in selecting business analytics because companies deploy software to "do something." This is more or less the case regardless of company size, industry, individual role or functional area. Ranking next most important is functionality. 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 and maps were also identified as important by 37 to 47 percent of these companies.

Analytics tools must support a range of roles in a telecommunications 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 40 percent of participants and important by another 47 percent. When an anomaly is discovered (a routine occurrence in business), individuals need to be able to drill down to find underlying causes, and the second-most frequently chosen capability is to explore data underlying analytics, deemed very important by 37 percent and important by 38 percent more. The participants rated similarly (26% to 34% deemed them very important) four of the seven capabilities we asked about: being able to publish analytics and metrics; to explore data by working with maps, charts and tables; to collaborate in the review of analytics; and to set alerts and thresholds. Rated of least importance was to access analytics and metrics via a mobile device, selected as very important by just 10 percent and important by 24 percent; we anticipate that this will grow in importance as more users come to rely on these devices to do their jobs.

Analysts need more sophisticated analytics. All of the nine capabilities we suggested were rated important or very important by analysts in at least three-fourths of telecommunications companies. The most important, with 45 percent rating it very

important, is being able to take action based on the outcome of the analytics (that is, to complete the cycle of measure, decide and act). The two next-highest rated were to be able to source data for the analytics (without this capability it's difficult to put together meaningful analytics) and to design and maintain a business model (which is another basic analytic function).

Business analytics in telecommunications should be more accessible.

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.

Telecommunications participants said making analytics more accessible is a priority: Nine 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: Telecommunications 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 telecommunications.

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 telecommunications 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 almost six in 10 of these organizations (58%). Another 6 percent spend most of their time grappling with not-easily accessible metrics. Only about one-third (36%) 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 56 percent are spending more than 25 percent of their time with them. We note, however, that telecommunications companies spend more time in productive analytics than do all industries combined.

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. Even though 58 percent of telecommunications organizations work with data that they receive in real time or close to real time, 39 percent said that some or most of the data is stale or outdated. (By this measure also telecommunications outperforms all industries together, of which 49 percent say data is not timely.) 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: 38 percent said the data they use for business analytics is accurate, while nearly half (48%) 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 telecommunications.

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 two-thirds of organizations in all industries; for telecommunications this drops to just over half (55%). In addition spreadsheets are used universally in more than one-fourth of telecom companies (28% vs. 38% overall) and regularly in more than half 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 telecommunications.

In telecommunications, IT and the lines of business often 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 more than half of telecommunications organizations (59%) 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 about one-third of companies; 17 percent use LOB analysts alone and another 15 percent have IT analysts and LOB analysts collaborate. Fewer than one-tenth go outside the company, using external LOB consultants (6%) or outsourced IT resources (3%). This pattern validates our conclusion that a deep understanding of a company's specific operations and requirements is critical to the analytics creation process.

The research also finds substantial cooperation of business analysts with IT in business analytics for telecommunications. In 54 percent of these organizations the two work together to design and deploy analytics, while business units do that for

themselves in only 12 percent. This is considerably more cooperation than we found in the overall research, where 30 percent collaborate and nearly as many (29%) do not. In the process of making new analytics available, only 23 percent will have the IT organization alone build them. Only 4 percent will work with consulting firms to make new analytics available. Purchasing prebuilt analytics could be a quick way to deploy analytics when resources are scarce, but only 8 percent plan to do that. In telecommunications companies the general business budget and the business IT budget provide the funds for analytics technology investment equally often (31% each); 15 percent each use the general IT budget or a shared service funded by business.

Predictive and forward-looking analytics should have higher priority in telecommunications.

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 telecommunications 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, 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.

In telecommunications, predictive analytics and what-if and planning-based analytics ranked low among analyst capabilities even though they could help 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 organizations.

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

Overall, one-third of telecommunications organizations are satisfied with their current analytics efforts. Moreover, about half (47%) of executives said that their company can significantly improve its use of analytics and performance indicators, as did 57 percent of management. 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 half of telecommunications organizations recognize a need to make changes, less than one-third (29%) are planning to make them in the next 12 to 18 months. Another 22 percent 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 telecommunications organizations are seeking to improve business processes (in 77%), operational efficiency (69%) and decision-making (62%). As well as these three choices, gaining a competitive advantage and increasing profitability each were cited by more than half of organizations.

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

Installation on-premises remains the most popular option for deploying business analytics, with slightly more than half of organizations preferring this method to purchase and maintain them. However, the research found a significant preference (of 24%) for software as a service (SaaS), an on-demand approach commonly called cloud computing. Only 7 percent prefer software hosted by the supplier, but 17 percent 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 organization to gain access to business analytics. Participants with IT titles in this sector prefer on-premises more often than business people do (57% vs. 51%), following the IT tradition of wanting systems installed under the group's control; IT also preferred SaaS less often than business (21% vs. 25%). In specific lines of business, Marketing and Operations expressed a greater preference for on-demand than did the average. Large telecommunications organizations prefer on-demand more often than other sizes.

What To Do Next

Participants in this benchmark research expressed a number of common concerns regarding the need for and use of business analytics. The metrics they most often identified as important across their varying roles span the core categories of financial, cost and operations. The research makes clear that many are concerned about how well they handle them; fewer than half (45%) of telecommunications participants are satisfied with their current analytics efforts. For businesses in this sector 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 telecommunications organizations are held back in the maturity of their business analytics by a variety of factors. The Ventana Research Maturity Index places only 21 percent of them at the highest Innovative level in their use of analytics, and 50 percent 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 a telecommunications 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 easy to use and flexible.

The research investigated qualities telecommunications organizations seek in business analytics. Of the seven product and vendor considerations we use to evaluate analytics products, these organizations ranked usability highest, with 60 percent rating it very important. More than 40 percent each rated functionality, manageability, reliability and adaptability very important. Even the lowest-ranked factor – vendor validation – was considered important or very important by more than two-thirds of the participants.

Usability and functionality – that is, business capabilities – stand out as organizations' most 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; telecommunications participants indicated an interest most often in the standard charts, reports and tables, but documents, visualizations such as gauges and sliders, Web pages and maps were also identified as important by 37 to 47 percent 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 a telecommunications business.

The benchmark research examined analytics needs of people in the lines of business as well as analysts in this sector. 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 87 percent of participants. Because anomalies are common in business, individuals need to be able to drill down to find underlying causes, and the second-most frequently chosen capability is to explore data underlying analytics, also deemed important or very important by a full three-fourths. The participants rated similarly (26% to 34% deemed them very important) four other capabilities: to publish analytics and metrics; to explore data by working with maps, charts and tables; to collaborate in the review of analytics; and to set alerts and thresholds. 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 45 percent as very important, is being able to take action based on the outcome of the analytics (that is, to complete the cycle of measure, decide and act). The two next-highest rated were to be able to source data for the analytics(without this capability it's difficult to put together meaningful analytics) and to design and maintain a business model (which is another basic analytic function).

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. Nine in 10 telecommunications 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 only increase in demand; already more than one-third of participants said this is important or very 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 almost six in 10 telecommunications organizations they spend the most time waiting for data, preparing data and reviewing it for quality and consistency. Conversely only about one-third (36%) 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 56 percent are spending more than 25 percent of their time with them. However, telecommunications companies spend more time in productive analytics than do all industries combined.

A related issue is the timeliness of the data to which analytics are applied. It is encouraging that more than half (58%) of these organizations work with data that they receive in real time or close to real time, but in 39 percent some or most of the data is stale or outdated. (By this measure also telecommunications outperforms all

industries together, of which 49 percent say data is not timely.) 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. While 38 percent said the data they use for business analytics is accurate, nearly half (48%) 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 telecommunications businesses use most commonly to generate analytics. Indeed, spreadsheets are used universally in more than one-fourth (28%) and regularly in more than 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 more than half of telecommunications organizations (59%) 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 about one-third of companies; 17 percent use LOB analysts alone and another 15 percent have IT analysts and LOB analysts collaborate. The research also finds substantial cooperation of business analysts with IT in analytics for telecommunications. In 54 percent of organizations the two work together to design and deploy analytics, while business units do that for themselves in only 12 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 the research shows predictive analytics are not yet high-priority analyst capabilities for the lines of business (LOB), nor are what-if and planning-based analytics; each is deemed very important by less than 30 percent in LOB. In telecommunications, both of these types of analytics ranked low among analyst capabilities. Both of these types of 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 telecommunications organizations are seeking to improve business processes (in 77%), operational efficiency (69%) and decision-making (62%). Other drivers were identified as well: gaining a competitive advantage and increasing profitability each were cited by more than half of 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 telecommunications organizations still prefer on-premises deployment for business analytics, but the research found a significant preference (of 24%) for software as a service (SaaS), an on-demand approach commonly called cloud computing. Only 7 percent prefer software hosted by the supplier, but 17 percent 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 and benchmarking 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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*_Additional services_ are available for solution providers, software vendors, consultants and systems integrators._

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