**Harvard
Business
Review**

THE UNTAPPED POWER OF SELF-SERVICE DATA ANALYTICS

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There is a fundamental change underway in how analytics software is evaluated, purchased, and ultimately used. The days of IT-led analytics purchasing are gone, as business leaders are demanding more agile and flexible insight to speed and improve the decision-making process. Today's business environment is driving a change not only in the buying process but also in the supporting technology itself. Tools like spreadsheets or legacy BI, as well as analytics tools, weren't built to handle today's data and analytical needs.

Self-service data analytics is changing the way organizations are able to operate and make decisions. It empowers line-of-business data analysts in departments such as marketing, finance, operations, and more because they understand nuances in the data and the key business challenges far better than do centralized staff who may be working on an HR business challenge this month and Operations the next.

Alteryx sponsored the study, "The Untapped Power of Self-Service Data Analytics," by Harvard Business Review Analytic Services, to support the empowerment of these analysts. This report was the result of Harvard Business Review Analytic Services surveying a wide range of business and IT leaders across multiple industries in multiple regions. You are about to read to the details, but the overall outcome is clear—there is a need for self-service data analytics throughout organizations of all sizes, in all industries.

At Alteryx, we are leading the self-service data analytics movement for analysts in the line of business. The Alteryx platform provides analysts with the ability to prep, blend, and analyze all of their data using a repeatable workflow, and then deploy and share analytics at scale for deeper insights in hours, not weeks. Analysts can connect to and cleanse data from data warehouses, cloud applications, spreadsheets, and other sources; easily join this data together; then perform predictive, statistical, and spatial analytics using the same intuitive user interface, without writing any code.

As self-service data analytics becomes embedded into an organization, there will always be concerns about data governance and security. That is why it is important for corporate technology managers and IT leaders to understand the important roles they play in supporting this movement. Progressive IT leaders who embrace this change and get involved in the early stages will ensure that as more people get access to data and the proper tools, their organization is empowered to make better, more informed decisions.

We are excited by the results of this study, as they validate our goal of empowering analysts and analytically minded decision makers to drive deeper business insights in hours, not weeks. This shift to self-service data analytics is allowing organizations to do more with their data and analytics than ever before, and driving a culture change throughout organizations. And it is propelling data analysts and analytic leaders to take on greater and more influential roles within their organizations.

Rick Schultz
Senior Vice President, Marketing
Alteryx, Inc.

THE UNTAPPED POWER OF SELF-SERVICE DATA ANALYTICS

DATA ANALYTICS has become critical for many business decision makers. However, many of these managers and data analysts still rely on spreadsheets and other legacy-era tools that fall far short of current needs. As a result, they also rely heavily on a virtual army of data specialists and scientists, working under the auspices of a centralized analytics group, to prepare, blend, analyze, and even report on the critical data they need for decision making.

As a new Harvard Business Review Analytic Services survey of more than 600 business and IT leaders across fifteen industries shows, data analytics tools are used widely. More than 60 percent of respondents say they already use some form of data analytics tools to generate insights that contribute to their business decisions. More than 80 percent expect their data analytics tools to be extremely important to them in the next two years. Yet respondents also say their current data analytics tools fall short in several important areas. These include ease of use, speed, and scalability.

Fortunately, with the stakes this high and data being collected in unprecedented volumes, self-service data analytics tools have emerged. Compared with current offerings, these tools provide far greater speed, ease of use, scalability, and other important capabilities. They help managers analyze data with greater ease and sophistication, make better decisions, and even lower related costs.

Yet the survey finds awareness of self-service data analytics tools is still low. This suggests that the first thing line-of-business (LoB) managers can do to improve their data-driven decisions is to learn more about these self-service tools.

VALUE DRIVEN

It's easy to see why data analytics has become so important. LoB managers are increasingly being asked to deliver more value from their organizations' data and associated systems. Analytics software helps them use data for business decisions that can lead to a better customer experience, more product and service innovation, optimized business processes and, ultimately, competitive differentiation.

Using data-analytics tools can also help organizations gain three important benefits: lower labor and IT costs, higher revenue, and increased employee productivity, according to technology research firm IDC. "That's an extra benefit organizations will get over their less analytically oriented peers," says Dan Vesset, IDC's VP of business analytics and big data research.
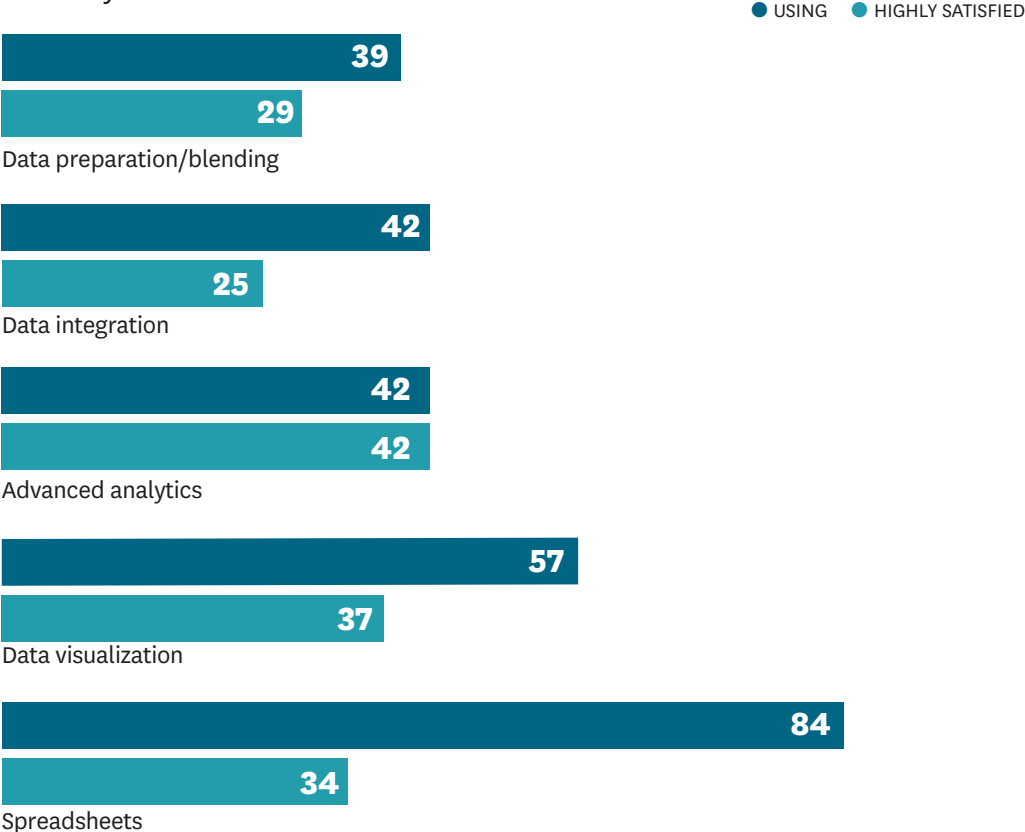
Yet two serious challenges have so far hampered LoB decision makers from realizing data analytics' full potential. First, many LoB data analysts are still burdened with old-school legacy tools and processes. They begin by manually poring over Excel spreadsheets, Access databases, and printed reports. Then they do rudimentary data manipulation and reporting using solutions that weren't built to access multiple data sources. Finally, they share their reports via email.

Second, many of today's tools aren't able to provide true self-service. Because these tools were not designed to be used by LoB analysts, users can find themselves relying on a virtual army of data specialists and data scientists, often working under the auspices of a centralized analytics group, to prepare, blend, and analyze data—or even to do the actual reporting of what they believe are the key insights. Worse, the survey finds, few decision makers are truly satisfied with the tools they currently have access to. figure 1 Of course, all this means wasted time and expense for both LoB managers and their organizations alike.

What's needed are data-analytics tools that are far easier to use. That way, they can be deployed by both nontechnical managers and LoB data analysts. (The latter are more familiar with the nuances in the data and the day-to-day business problems at hand.) These tools also need to be highly repeatable, so that initial setups can be used by others, and extremely scalable, to process the enormous volumes of data from both inside and outside the organization that today's managers and data analysts must analyze.

FIGURE 1

PLENTY OF OLDER TOOLS BUT NOT MUCH JOY

Percentage of respondents use a wide range of tools to analyze data for decision-making. But when it comes providing the needed information, few say they're either very or extremely satisfied.

● USING ● HIGHLY SATISFIED

Data preparation/blending	USING 39, HIGHLY SATISFIED 29
Data integration	USING 42, HIGHLY SATISFIED 25
Advanced analytics	USING 42, HIGHLY SATISFIED 42
Data visualization	USING 57, HIGHLY SATISFIED 37
Spreadsheets	USING 84, HIGHLY SATISFIED 34

USING: Percentage of respondents who say they use these specific tools; **HIGHLY SATISFIED:** Percentage who say they're very or extremely satisfied with the tools' ability to provide the information they need for decision-making.

SOURCE HARVARD BUSINESS REVIEW ANALYTIC SERVICES SURVEY, MARCH 2016

Today's decision makers and data specialists need to be able to access data from multiple sources, including internal storage locales such as data warehouses, CRM and ERP systems, and myriad Excel and Access files.

HELD BACK

One big challenge for LoB decision makers and analysts is that, as a result of working with spread-sheets and other manual tools, they often glean information by "gut reaction." That's because older tools, unlike today's more advanced tools, cannot dive deeply into data and allow users to easily spot trends across disparate systems. Instead, these older tools offer data results that are relatively rudimentary.

To be sure, self-service data-visualization tools are now available, and many are somewhat help-ful for eyeballing localized data compiled as charts and graphs in dashboards. But they were not meant to delve into mountains of raw data across multiple storage areas. And they certainly can't handle much-needed data cleansing, preparation, and predictive analysis.

As a result, data analysts in business can find themselves spending up to 90 percent of their time on ensuring the quality of their data, says Ray Wang, CEO of Silicon Valley–based researchers Constellation Research. That's because these managers must ensure that their data is relevant, cleansed, and prepared before they can spin it into data-visualization dashboards. And in most cases, they must do this manually. "This leaves only 10 percent of the time for discovering busi-ness patterns and insights," Wang adds.

Another limitation of today's analysis tools is that they're unable to effectively work with data from multiple sources. For today's decision makers and data specialists, that's a big issue. They need to be able to access data from multiple sources, including internal storage locales such as data warehouses, CRM and ERP systems, and myriad Excel and Access files. But these managers also need to analyze data from the growing number of external data sources, such as social media and cloud-based platforms.

Yet another challenge highlighted by the survey: more than 60 percent say they depend on data analytics specialists and data scientists for their data-analysis work. In addition, many respon-dents say they're dissatisfied with both the speed of these specialists' responses and the quality of their work. figure 2

Unfortunately, this is an old, tired story, says Wang. He notes that data analysts have for years found getting access to enterprise data sources with help from IT to be a time-consuming process. Often, data analysts find themselves "waiting in line" for attention, he explains. Adding new requests for additional data sources—such as external social-media data—only makes matters worse. "When that happens," Wang says, "IT needs to apply new rounds of data cleansing, transformation, and integration to these sources."

FIGURE 2

RELYING ON EXPERTS ...

Do you typically rely on others, such as your organization's IT or data analytics group, for decision-making data analysis?

62% YES

38% NO

BUT WISHING THEY WEREN'T ...

Percentage of respondents who say they're very or extremely satisfied with their IT or data analytics group on the following criteria.

19

Ability to compile information from inside/outside the organization

19

Speed

31

Quality of work
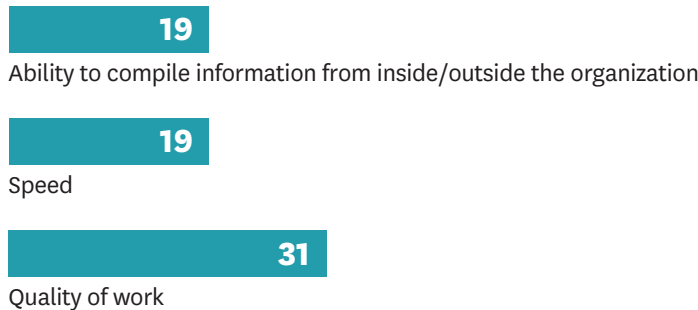
SOURCE HARVARD BUSINESS REVIEW ANALYTIC SERVICES SURVEY, MARCH 2016

IDC analyst Vesset says this issue is likely to only get worse in the future. The current shortage of skilled and qualified data staff will not only persist, he says, but also extend to include data architects and data-management experts. While colleges and universities are trying to help by offering more data classes, Vesset adds, "it will take some time before the new pool of talent becomes fully integrated into the labor force."
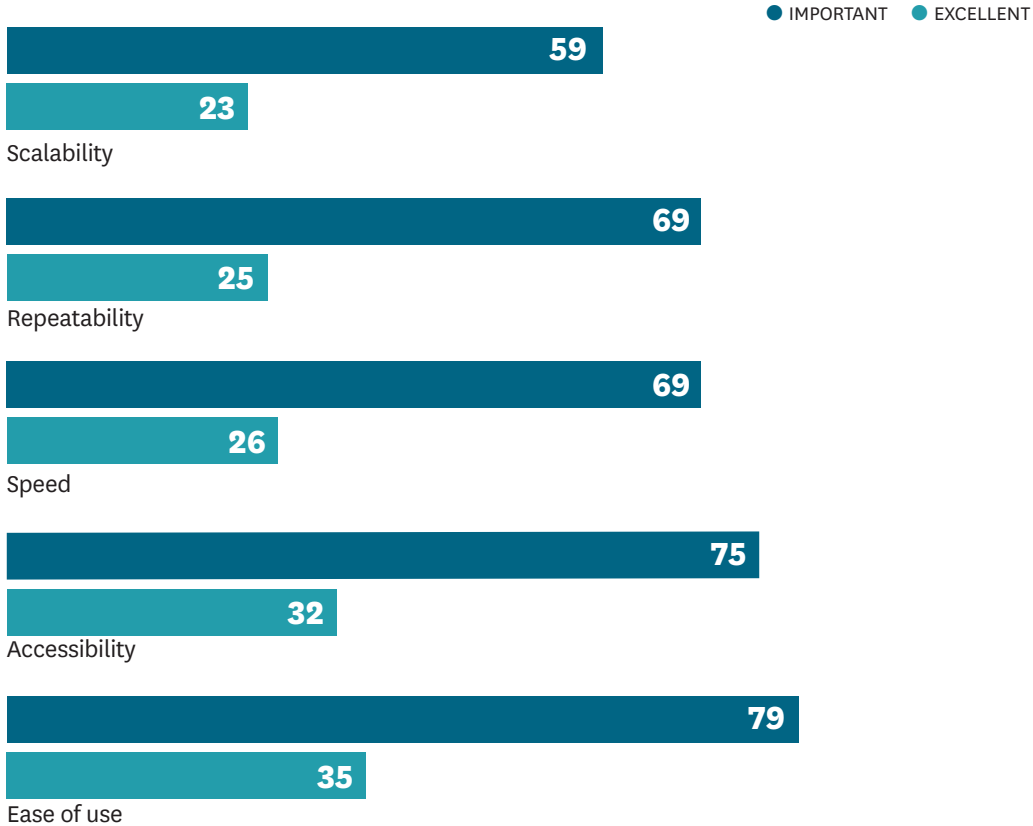
All this leads LoB managers and data analysts to be disappointed with their current data analytics process, and to seek tools that are better suited to their needs, rather than tools designed for data scientists. As the survey shows, a majority of respondents put a high value on ease of use, accessibility, speed, and other user-friendly characteristics. But unfortunately, no more than a third say they're getting these features from current tools. figure 3

The need for customization is another limitation of many current data analytics tools. LoB managers often need to customize existing reports to analyze a different geography or time frame, or make other tweaks. In most cases, this requires the original data analyst who developed the report to take time away from his or her regular work and customize the report. While this may not be

FIGURE 3

KNOWING WHAT'S NEEDED BUT NOT ALWAYS GETTING IT

Executives know which characteristics they want from their data analytics tools. But in most cases, they aren't getting them.

● IMPORTANT ● EXCELLENT

59
23
Scalability

69
25
Repeatability

69
26
Speed

75
32
Accessibility

79
35
Ease of use

IMPORTANT: Percentage of respondents who say these characteristics are either very or extremely important for their decision-making; **EXCELLENT:** Percentage who say the data analytics tools they use are either very good or excellent at these characteristics.

SOURCE HARVARD BUSINESS REVIEW ANALYTIC SERVICES SURVEY, MARCH 2016

a big deal for the occasional customization, it can become problematic for any data analyst who has to support a large number of LoB managers, or who works with managers needing frequent customization. That's why it's somewhat disturbing that fully half the survey respondents say they customize analytics reports for others somewhat frequently, while fewer than 10 percent say they never do it. figure 4

A senior analytics researcher at a major automaker, says he's well aware of this kind of extracurricular customization work. He spends many overtime hours on just such tasks. What's more, he believes his time could be spent far more productively. After a data project is completed, for example, the researcher wishes that a retroactive roundup could take place: "Nobody's going, 'Let's look backward in time to evaluate what we did right and wrong, and what's best going forward.'"

TOO MUCH CUSTOMIZING

When working with data, how often do you need to customize existing reports for others?

51%
SOMEWHAT FREQUENTLY

23%
VERY FREQUENTLY

18%
NOT FREQUENTLY

8%
RARELY/NEVER
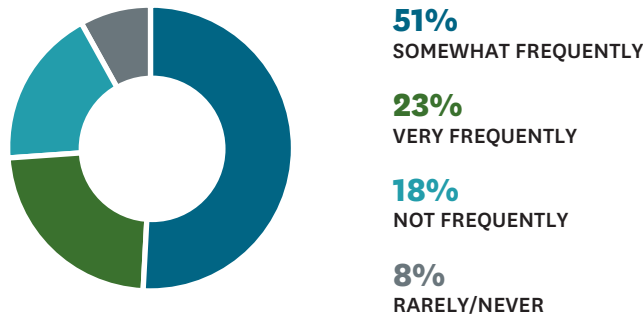
SOURCE HARVARD BUSINESS REVIEW ANALYTIC SERVICES SURVEY, MARCH 2016

SELF-SERVICE EMPOWERMENT

It's clear, then, that legacy data analysis tools are becoming prohibitively time consuming and costly. What's needed are solutions that are automated, easy to use, repeatable, and scalable enough to process the enormous volumes of data companies now draw from multiple sources, including data streams from both inside and outside the organization.

Self-service data analytics tools are the answer. This technology can empower LoB data analysts to take charge of the entire analytical process instead of relying on data specialists from IT to create the critical tools they need or to do the analysis work for them. Data managers using these tools can now deploy self-service data solutions that easily prepare, cleanse, blend, and analyze all relevant data. "With these self-service tools, you don't have to deal with IT at all," says Wayne Eckerson, president of research and consulting firm Eckerson Group. "While IT still needs to provide governance, at least for now, data managers don't need to wait in line for IT to clear a data mart for them."

As a bonus, managers with these tools can do all this work on their own, without any need to code. And they can glean data from virtually any available source. This also empowers them to share their analytic results across the business with an easily accessible graphical user interface (GUI) environment. They can make more comprehensive and insightful business decisions at speed, ultimately keeping their companies highly competitive.

ON CLOUD NINE

How much do users like these self-service data analytics tools? A lot. Preethi Elango, an enterprise data strategist at Southwest Airlines, is so high on the technology, she says there's a "self-service movement" within her company.

As Elango explains, self-service data analytics tools give Southwest's data managers more ownership and faster access to their data than ever before. "Our self-service tools are user friendly and intuitive," she says. "And they empower users to integrate across multiple data sources to discover business information and innovate with their data."

Elango adds that Southwest Airlines' enterprise data is siloed, disparate, complex, and "in varying degrees of messy and clean" in data-storage areas across several different platforms. "Our data is growing every year," she adds, "and our business users have been struggling with the inability to quickly consume, integrate, cleanse, and analyze all this data." She adds that her team wasn't thrilled with the data analysis tool it was using, mainly due to its limitations in data integration and manipulation.

That's because those legacy self-service data analysis tools simply cannot perform the cleansing, preparation, and integration required to generate the useful business results that analysts need for making the best business decisions.

Before Southwest Airlines deployed its self-service solution, the overall process was extremely time consuming. It also made outcome-sharing quite difficult. But now, Elango says, "having such powerful self-service data analytics tools has created a faster path from data to insight."

REVOLUTIONARY

The automaker's senior analytics researcher likes self-service data analytics too. In fact, he calls the technology "the new software revolution for data." Thanks to a new self-service data analytics tool, his company's LoB managers can now answer business questions much more quickly and easily than ever before, and with little of their older system's complexity. What's more, LoB managers get their data results all in one place via highly drillable and customized dashboards. As a result, the researcher's data team finds less need for the legacy data-visualization platforms it's used for years. He adds, "It's phenomenal."

As an example, the researcher cites a recent project that evaluated his company's global travel expenses and itineraries. The goal: discover insights to cut travel costs while also making travel more efficient. The project's scope was massive, consisting of more than 13 million expense records collected over the past eight years. To dig in, the team began by methodically inputting the booking data, expense data, and organizational data, such as which divisions traveled the most. Then they deployed the legacy tools at hand. In all, it took about three months before the team could create the first reports for LoB managers. While they were able to add new insights on price optimizations and more effective travel outcomes, the whole project was "a grind," the researcher says, adding, "It took its toll on people."

Along the way, the automaker installed a new self-service data analytics tool, and the researcher used it to rewrite the program for independent verification. It took him less than one day.

Now, when new travel information is input, it's automatically updated by the new system. "I have a highly efficient system that's repeatable for use in the data division," the researcher says. "I can call up all this data by pushing a button and have the up-to-the-minute status and a new set of results. And it's all in dashboards that are accessible for our LoB managers and business leaders."

WANTED: GREATER AWARENESS

However, while some organizations are gaining benefits from self-service data analytics tools, many are not. In fact, only 15 percent of survey respondents say they're extremely aware of the concept of self-service data analytics. And slightly more than 30 percent say it's a concept with which they're not at all familiar.

That will be an increasingly tough issue, says Wang of Constellation Research. The coming era will

be data driven, he believes, making it essential for organizations to build data-driven cultures that promote collaboration between IT and the business. "This will empower everyone with shared environments and connected tools," he says, "so they can all work together and learn from each other."

Not to mention that through 2020, IDC predicts spending on self-service and related data tools will grow 2.5 times faster than will traditional IT-controlled tools for similar functionality.

Self-service data analytics has supplanted IT-driven applications, according to researcher Eckerson. He adds that the shift could be as big as the social revolution that occurred when affordable cameras shifted from black-and-white to color. "In data delivery," he says, "we're moving from a monochrome world to a Kodachrome one."

Leading-edge data managers know this well, and they're swearing by their self-service data analytics tools. Many have already left the black-and-white world far behind. "When I got my self-service solution, the world opened with an unlimited possibility for solving problems," the automaker's researcher says. "Now, if someone took my self-service data analytics tool away from me, I'd go buy it myself. Seriously. I have to have it."

METHODOLOGY AND PARTICIPANT PROFILE

A total of 644 respondents drawn from the Harvard Business Review audience of readers (magazine and enewsletters, customers, and HBR.org users).

SIZE OF ORGANIZATION

Thirty percent were in organizations with fewer than 500 staff, 17 percent were in organizations with 500 to 1,499 staff, 19 percent had 1,500 to 5,000, and 34 percent were in organizations with more than 5,000 staff.

SENIORITY

One-quarter (25 percent) of respondents were executive management or board members, just under a third were senior management (31 percent), one-quarter (24 percent) were middle management, and 20 percent came from other grades.

KEY INDUSTRY SECTORS

Thirteen percent were in financial services; 12 percent were in health care or pharma/life sciences, 12 percent were in manufacturing, 10 percent were in technology, 10 percent were in education, and a further 10 percent were in government/NFP. Other sectors were each represented by 8 percent or less of the respondent base.

JOB FUNCTIONS

Twenty percent of respondents were in operations or management, 15 percent were in sales/marketing, 8 percent were in strategic planning, and a further 8 percent were in consulting. Other functions were represented by 6 percent or less of the respondent base.

REGIONS

Forty percent of respondents were located in North America, 22 percent were from Europe, and 22 percent were from Asia. MEA provided 7 percent, and South/Central America provided 8 percent.

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