A Forrester Consulting Thought Leadership Paper Commissioned By SAP

Competitive Differentiation Through Innovation In Business Intelligence

Making The Most Of Existing And Emerging BI, Analytics, And Big Data Tools

May 2013

FORRESTER®

Headquarters | Forrester Research, Inc.
60 Acorn Park Drive, Cambridge, MA 02140 USA
Tel: +1 617.613.6000 | www.forrester.com

Table Of Contents

About Forrester Consulting
Forrester Consulting provides independent and objective research-based consulting to help leaders succeed in their organizations. Ranging in scope from a short strategy session to custom projects, Forrester's Consulting services connect you directly with research analysts who apply expert insight to your specific business challenges. For more information, visit www.forrester.com/consulting.

Executive Summary

A challenging global economic environment, ever shorter business cycles, and far-reaching changes in the competitive landscape resulting from the move toward the digital economy — nobody needs to be reminded that enterprises are having to adapt fast if they want to survive in this new world. It's also clear that data has moved center stage as a key enterprise asset, and not just in those companies whose core business is around selling content. More importantly, signs are emerging that new ways of exploiting data tactically as well as strategically are increasingly dividing the leaders from the laggards.

Enterprises typically use only around 10% of their data for analysis and decision-making.

Getting the most value out of corporate data assets isn't something that happens automatically. Data is worth nothing without technologies that facilitate its transformation into meaningful information, delivered in a timely manner, and which a business professional can use as the basis for making decisions. Many organizations are finding themselves held back by processes, technology infrastructure, and business intelligence (BI) tools which are no longer fit for purpose. On the other hand, there are companies that are harnessing the latest innovations in BI technology — such as interactive visualization and big data analytics — to achieve their business goals.

Only 17% of organizations regard their BI environment as highly mature, and fewer than one in five think that their BI projects have been mostly highly successful.

In February 2013, SAP commissioned Forrester Consulting to investigate how innovations in BI, analytics, and big data are helping enterprises drive business success. One of the study's key objectives was to identify what differentiates the leaders from the laggards when it comes to exploiting innovative technologies in BI, analytics, and big data. Forrester conducted in-depth surveys with 330 global BI decision-makers and found strong correlations between overall company success and adoption of innovative BI, analytics, and big data tools. In this paper, you will learn what separates the leading companies from the rest when it comes to exploiting innovative technologies in BI and analytics, and what steps you can take to either stay a leader or join their ranks.

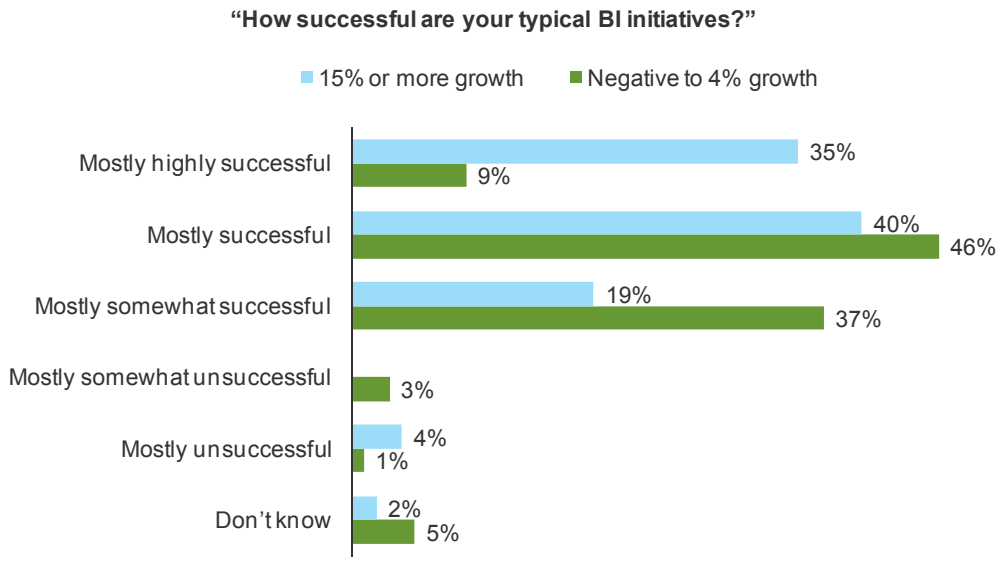
Key Findings

Forrester's study yielded five key findings:

- **A majority of organizations regard data as a key strategic asset.** Companies recognize that data is crucial to the efficient and effective running of the company, and most see information as a competitive differentiator. But while the majority regard themselves as being data-driven, only half of them use data to support the majority of their decisions, and it's clear that great potential remains for achieving further business benefit.
- **BI maturity and superior business performance may be correlated.** While cause-and-effect relationships are difficult to prove, this study — as well as additional Forrester research and other independent studies — found a correlation between higher BI maturity and better business performance, demonstrated in higher year-on-year growth. Better-performing companies (those growing 15% or more per annum) also report greater levels of BI success (see Figure 1).
- **New BI capabilities can put companies in a better position to meet today's challenges.** Technologies such as predictive analytics and big data techniques are enabling companies to exploit the increasingly large and diverse amounts of data, often in real time, for maximum business benefit. Data visualization and self-service technologies further support effective decision-making through facilitating the easy recognition of patterns and putting the tools in the hands of the people who most need them — the actual decision-makers.

- **Leading organizations are more likely to use innovative technologies.** While it's again not appropriate to speculate about cause and effect, there are clear signs that better-performing companies make much greater use of innovative technologies such as predictive analytics, big data, interactive data visualization, and cloud computing. They are also more likely to have put self-service tools in the hands of end users.
- **Agile BI environments are essential, and they need a solid foundation.** Today's fast-changing business demands and regulatory requirements call for technology that can keep up with that pace. Organizations are increasingly recognizing the importance of agile environments as a prerequisite for ensuring that the right data is in the right hands at the right time. A positive and constructive working relationship between business and IT helps find the right balance between controls and flexibility.

Figure 1
BI Success Often Equals Business Success



Base: 131 BI decision-makers (79 with negative to 4% growth; 52 with 15% or more growth)

Source: A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2013

Information Is A Crucial Competitive Differentiator

Constant change is the "new normal" in a world where challenging economic conditions add to the pressures put on executives by an intensely and increasingly competitive environment. For the majority of companies, sticking with the status quo is not an option. If any reminder was needed, it has been forcefully provided by the number of well-known brands getting into difficulty — or even going into administration — over the past year or so. Decision-makers at all levels of the organization — be they in the C-suite or operational roles — must respond by finding ways of boosting enterprise performance through increasing profitability, expanding market share, and getting (or staying) ahead of their competitors. And for many, this may turn out to be companies that weren't their competitors in the past, either because they didn't exist at all, or because they were in a different business.

To be able to respond to these competitive pressures, decision-makers don't just need data — they need data beyond the standard business performance numbers. Otherwise, how would they know how their production line's running, how their inventory levels are shaping up, or how the supply chain is looking at any given point in time? How much early warning are they getting that something may not be quite right? And what about nonfinancial measures that may influence company performance, such as brand perception, customer behavior, and other measures that don't show up in a general ledger?

Getting the right data into the right hands, reliably and securely, typically requires an enterprisewide information management strategy. Developing and implementing such a strategy is not an easy task, especially as it tends to involve crossing organizational boundaries.

On the other hand, an effective information strategy delivers many benefits. Whether it's the ability to solve long-standing problems or the identification of new revenue streams — equipping decision-makers and subject-matter experts with the right tools and giving them access to the right data is increasingly seen as an essential requirement. In this and other relevant studies, Forrester finds that companies that recognize the value of their data:

- **Reap a variety of business benefits.** When asked about how their enterprises use information in our survey, 75% of respondents indicated that they treat information as a strategic asset and 70% declared that they make data-driven decisions based on information. These organizations enjoy multiple tangible and intangible benefits such as making better-informed business decisions, monitoring process performance, and improving customer satisfaction. At the same time, it is also clear that there is still plenty of scope for further benefits realization (see Figure 2).

- **Realize tangible business benefits as a result.** Business cases to fund BI can be hard to establish. While intangible benefits are great, something more concrete is needed to support the argument. Even though cause-and-effect relationships are hard to prove, in a recent related Forrester survey, we indeed found a correlation between higher BI spending (11.9% versus 9.5% of total IT spending) and higher year-over-year enterprise growth (more than 15% versus less than 15%). Independent research further supports the Forrester findings: Firms that adopt data-driven decision-making have output and productivity that is 5% to 6% higher than what would be expected given their other investments and IT usage.[1]

- **Can leverage information to improve existing ways of doing business or find new business models.** Making the most of the data they have, companies can use it to fine-tune their product development, marketing messages, and processes to retain or gain competitive advantage. Even those at risk from disintermediation may benefit through finding emerging value streams based on data. Anecdotal evidence is also emerging that companies are increasingly using data as a "currency" in pricing negotiations. The potential for disruption is as great as it was when businesses first started moving online: As with the advent of eBusiness, information agility has the potential to transform the business landscape — everyone gets another shot at first-mover advantage!

Figure 2
Treating Data As A Strategic Asset Correlates To Multiple Business Benefits

Base: 330 BI decision-makers who indicated that their business is data-driven or use information as an asset

Source: A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2013

Lack Of Agility Is A Major Obstacle To Delivering Effective BI

Understanding what's going on in the business requires BI. And yet, complete BI success continues to be beyond the reach of most organizations: While 46% of survey respondents regarded their BI initiatives as being *mostly* successful, only 19% judge them as being mostly *highly* successful. So what may be behind this? While scalable, robust, and function-rich BI environments were a challenge in the past, modern tools and techniques have largely enabled us to address those challenges. Agility and flexibility, however, are another matter — only 25% of respondents characterized their BI environment as highly agile. The most likely cause is earlier-generation BI architectures and technologies, which appear to be having a serious side effect: a constant backlog of business requests. It's a classic "first in, first out" (FIFO) queue problem, where new BI requests come in at a higher rate than they can be addressed and fulfilled. Here are some of the reasons why:

- **The BI architectural stack remains quite complex.** In an average large enterprise operating several business lines in multiple regions, the number of components that need to be cobbled together to build complete end-to-end BI solutions sometimes reaches a few dozen. Rarely do all of these components come from the same vendor, and even when they do, chances are that some of the components were recently acquired and are not seamlessly integrated. Integration challenges first start with having to extract, integrate, reconcile, and aggregate data from dozens, if not thousands, of data sources. Next, even if a centralized enterprise data warehouse (EDW) is part of the strategy, it's never a vision that's completely realized. Last, but by no means least, it's rarely the case that a single BI tool meets all needs. As a result, IT has to deal with supporting and integrating multiple platforms: 49% of the respondents indicated that their BI environments are based on more than 10 different platforms, including database management systems (DBMSes); extract, transform, and load (ETL); BI; and master data management (MDM).

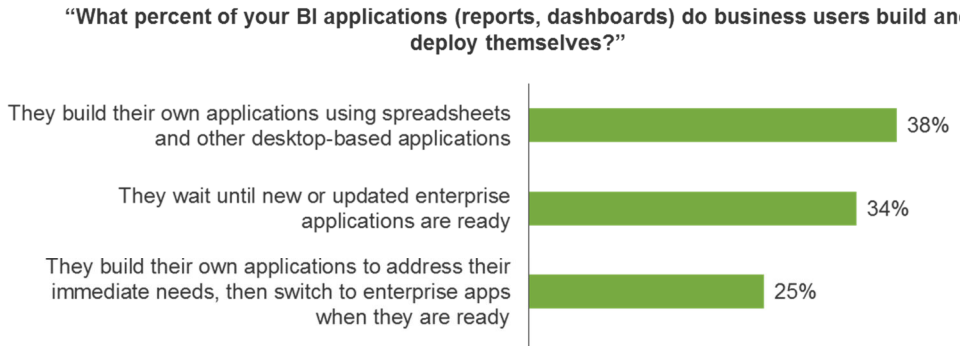
- **Implementing BI requires using best practices and building on lessons learned.** Using best practices and learning from past mistakes make a significantly greater contribution to successful BI implementations than technology and architecture alone, for several reasons. First, end-to-end BI architecture and implementations require closely coordinated integration efforts to put together multiple components like data sourcing, integration, modeling, metrics, queries, reports, dashboards, portals, and alerts. Second, it's tricky for anyone to define future BI requirements, as the business and regulatory climate may change significantly at a moment's notice. Finally, it'll never be easy to get agreement on what the key metrics should be and how they should be defined. That's why creating successful BI strategies, processes, and applications takes years of experience — and in many cases, unfortunately, also learning from failed implementations.

- **The goals of business and IT BI stakeholders aren't always aligned.** Business users — quite rightly — tend to focus on meeting the needs of their clients, such as getting a deal done or a product out the door. IT goals, on the other hand, are typically expressed in more technical terms, often in complete isolation from the objectives set for lines of business. Standardizing and rationalizing tools and platforms surely helps mitigate operational risk, and putting a sound technology foundation in place for the future is entirely legitimate, but these objectives can become constraints when out of sync with business demands.

- **Existing BI support structures often no longer meet the need.** Even organizations that have established BI centers of competence find that, in many cases, these centers are no longer fit for purpose in their current form. Typically IT-centric and project-focused, they often use methodologies that work well for clearly defined tax or regulatory reporting requirements but are simply not suited to the fast-moving BI needs of today's decision-makers.

Coupled with the ever-increasing speed of business and competitive pressures, the mismatch in goals between IT and lines of business results in enterprise standards being bypassed in the interest of simply getting things done. For example, just one-third of respondents stated that business users would wait until new or updated enterprise applications were ready — the remaining two-thirds take the law into their own hands, building their own applications using spreadsheets or other desktop tools (see Figure 3). Responses to this survey also indicated that around 40% of BI environments are separately owned and operated by either business or IT, with little joint coordination.

Figure 3
Business Users Seek Their Own Alternatives When IT Can't Keep Up



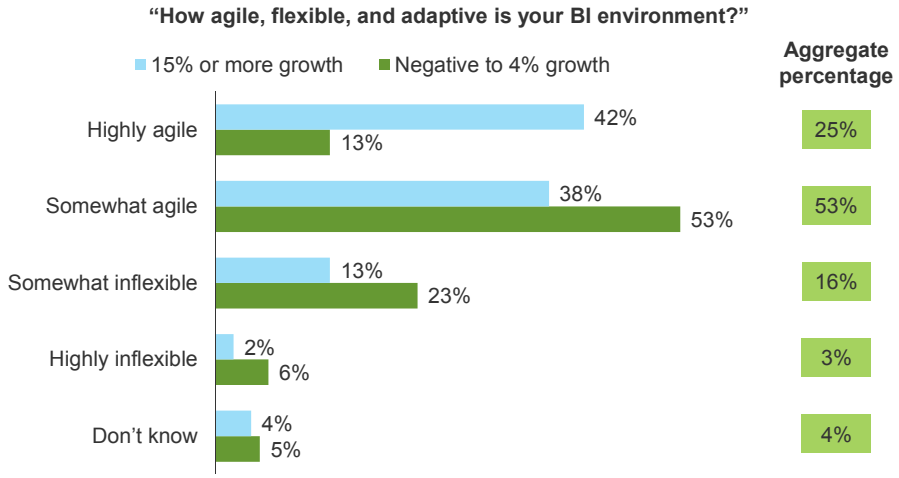
Base: 330 BI decision-makers ("Don't know" and "other" responses not shown)

Source: A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2013

All in all, there's no denying that BI requirements change faster than IT can keep up. Even when architected and deployed by the book, a BI application can become outdated the day it's rolled out. And even when it takes just weeks to design, build, and implement a BI application, that might still be too long. Whether it's an unexpected M&A event, a new competitive threat, a new management structure, or new regulatory reporting requirements, the reasons are plentiful why a BI application's lifespan can be days or weeks as opposed to months or years.

That's why it's essential to have in place a BI environment that is agile in all respects: BI software development, BI organization, and BI technologies. There may also be a link to business success. While it's not appropriate to speculate about cause and effect, it's nevertheless worth noting that the better-performing companies in the survey (growing at 15% or more) reported a greater prevalence of highly agile BI environments (see Figure 4).

Figure 4
Better-Performing Organizations Have The Most Agile BI Environments



Base: 131 BI decision-makers (79 with negative to 4% growth; 52 with 15% or more growth)

Source: A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2013

Balancing Control And Agility Is Essential For A Solid BI Foundation

Having made the case for agile BI, we must still stress that "agile" is by no means the same as a "free-for-all," where anybody with the budget or technical skills procures or builds their own BI solutions. Aside from the potential risks and costs associated with such an approach, it also reinforces existing data silos and creates new ones — the opposite of what's needed in an environment where decision-makers increasingly need a real-time, 360-degree view of their business.

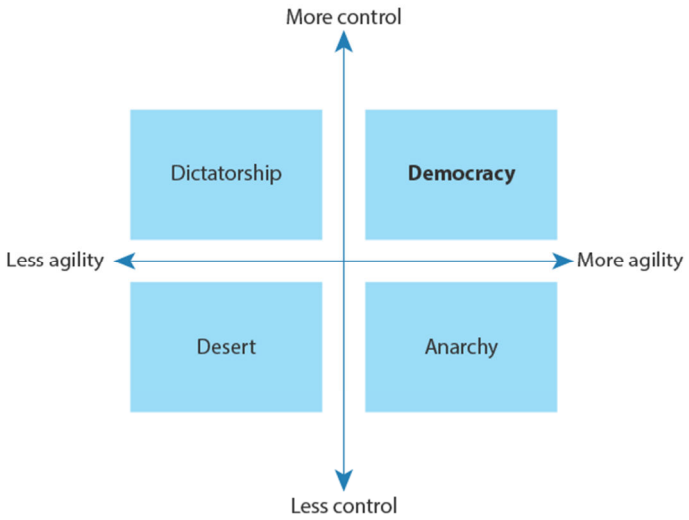
On the other hand, a completely centralized BI architecture, while providing obvious benefits, often becomes a sluggish, unresponsive environment. All new requests go through an endless stream of steering committees, approval processes, and other bureaucratic hurdles. Furthermore, an overly rigid, centralized approach tends to lead to exactly the situation it's trying to control: business users going back to spreadsheets or acquiring their own BI solutions from IT vendors.

With more and more IT budgets coming from the line of business, IT departments lack adequate funding for enterprise-scale support, thus continuously incurring technical debt. But this doesn't have to be a disadvantage: With proper business funding and IT investments in emerging and more-agile tools and architectures, business and IT can together find the right mix of business and IT governance, ownership, management, controls, risk mitigation, and agility. The main characteristics of an effective BI delivery environment are as follows:

- **To ensure an appropriate balance between control and agility.** Whether it's control or agility — too little or too much of either can easily lead to disaster. The wrong balance of control and agility may manifest in inefficient outcomes like dictatorship or anarchy; the right mix will result in the most desired outcome: democracy (see Figure 5).
- **To consider and address the risks inherent to agility.** Organizations cannot become more agile without mitigating intrinsic risks — and doing so at the right cost.
- **To verify that information types match decision types.** Decisions that are critical to the business, such as assessing which quantities of a product to order or which compound to select for an engine part, must be made with information that is trusted and can be validated. Decisions that are secondary or noncritical to daily operations can be made with unfamiliar sources that are not always validated. Additionally, organizations are increasingly mixing their internal qualified data with external data sources — without being privy to the data quality controls provided by the third-party providers. This means that it's not always possible to use trust in the information as the primary criterion on whether or not to base decisions on a particular data set; in the future, a risk-reward assessment will be equally important.
- **To maximize the evolution of the BI competency center (BICC) into an agile BI solutions center (BISC).** Its remit goes further than that of a traditional BICC, as encapsulated in Forrester's definition: A BISC is a "permanent, cross-functional, virtual or physical organizational structure, loosely coupled for flexibility and agility, responsible for the governance and processes necessary to deliver or facilitate the delivery of successful BI solutions, as well as being an institutional steward of, protector of, and forum for BI best practices" (see Figure 6).
- **To keep data preparation and data usage separate.** The prerequisite is a willingness on the part of the business to take ownership of the data usage layers of the BI stack. Provided this is in place, everybody can focus on what they do best: IT pros stay in charge of handling the data preparation layers of the BI stack like data integration, metadata, and data warehousing. Based on this solid foundation, business professionals can write their own reports, ad hoc queries, and dashboards, using tools that have either been selected in conjunction with IT, or conform to corporate standards.

Figure 5

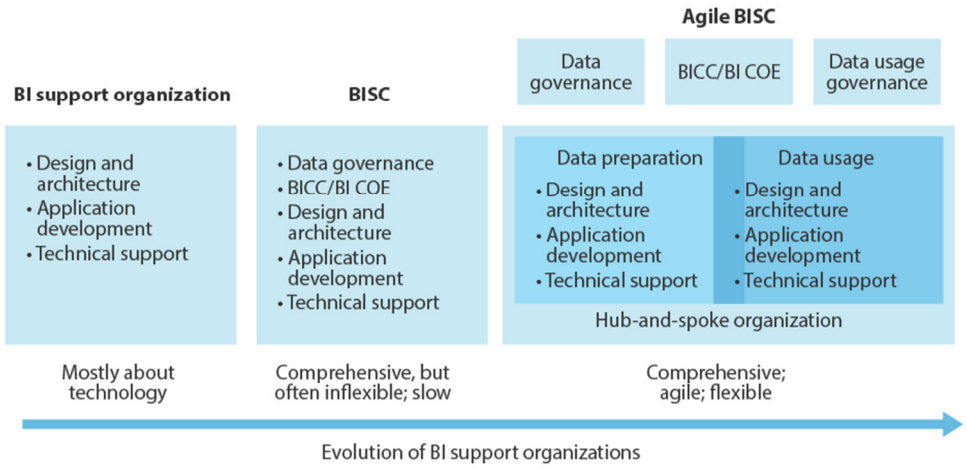
The Balance Between BI Control And Agility



Source: "Build An Agile BI Organization," Forrester Research, Inc., January 25, 2013

Figure 6

BI Center Of Excellence With Separate Data Preparation And Data Usage Organizations



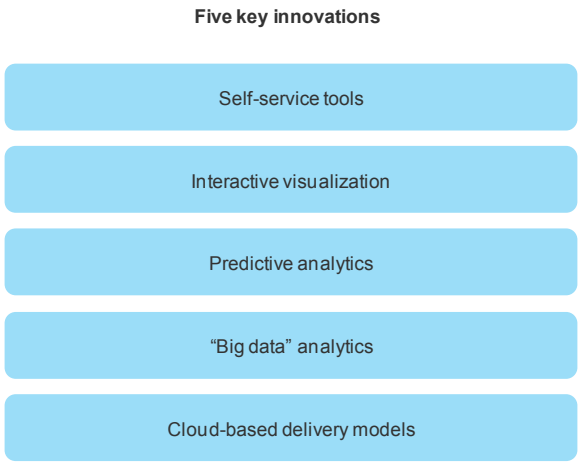
Source: "Build An Agile BI Organization," Forrester Research, Inc., January 25, 2013

Innovative Technologies Can Help Get Maximum Value From BI

A number of technologies and techniques have emerged over the past 18 to 24 months which have a key role to play in providing organizations with the agility and flexibility they need to make decisions in a timely manner, based on the most complete possible picture of how their enterprise is performing, what's happening with customer transactions, which trends are emerging, and so on. Some of these tools are also specifically designed to put that information in the hands of those who need it most at the time they need it: the decision-makers and subject-matter experts. It's fair to say that not all of these technologies — or the principles underlying them — are brand-new. In fact, some of them have been around for a long time, whether it's massively parallel processing or data visualization. What's new is a combination of innovation on the software side to make tools both more powerful as well as easier to use, and advances in hardware that can make available high performance compute power at competitive price points. There are five key innovations (see Figure 7):

"BI is not a technology; it's business capability for us. We can't be in the business of constantly tweaking performance and tweaking for new requirements. We need technology that instantly adapts to new requirements." (BI lead, consumer products manufacturing, US)

Figure 7
Five Key Innovations



Source: Forrester Research, Inc.

- **Self-service tools.** These tools are designed to help enterprises deliver on the organizational principle of separating data preparation from data usage. Through enabling business professionals to write their own reports or queries, and build their own dashboards, they do away with the time-consuming cycle of having BI specialists deliver reports which — even when they provide the required answers to start with — typically lead to further questions. Self-service tools not only allow business and BI professionals to escape from the frustrating and seemingly endless to-and-fro game, they also ensure that business professionals ask the questions they want to ask, not the ones a BI or IT professional *thought* they asked.

"Some of our challenges in working with traditional BI technologies and approaches are that things get lost in translation between users and IT. The more you enable business with self-service BI technologies, the fewer things get lost in translation." (IT manager, chemicals manufacturer, Australia)

- **Interactive visualization.** Data visualization in some form or other has been around for a long time, and nobody would dispute that it's much easier and quicker to pick out the most crucial pieces of information when the data is presented in a heat map, or to see trends and detect patterns when they are shown in chart format or on a geographic map. But even the most powerful picture can only tell part of the story — unless it's possible to drill down into the underlying data straight away, from the visualization, its value will be limited if the user has to use other tools or interfaces to get at the detail that's required to gain understanding and deeper insight. Equally, users may wish to switch seamlessly between visualizations, as it's not always obvious, for example, which chart type is the most suitable for a particular data set. And then there are companies with requirements for advanced data visualization tools, necessitated by the complexity of their data sets. All of these needs are increasingly being met, with new tools and enhancements, to existing ones coming to market at a steady stream, putting the required capabilities in the hands of subject-matter experts.

> "Our data is too complex for relational databases; it's too broad. A transaction for us is a single event in a drug trial. Think how many attributes each transaction has. Patient's height/weight, age, sex, race, blood type, hair/eye color, prior medical history (which itself may have hundreds of attributes), genetics, life style — literally thousands. Typical OLAP tools that can analyze at most several dimensions at a time are useless here. We need advanced data visualization capabilities." (IT executive, pharmaceutical firm, US)

- **Predictive analytics.** The ability to predict what might — or is likely to — happen next is an increasingly essential capability in today's fast-moving and competitive business environment. For example, in industry sectors such as utilities, manufacturing, or commodities extraction, maintenance costs and downtime can be reduced through the ability to predict when equipment is likely to fail. Retailers can improve the effectiveness of their marketing campaigns using predictive analytics, and churn rates in any industry can be reduced through taking appropriate action once those customers who are most likely to leave have been identified. Patient outcomes can be improved through predicting which drug is likely to be most effective or have the worst side effects. The list of potential use cases is endless, and it's fair to predict that organizations that choose not to make use of these techniques are likely to find themselves at a competitive disadvantage sooner or later.

> "We need to get a better understanding of what motivates our customers to buy from us again — our online conversion rates are far too low." (Senior marketing executive, European insurer)

- **"Big data" analytics.** This area of technology has probably made more headlines than any other in the past 18 months or so. First, there is the debate around definition. Whether one chooses three V's (volume, variety, velocity), or adds a fourth (variability) or even more, is ultimately of less importance than the value big data analytics techniques can bring to the business. These techniques include massively parallel processing; BI-specific database management systems (DBMS) such as columnar or in-memory; unstructured data analysis (e.g., semantic entity extracting, natural language processing, or similar); and low latency, streaming data analytics. In the past, high price tags made these technologies unaffordable for most mainstream organizations. This has changed with the emergence of competitively priced solutions that can address a wide variety of data handling and analysis requirements, which are outside of the capabilities of traditional BI environments. Big data solutions will not replace these, but are increasingly going to be an integral part of the BI landscape, in particular as more and more of the data of importance to business professionals will reside outside of existing reporting and BI systems. It's fair to say that there have also been many inflated claims around big data

> A set of skills, techniques, and technologies for handling data on an extreme scale with agility and affordability (Forrester definition)

> Caution is advised: Not all big data analytics tools can be described as "enterprise grade," and many remain experimental and immature.

technologies, but it's important not to throw out the proverbial baby with the bathwater: Wisely chosen, big data analytics tools can bring immense business benefits.

- **Cloud-based delivery models.** This includes a number of different technologies and techniques, some of which are more established and mature than others. What they have in common is freeing up corporate resources to focus on more mission-critical activities, as well as potentially providing greater flexibility and agility in the face of changing requirements, and a reduced need for capital expenditure.

Cloud computing includes:

- Managed services by a third-party provider
- Application hosting by a third-party provider
- Public cloud
- Private cloud

Leading Companies Make Greater Use Of Innovative BI Technologies

In this study, we explored not only the adoption of new BI technologies but also investigated the relationship between BI maturity and the use of the innovative BI technologies outlined above; in addition, we investigated whether there was a relationship between corporate performance (expressed in terms of year-on-year growth rate) and the deployment of such technologies. We found that:

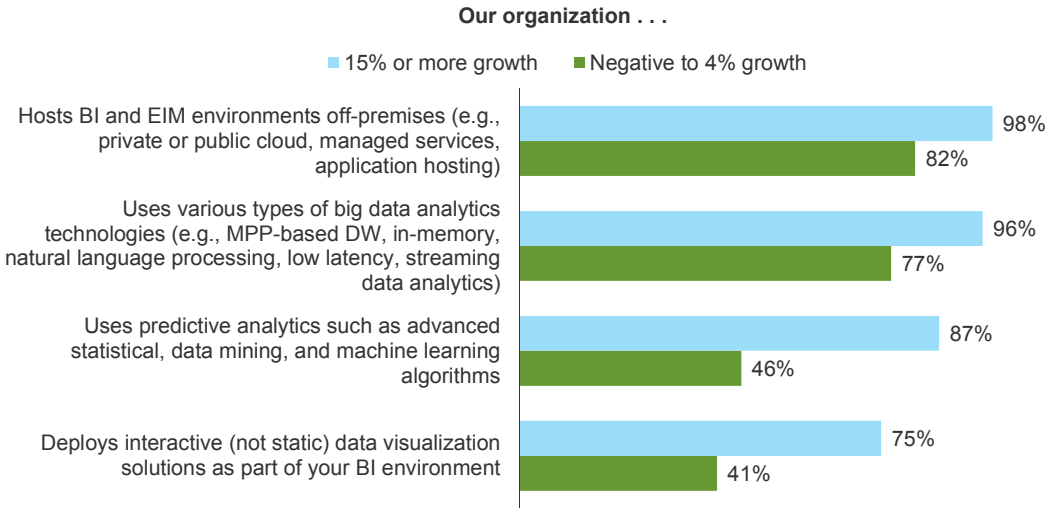
- **BI maturity and use of innovative BI technologies are related.** Companies that describe their BI environments as mature or highly mature are much more likely to have deployed interactive data visualization tools, and make more extensive use of predictive analytics as well as big data analytics technologies. In these organizations, self-service has also taken hold to a greater extent, with business users being more likely to build between 75% and 100% of their reports and dashboards themselves. There is also a greater openness toward the adoption of alternative BI delivery models, such as managed services or applications hosted by a third party, as well as cloud (both public and private).

- **Better-performing organizations make greater use of innovative BI technologies and delivery models.** Companies whose revenues are growing at a rate of 15% or more are far more likely to make use of predictive analytics, have deployed interactive data visualization solutions, and use big data analytics techniques. They're also more open to taking advantage of cloud-based delivery models (see Figure 8). Those that have chosen big data analytics are also more likely to have gone into production with their projects rather than being at the prototype stage.

- **Greater use of BI self-service correlates with better business performance.** Putting the right BI tools in the hands of the business professionals who need the answers saves time and gets away from the "lost in translation" challenge described in the previous section. The survey results showed that almost all organizations have started along the path of putting report and dashboard creation into the hands of end users. But there are considerable differences between companies when it comes to the degree of adoption, with better-performing enterprises using self-service BI tools to a much greater extent (see Figure 9).

Figure 8

Better-Performing Organizations Make Greater Use Of Innovative BI Technologies And Delivery Models

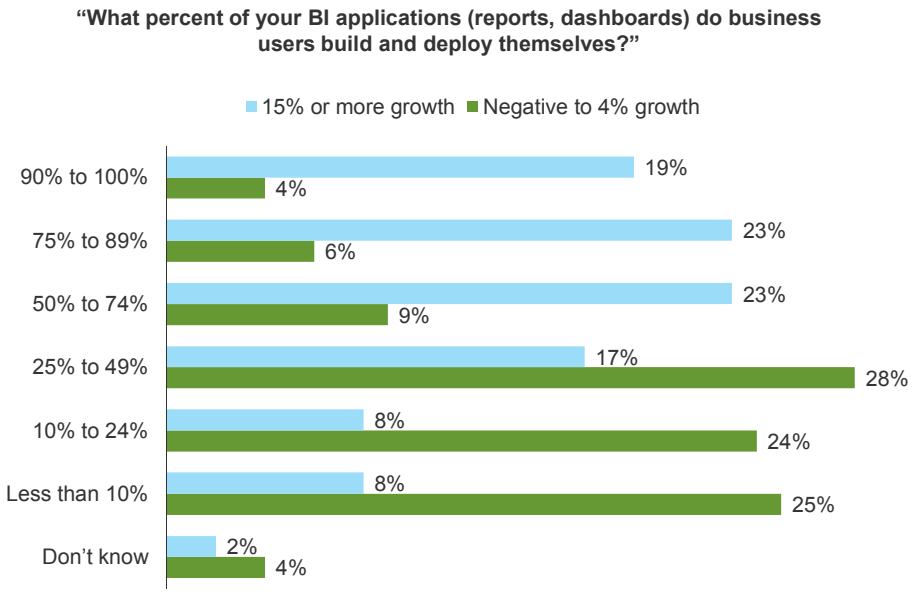


Base: 131 BI decision-makers (79 with negative to 4% growth; 52 with 15% or more growth)

Source: A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2013

Figure 9

Greater Use Of BI Self-Service Correlates With Better Business Performance



Base: 131 BI decision-makers (79 with negative to 4% growth; 52 with 15% or more growth)

Source: A commissioned study conducted by Forrester Consulting on behalf of SAP, April 2013

KEY RECOMMENDATIONS

In many organizations, the gap is widening between the data that is available to business professionals — both from internal and external sources — and their ability to transform that raw data into information and use and analyze it to support business decisions. One of the root causes of that gap is that traditional BI organizations and technology environments are frequently proving too inflexible to respond to business demands in a timely manner, which in many cases leads to "rogue" BI projects born out of sheer frustration. To overcome these limitations and to make the most of existing as well as new BI technologies, Forrester recommends:

- **Making sure that the relationship between IT and business is sound and that goals, priorities, roles, and responsibilities are aligned.** Many organizations continue to struggle when it comes to getting the most out of existing and planned BI deployments. To bridge the gap, a constructive working relationship between business and IT is essential. In situations where the relationship between business and IT is fraught or broken, start small. If you're on the IT side, try to identify quick wins that are aligned to business priorities; if you're on the business side, invite IT to the table and have a dialogue — in business terms —to understand why your needs aren't being met. Divide and conquer. Put IT in charge of data preparation and mission-critical BI applications. Empower business to self-serve most of their own BI requirements, especially for non-mission-critical applications. The latter is where innovative BI technologies play a key role. The better aligned goals and responsibilities are between business and IT, the easier it will be to justify any investment that may be required to benefit from the latest tools and technologies.

- **Establishing an agile BI solutions center (AKA BI CoE, BICC) and empowering it with piloting innovative technologies.** Or if you've already got a BI CoE, examine whether it provides you with the flexibility and agility you need to exploit BI to best effect. This includes making sure that both business and IT professionals are involved, that data preparation is separated from data usage, and that business decision-makers are provided with self-service tools as well as expert technology support. Last, but by no means least, make room for experimentation. Whether it's through formally established "play pens" or freeing up a certain percentage of BI — or indeed business — professionals' time to try out new things — the most important aspect is to assess the potential that new technologies can bring.

- **Avoiding getting stuck in lengthy pilot projects and evaluations.** In many cases, it's not always clear what benefits a particular technology can bring. That's why it's important to take a hands-on approach to establish what value a particular technology can deliver. And if it doesn't, move on fast — either to a different use case or a different tool or technique. One of Forrester's clients, a leading US retail bank, successfully experiments with thousands (!) of different campaigns based on different customer segmentation and different pricing structures every month. Innovative analytics technologies allow the bank to create these test campaigns so quickly that it's easier for them just to try *all* of the possibilities and see which ones work (highest campaign responses) rather than agonizing over picking the right ones upfront.

- **Classifying your projects for good/not good fit for innovative technologies.** Not all requirements are equally well-suited for emerging technology solutions. Define as many BI use case scenarios as appropriate for your business and regulatory requirements. For example, are you making strategic, tactical, or operational decisions? Do you need to look at real-time data or is the month-end data good enough? How often do the requirements change? How much do external entities (like regulators and partners) control your BI processes? Does the information absolutely have to be 100% accurate (even at the expense of taking more time to produce) or is a "good enough" but a timely answer good enough? Map these use cases to your earlier generation of innovative BI tools and technologies and pick the best tool for each use case based on a risk/reward model.

- **Making the most of technology to help business professionals make better decisions, faster.** Needless to say, a solid technology platform and strong governance mechanisms are prerequisites to mitigate risk and prevent "garbage in, garbage out" situations. Assuming those foundations are in place, companies should really focus on how to exploit the data they have most effectively. This in turn means augmenting existing technology portfolios with the tools that facilitate this, whether it's big data analytics, advanced visualization, or predictive analytics. Finally, the importance of enabling business professionals to do their own data discovery and analysis cannot be

stressed enough — after all, they are the ones who know best which levers really move the business. Forrester recommends that business users be responsible for as much as 80% of all BI deliverables. While that number may be lower in highly structured or regulated domains (for example, in FDA-regulated pharmaceutical GMP processes, no ad hoc reports are allowed), Forrester finds that when business users are not responsible for a majority of BI deliverables, the queue of BI requests will keep getting longer and will become unmanageable very quickly.

Appendix A: Methodology

In February 2013, SAP commissioned Forrester Consulting to investigate how innovations in BI, analytics, and big data are helping enterprises drive business success. Forrester conducted in-depth surveys with 330 global BI decision-makers and found strong correlations between overall company success and adoption of innovative BI, analytics, and big data tools. The survey was fielded online in North America, Latin America, Europe, and Asia in March 2013. Forrester also conducted three interviews of BI users to explore the subject in depth.

Appendix B: Endnotes

[1] Based on the responses of 460 BI users to our recent survey, we found a correlation between higher BI spending (11.9% versus 9.5% of total IT spending) and higher year-over-year enterprise growth (more than 15% versus less than 15%). Source: Forrsights Strategy Spotlight: Business Intelligence And Big Data, Q4 2012, Forrester Research, Inc.

When using survey data on the business practices and IT investments of 179 large, publicly traded firms, researchers recently found that firms that adopt data-driven decision-making have output and productivity that is 5% to 6% higher than what would be expected given their other investments and IT usage. Source: Erik Brynjolfsson, Lorin M. Hitt, and Heekyung Hellen Kim, "Strength in Numbers: How Does Data-Driven Decisionmaking Affect Firm Performance?" Social Science Research Network, April 22, 2011 (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1819486).