Cloud Business Analytics: A Step Closer to Pervasive Adoption of Decision Support Services

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IDC OPINION

One of the biggest changes facing buyers, users, and implementers of business analytics software is the shift to cloud solutions. Just a couple of years ago, spending on cloud business analytics represented a small fraction of the $40+ billion worldwide software market. However, today, we see rapid and unabated growth in the adoption of cloud business analytics solutions. In fact, IDC expects over the next five years, the cloud business analytics portion of the worldwide software market will continue to grow five times faster than similar on-premises solutions.

This trend is not only about lowering technology and related maintenance and administration costs, although that is one of the key decision variables for today's technology purchasers. Cloud business analytics solutions provide their users with other important benefits that help in promoting more pervasive use of business intelligence (BI) and analytics technology throughout the organization.

The move to the cloud includes a better ability to address changing system scalability and performance requirements, greater opportunity to monitor software usage patterns and encourage greater utilization of the software, an opportunity to take advantage of new, modern user interfaces (UIs), easier integration of cloud data sources, more efficient information sharing with external parties, and faster development cycles for new analytic applications. These and other benefits of cloud business analytics solutions are enabling a rapidly growing number of organizations to ensure that any and all of their employees have their decision-making processes supported with the right data at the right time.

However, "cloud" can mean several different technology deployment options. The reality for most organizations is a business analytics technology environment that will be partially deployed on the cloud and partially deployed on-premises, with the additional option for hosted solutions. This hybrid environment will continue for the foreseeable future and will require organizations across industries and geographic regions to address the challenges that come with more deployment options.

IN THIS WHITE PAPER

This IDC white paper describes the current and emerging states of business analytics deployments. The broad shift from on-premises to cloud deployments has begun, and IDC expects that over the next five years, spending on cloud business analytics will grow five times faster than similar on-premises solutions. This white paper discusses drivers and some of the roadblocks of cloud-based business analytics solution deployments and highlights the offerings from SAP in this market.

SITUATION OVERVIEW

A New Phase in Business Analytics Adoption

As the year 2016 began, one of the changes noticed by IDC analysts who follow analytics and information management technology trends was that the hype surrounding "Big Data" began to subside. Our discussions with IT and business executives were no longer about the volume of data or about the fight between relational and nonrelational technology or about the worshipping of a data scientist. The conversation, and with it the investment in time, people, technology, and data, became much more pragmatic – about all data, about all users and, importantly, about all decision-making processes.

One of the victims of the Big Data hype was the loss of focus on why investment in business analytics still matters. When all you focus on is how to handle hundreds of terabytes or petabytes of data, it is easy to lose track of why you're investing in this technology in the first place. Certainly, investing in analytics technology for its own sake is not a winning strategy. The focus needs to return to decision support (as well as decision automation). The reality is that everyone in an organization makes decisions and every decision has the opportunity to drive value for the organization. IDC's Decision Management Framework makes this clear and can serve as one of the tools for helping drive more pervasive adoption of business analytics in your organization (see Figure 1).

FIGURE 1

IDC's Decision Management Framework
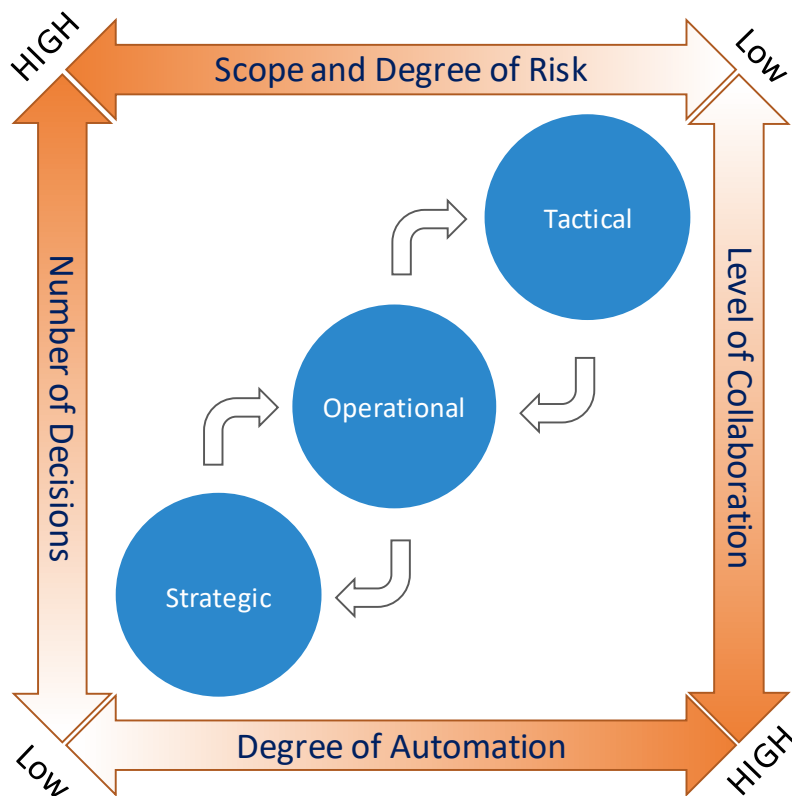
Source: IDC, 2016

IDC's Decision Management Framework highlights the existence of three sets of decision-making processes: strategic, operational, and tactical. The four dimensions of these decisions show that there is a low number of strategic decisions that have a high degree of risk, high level of collaboration, and relatively low degree of automation (at least today). Tactical decisions, by contrast, are numerous; sometimes they are fully automated and thus require minimal or no collaboration, and each of these decisions has a low degree of risk associated with it.

The three categories of decision-making need to be connected. Outputs of strategic decisions become inputs to operational decisions, which in turn become inputs to tactical decisions. There must exist an ongoing feedback loop that is operationalized using a common metadata and data movement functionality that does not silo data and software functionality.

Figure 2 highlights that each type of decision-making process is used for different reasons by different user groups and needs different technology functionality. Each user group also needs right data at the right time.

FIGURE 2

Key Attributes of the Decision-Making Framework

| Decision Making	Strategic	Operational	Tactical
What?	Performance Management	Exploration and Discovery	Operational Intelligence
Who?	Executives Managers	Business Analysts Data Scientists	Frontline Employees Automated Systems
Why?	Optimize Investments Plan for Future	Anticipate Sooner	React Faster
How?	Plan and Analyze	Model and Predict	Sense and Respond

Source: IDC, 2016

Enterprise Business Analytics Needs Today

Right data means actionable data — timely, accurate, trusted, and available on demand. Data can be internally produced or externally procured, it can be structured or unstructured, and it can be big or small — these are variables that depend on the context of the decision support or decision automation process and the specific needs of the decision maker.

As shown in Figure 3, in business analytics, what started out as data warehousing (DW) and reporting three decades ago has expanded into a broad set of information access and analytics requirements, needs, methods, and software. Today's modern business analytics suites must ensure availability of a cohesive set of functionality for visual discovery, planning and forecasting, predictive analytics, and consolidation. Plus, any and all of these technology components might be on the cloud.

FIGURE 3

Decision-Making Framework: Requirements, Needs, Methods, and Software
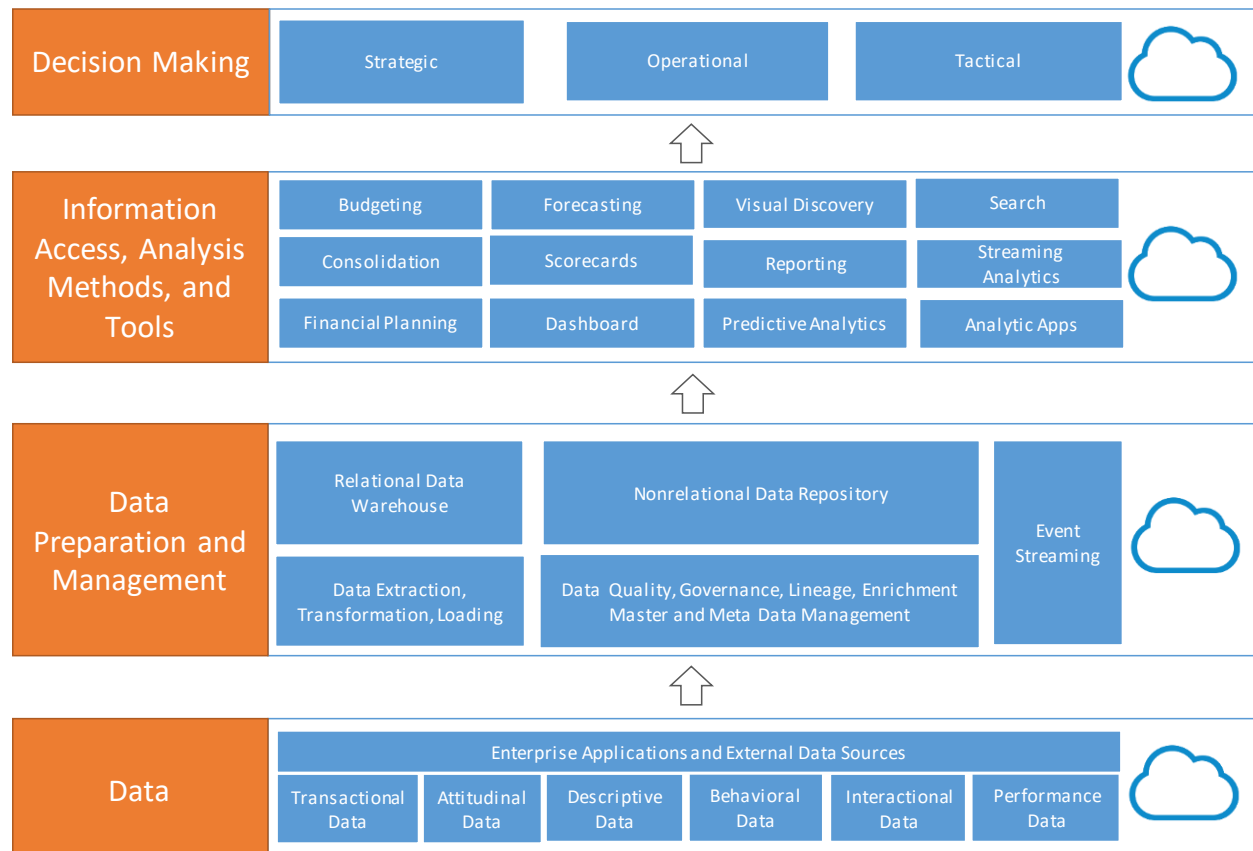
Source: IDC, 2016

The need to break down data and software functionality siloes has persisted for years but is finally being addressed more pervasively, thanks to growth in the availability of cloud business analytics solutions. The availability of these solutions is one of the key trends in the business analytics market. Just as organizations across industries have shifted away from the hype of Big Data to a broader view of business analytics, they have begun to rapidly adopt cloud business analytics solutions.

The great migration to the cloud has begun, and by assessing current demand and supply trends, IDC predicts that through 2020, cloud business analytics solutions will grow five times faster than similar on-premises solutions.

One of the technology vendors supplying the market with cloud business analytics solutions is SAP. As Philip Kim, senior director of Big Data and Analytics at Under Armour, the sports clothing/accessories and Connected Fitness social network company, and one of SAP's customers interviewed by IDC, made it clear, "Our CIO's strategy is cloud first. We need to have a very solid argument for why any particular application can't be in the cloud. All of our mobile app data for 160 million athletes is in the cloud; most of our enterprise data is in the cloud. The cost of doing the same on-premises would be prohibitive."

> **Philip Kim says, "Our CIO's strategy is cloud first."**

SAP ANALYTICS CLOUD

SAP has and continues to be one of the leading providers of business analytics software. SAP holds the largest share of the combined BI tools and analytic applications software market. Its data management, business intelligence and analytics tools, and prepackaged analytic applications are widely deployed at thousands of organizations globally. In 2014, the company announced its new cloud analytics strategy, which at the time was called SAP Cloud for Analytics. In the beginning of 2015, SAP released the first set of capabilities of the cloud business analytics software as a service – planning. By the end of 2015, SAP added data discovery and visualization capabilities and is following up these capabilities with several additional releases in 2016. The company has also evolved the name of this cloud services solution to SAP Analytics Cloud.

From Executives to Information Consumers

SAP's BusinessObjects Cloud vision addresses all users from C-suite executives to various analyst roles to both internal and external information consumers with a consistent analytics experience for those involved in strategic, operational, or tactical decision making.

SAP Digital Boardroom

SAP Digital Boardroom provides business leaders with a unified and trusted view of their organizations, most importantly, business metrics – both at the high level and with the ability to drill down deep into the far corners of the organization and to look at the detailed functions of any given line of business (LOB) or division. This application, built on the SAP Analytics Cloud platform, for supporting strategic and operational decision making enables business leaders to do so using a very compelling, touch-based user experience that's even more impressive and impactful on very large, triple interlinked touchscreens.

Under Armour, which was an early adopter of SAP Analytics Cloud, described how the new visual user interface makes it easier to highlight the few really relevant key performance indicators (KPIs) for executives. Under Armour's Philip Kim said, "We aren't effective if we only show top managers advanced algorithms or the details on billions of data points. This platform allows users to explore and interact with large data sets, visually."

SAP Analytics Cloud

The SAP Analytics Cloud is the company's flagship BI and analytics cloud platform that spans capabilities across the decision-making functionality categories (refer back to Figure 3). This includes functionality for:

- Business analysts and managers, including visual discovery, dashboards, and reporting
- Decision scientists, including advanced and predictive analytics
- Planning, forecasting, risk management, and compliance staff, including enterprise performance management and GRC

As mentioned previously, SAP has already released some of these capabilities, and its customers and prospects should expect additional capabilities to be released in 2016 and beyond. The single platform for these cloud-based capabilities is an important benefit to SAP clients that chose who to subscribe to these multiple analytic capabilities. It allows for more seamless data exchange between different organizational roles (e.g., business analysts and data scientists or executives and planners) as well as with external parties, such as partners, suppliers, and customers. IDC research shows that information sharing through a business analytics solution can strengthen relationships with clients based on codependence on a set of data and metrics that both parties incorporated into their respective decision-making processes. Cloud makes the execution of such information sharing easier.

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Embedded Analytics in SAP S/4HANA

Customer-facing and operational employees are sometimes viewed as not making decisions or not needing decision support functionality from the technology they use. This is a mistake. Tactical decision making, in the flow of operations, is a critical part of any organization and a testament to the ability of the organization to ensure that its strategy is being successfully executed. It is therefore imperative that customer-facing and operational employees have access to information or prescriptive guidance as part of or embedded in enterprise applications they use on a daily basis — whether they are in the office or in the field using a mobile device. To address this critical requirement, SAP offers the following business analytics technology:

- SAP Smart Business cockpits
- SAP Fiori analytical applications
- Predefined SAP Analytics Cloud reports and visualizations

These software provide developers with options for incorporating BI and analytics functionality into a broad range of applications.

The Impact of SAP Analytics Cloud on SAP Customers

On the surface, the importance of the shift to cloud business analytics solutions may not be fully appreciated by those who focus first and foremost on the pricing and payment models for cloud solutions. Yes, a subscription contract that spreads the cost over time may be advantageous over a large lump sum capital expenditure. However, this view does not account for the many other benefits that organizations are experiencing with new cloud business analytics solutions.

The reality is that the shift to the cloud almost always brings with it a broad range of business and technology changes that can turn into real, quantifiable benefits. These benefits fall into three broad categories:

- Pricing, productivity, deployment
- Accessibility, availability, integration
- Flexibility, innovation, trust

Pricing, Productivity, Deployment

Lower administrative and software update costs result from subscription-based cloud solutions that are maintained and periodically updated by the software vendor. With a cloud solution, the tasks of applying updates and patches turn into a process of working with the vendor to assess timing of updates and their criticality. Similarly, the tasks of tuning system performance are offloaded to the vendor. Of course, the need to understand your organization's data, decision-making processes, data models, and metrics can't be ignored and shouldn't be surrendered to an external party. Cloud business analytics solutions enable you and your colleagues to focus on these high value-added tasks. As the head of the BI group at a European manufacturer said, "With the range of software our users require for data access, analysis, and planning, it is becoming trickier to keep up with all the updates. Our goal is not to do that but rather to support business questions."

Cloud solutions also bring deployment options. Not all "cloud" solutions have to be in the public cloud and not all of them have to be off-premises. The decision for a particular type of cloud deployment will depend on several business and technology variables. One SAP client we interviewed has his/her data source physically located on the company's real estate where the data can remain behind the company's firewall and does not need to be replicated to the cloud.

Accessibility, Availability, Integration

"Initially, SAP Analytics Cloud, is for the LOB analyst and decision maker – ultimately, for a manager who makes an operational decision. We are structuring it for dashboards to show what drivers are behind the changes in key performance indicators and display the trends in these drivers and KPIs," said Philip Kim of Under Armour. He was impressed with the new user interface in SAP Analytics Cloud and mentioned that "SAP has done a great job at rethinking the UI with its Concur and Ariba applications and is now bringing this to the BI and analytics solution." Under Armour is now looking to the SAP cloud business analytics solution to bring together highly visual, self-service functionality with a strong focus on governance, including data quality and security. Another by-product of the cloud solution is the ability to monitor user activity and preferences more consistently and more comprehensively. Rather than trying to do so at the level of individually deployed disparate software modules, a single cloud platform approach allows the organization to better understand all users' interaction across the different functionality they may be using. This helps organizations develop rules, and monitor and modify them, and increase the amount of automation in operational decision making.

From this starting point, Under Armour plans to bring together reporting, predictive analytics, and planning applications. It has been using SAP's predictive analytics software, but having this "math and modeling" functionality in the same cloud solution will enable closer collaboration between business analysts, data scientists, developers, and the LOB staff. The third step of Under Armour's strategy enabled by SAP Analytics Cloud solution is what the company called "actioning." Philip Kim said, "We like SAP because we have SAP's ERP and therefore for us it's easier to trigger operational processes such as replenishment within the supply chain based on outputs of the analytic processes." In this

case, the cloud solution enables not only integration among the various business analytics modules but also integration between analytics and operational systems. Emphasizing again the connection between different types of decisions and decision makers he added, "Executives need just a few key and, ideally, simple visualizations. Where it gets complicated is in understanding how to distill the complex data into a key visual so the senior leaders see what is driving the change and what they can do about it. To do that, we need math that works on large data sets; a system tightly integrated with the ERP and built-in workflow that extends from the analytics to execution."

Flexibility, Innovation, Trust

One of the arguments for cloud business analytics technology is the improvement in flexibility. This was confirmed in interviews with SAP clients, who cited that while cost consideration was one of the decision variables for moving to the cloud, it was viewed in context with flexibility. IDC research shows that business analytics solutions' *design quality* is one of the most impactful factors to drive more pervasive use of business analytics. We define *design quality* as the extent to which end users' expectations about the speed of adding various solution components are met. This could mean adding a new data source, new subject area, new dashboard, new metric, or calculation. The design quality can be viewed as a proxy for system flexibility and in response to ongoing decision support demands. Dissatisfaction with an IT group's ability to rapidly respond to new requests is the primary cause for end users to seek alternate BI solutions. Thus insufficient design quality often leads to silos of information that don't follow data governance policies, decentralized purchasing of software, and creation of "shadow" IT groups within business groups.

One of the keys to successfully influencing design quality is proper execution of the end-user requirements gathering process. Much has been written about the need for IT and business groups to collaborate. We not only can confirm this need but also can suggest some collaboration best practices. First, there is no question that the "if we build it, they will come" strategy does not work – hence a need for flexibility and an iterative deployment and enhancement approach enabled by cloud business analytics solutions. As one of the best-known management experts, Peter Drucker, once said, "There is nothing so useless as doing efficiently that which should not be done at all." We found that leading organizations evaluate end-user decision-making processes, not simply data requirements. In other words, they don't ask "What data do you need?" but rather "What decisions do you make?" SAP clients cited, in our interviews, a similar approach by the vendor, which the clients characterized as being heavily invested in design thinking to solve clients' users' problems. One SAP client singled out SAP Digital Boardroom to illustrate the point that this application allows the company to assess what questions executives ask and what do they want to do about the information they receive.

Another benefit of a cloud business analytics solution is that it can serve, when appropriate, as a new data integration layer. The data warehouse was intended to serve the purpose of an all-encompassing, single-version-of-the-truth data set. Today, the reality is that the relational DW remains the workhorse for largest organizations' business analytics architectures, but it is not all encompassing. With new internal and external semistructured and unstructured data from on-premises and cloud applications, it is no longer feasible or desirable to load all data into the data warehouse. One of the SAP clients stated, "We need to combine at a higher level than the DW, and we believe SAP Analytics Cloud can serve that purpose for us." The DW still has a place, but agility is an issue with most DWs. This client added, "We have Spark, Hadoop, and Cassandra deployments; we have Hybris cloud marketing and other applications that never fed the DW and likely never will. Yet this data needs to be accessed and analyzed to support decision making."

Another interviewee talked about the 20-30% annual growth for their company and the accompanying expansion of the business into new geographic markets. In this environment, the traditional approach to deploying a BI and analytics toolset on-premises at the headquarters does not work. A cloud solution provides this company the ability to expand its deployment of end-user facing BI and analytic tools and applications to the various localities while maintaining centralized control over the underlying data management layer, which ensures trust and consistency of data.

FUTURE OUTLOOK

Results shown in Figure 4 from one of IDC's surveys of 650 organizations conducted at the end of 2015 indicate that 53% of organizations (in North America) already are actively managing data in the cloud (20%) or in hybrid on/off-premises environments (33%). Yes, this is only the beginning of an expected rapid migration of business analytics technology to the cloud. IDC expects spending on cloud business analytics solutions to grow five times faster than spending on similar on-premises solutions through 2020.

FIGURE 4

Data Integration Solution Environments by Location

Q.   Thinking of your IT environment, select the platforms that data is being sent from or to in your data integration solutions.

Hybrid (33.0%)
On-premises only (47.0%)
Cloud only (20.0%)
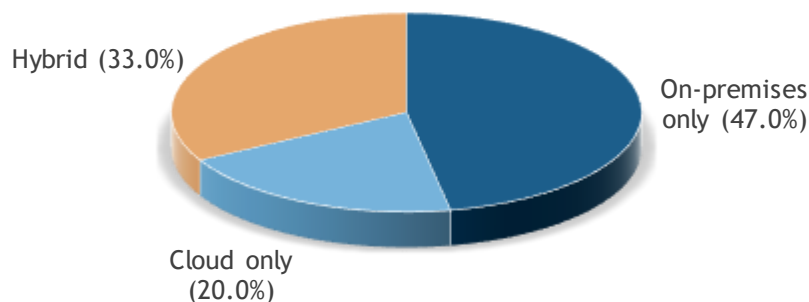
n = 650

Source: IDC, 2016

The migration to the cloud is driven by both redeployment of existing application to the cloud and by deployment of new applications to the cloud. In many cases, the core functionality of these applications is not substantially different. In other words, a process such as financial planning doesn't fundamentally change simply because the application to support it is now on the cloud. However, the same cloud deployment does enable process innovation that would be difficult, if not impossible, to achieve if the status quo were maintained.

We expect that over the foreseeable future cloud business analytics will enable:

- A much tighter integration among the various modules of a full business analytics suite
- Breaking down of data siloes that emerged due to disparate BI, analytics, and enterprise performance management applications

- Greater collaboration (where needed) among managers, LOB staff, analysts, and IT groups due to the common technology platform and data definitions.
- Improved IT productivity, as much of the daily operational maintenance tasks for the technology are handled by the IT vendor
- Improved business productivity as business users and analysts' self-service data access and analysis requirements will be met faster by a collaborative team of internal IT and technology vendor staff

OPPORTUNITIES AND CHALLENGES FOR SAP

In the current environment, as cloud business analytics adoption has begun in earnest, SAP has a tremendous opportunity to innovate and to ensure that its current and new clients are able to fulfill their cloud technology strategy and plans. Yet the company (along with all other established vendors) also faces certain challenges.

Chief among the challenges is to balance R&D and customer service investments for both on-premises and cloud-based business analytics clients. As the great mathematician Alfred North Whitehead said, "The art of progress is to preserve order amid change and to preserve change amid order." SAP must ensure that it addresses the reality of a hybrid business analytics market that allows clients to subscribe to cloud-based solutions while also enabling many thousands of clients to maintain some applications off the cloud — a decision dictated by financial, risk, compliance, staffing, and competitive factors for each individual organization.

RECOMMENDATIONS

The triggers for making business analytics more pervasively available differ. They often include specific business events and new business process initiatives, which include arrival of new executives, a need to comply with regulations, the introduction of a performance management methodology, corporate reorganization, and change in the organization's growth phase. In the absence of these triggers, a project to deploy cloud business analytics technology can facilitate more pervasive adoption not only because of its inherent functionality but also because of the accompanying opportunity for process changes. As your organization contemplates deploying current or new BI and analytics technology on the cloud, consider the following:

- The risks associated with cloud business analytics have dissipated. Cloud business analytics adoption is now well rooted in market supply and demand trends. At the risk of repeating myself, it is important to remember that adoption of cloud business analytics solutions is growing five times faster than adoption of similar on-premises solutions.
- The reality for the foreseeable future for the vast majority of organizations will be a hybrid — cloud, hosted, and on-premises — analytics and data management environment.
- Deploying a new cloud business analytics solution isn't only about cost savings. Some clients report that over a three-year period, there is parity in purely the technology costs of cloud and on-premises solutions. However, the ongoing labor cost efficiencies favor the cloud. In addition, a cloud solution offers greater flexibility in addressing scalability requirements, greater speed of deployment (and hence speed to insights derived), easier data integration with a growing number of source systems that are also in the cloud, and easier ability to monitor technology usage and adoption.

- A cloud business analytics suite from a vendor like SAP, with multiple modules, components, or applications built on the common cloud platform, will alleviate much of the friction of moving data among the modules and ensuring that common metadata is shared among analytic tools. This can enhance the collaboration between business analysts, data scientists, and line-of-business staff. However, don't expect the cloud solution to magically take care of all the perennial challenges with data quality and data integration. Appropriate time and staff will need to continue to be allocated to these business analytics challenges.
- Use the opportunity of your business analytics vendor releasing cloud solution to assess not only the software's core functionality but also the software's new user interface. The user experience of new cloud solutions, including those from SAP, will have UI improvements that will be welcomed by clients and that will encourage more pervasive adoption of BI and analytics.

About IDC

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