Forrester Consulting

MAKING LEADERS SUCCESSFUL EVERY DAY

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Lean Business Intelligence
Why And How Enterprises Are Moving To Self-Service Business Intelligence

A commissioned study conducted by Forrester Consulting on behalf of SAP BusinessObjects and Accenture

TABLE OF CONTENTS

Executive Summary

There are major forces at play that are changing how business operates: Business processes are becoming more integrated and complex, economic pressures are forcing companies to do more with less, and the amount of information available is becoming more overwhelming. To meet these changing conditions, companies are progressively more dependent on increasing the productivity of knowledge workers. However, the workflows, tool sets, and skills these knowledge workers are using are more grounded in industrial-revolution-era thinking and have not been modernized to adapt to the business realities of today. As a result, many of these workers are at breaking points, spending more and more time looking through and sorting information and less time adding value to it.

This current state creates a potentially tremendous opportunity for breakthrough productivity gains for companies that confront this rising time of information chaos. To test this hypothesis, in September 2009, SAP BusinessObjects and Accenture commissioned Forrester Consulting to evaluate the information usage requirements, patterns, and challenges of modern knowledge workers. In conducting 30 in-depth interviews with 24 business and six IT professionals across multiple industries within the US, UK, India, and Singapore, Forrester found that these companies — across industries, geographies, and roles — heavily depend on all types of information for operational, tactical, and strategic decision-making.

Regardless of the industry, the function, or the geography, Forrester found that information brokers all share similar characteristics. They use information from a variety of different sources both internally and externally, finding the right information for their specific need, which takes a lot of time. And when they do find it, they have to wade through a lot to find exactly what they are looking for, and they all feel that getting the right information to do their job is getting harder each year. Across Forrester's interview sample, everyone wants to spend more time applying their own unique genius to the information to create value for their company. But being caught between a proverbial rock (greater workloads and more pressure to produce results) and hard place (the increased amount of time they spend looking for information), they are finding that they are seeing their work weeks extend or realizing that there are valuable activities they could be doing with the information, if they only had the time.

But often business intelligence (BI) infrastructure and applications — implemented in an attempt to aid these knowledge workers — become complex and expensive, and many Forrester clients tell us that they depend heavily on IT for most BI needs. The world, however, does not stand still, and business often cannot wait until someone from IT develops a new report — they need it now! As a result, Forrester has seen an emergence of so called "complementary" self-service BI tools that business users procure, install, and use on their own. Alas, this is also not the right answer in the long term, since such complementary BI tools make it hard to keep a single version of truth and can create compliance nightmares and operational risks.

So what is the answer? How can business stakeholders get the information on the right data at the right time and place, while using a secure, controlled, and well-managed environment, without jeopardizing information quality and minimizing operational risks? In this study, Forrester researches and analyzes requirements and specific use cases for one type of controlled and managed self-service BI application.

Key Findings

Forrester's study yielded five key findings:

- There are several different groups of knowledge workers embedded within different organizational departments that are increasingly relying on themselves, not IT, for most of their information needs.

- In most cases, information needs for these knowledge workers are not fully addressed by traditional BI applications. One feature missing in traditional BI applications is an intuitive, search-like interface that requires little to no training.

- In most cases, information needs for these knowledge workers are fulfilled by homegrown self-service BI applications such as spreadsheets or desktop-based file systems.

- Such knowledge workers spend an inordinate amount of the workday looking for and not actually using the information. These workers feel that the amount of time spent just on *looking* for the right data and information is on the rise.

- These knowledge workers will significantly benefit from a blended BI solution that would allow these office workers to fulfill most of their information requirements, while requiring minimal support from IT.

The Roles, Drivers, And Challenges Of Information Workers In Today's Knowledge Economy

We live in a knowledge economy, and it is no longer sufficient for only senior management to have all the information. Competition is shortening business-cycle lengths, forcing businesses to be more agile and thus pushing more decision-making responsibility to all, including the lower levels of the company. Many firms, however, cannot afford to invest in enterprise BI systems to properly equip lower-level office workers but still need these employees to be more productive to respond to market forces. These employees are overwhelmed with the explosion and constant stream of information and are finding less and less time to dedicate to information gathering.

As a result, Forrester sees growing interest in strategies to help businesspeople reduce the amount of time they spend sorting through mountains of data so that they can in turn spend more time analyzing and making decisions instead. In a recent conversation with a CIO of a large European financial services enterprise, Forrester asked how the bank missed the signs and indicators of the impending financial collapse of its portfolio — even though it had all the necessary data at it's disposal. "Yes, we had the data," answered the CIO, "But we did not have the information." Indeed, lack of business intelligence, the process that transforms data into information — or at least lack of the right kind of BI — forms the foundation for why financial institutions, enterprises across all industries, and even entire nations are in the current economic mess. On the other hand, when correctly architected and implemented, BI can be a vehicle that helps us get back on the road for recovery by helping us identify trends and see opportunities.

Indeed, BI initiatives continue to be front and center for most enterprises, and BI-related activities keep on rising. Why? The commoditization of many products and services as well as the increasing size and complexity of business operations represent some of the main catalysts for this upward BI trajectory. Improved insight and smarter and faster decisions continue to remain increasingly important competitive differentiators. Other key catalysts for this persistent and growing BI trend include:
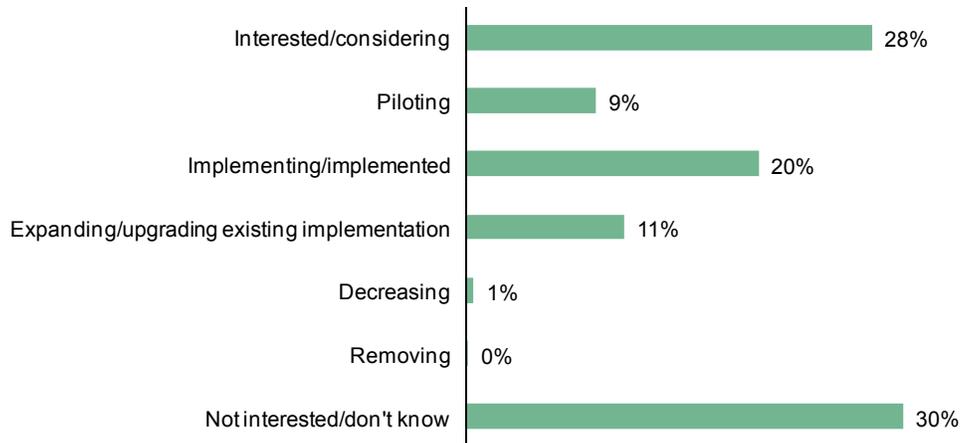
- **Increasing data and content volumes.** It's not just that large volumes of data are generated in transactional applications like ERP, from smart devices like utility meters, and from social media outlets like blogs and wikis, but this data is also replicated many times over. Data is replicated for backup and disaster recovery, analytical applications (so that it does not interfere with the operational apps), and regulatory purposes such as the 30-year record retention requirement for US-based financial institutions. As a result, analysis that could be performed in spreadsheets or homegrown desktop-based BI applications a few years ago now requires petabyte-sized data warehouses and industrial-strength BI applications.

- **Increasingly complex regulatory and general reporting requirements.** The number of regulations required to keep the increasingly complex global economy transparent will continue to skyrocket. Business intelligence applications, reporting, and analytics are the key enablers to support regulatory requirements like SOX (Sarbanes-Oxley), BASEL II, and IFRS (International Financial Reporting Standards) in the financial services sector; HIPAA and pay for performance in healthcare; and hydrocarbon accounting in the oil and gas, transportation, and manufacturing industries. Like it or not, most enterprises have no choice but to comply and implement these tools to ensure legal compliance.

- **Growing and increasingly complex business operations.** As the size of business operations expand, and siloed lines of businesses and geographical operations merge, general reporting becomes ever more complicated.

- **Hunger for more insight about internal and external processes.** No one said it better than Walter Wriston, chairman of Citicorp in the 1980s: "Information about a transaction will become more valuable than the transaction itself." Indeed, while a transaction occurs only once, the information about that transaction can be leveraged and reused numerous times in customer-facing processes, such as sales and marketing activities, and in internal processes, such as capacity, product, and resource planning. Once again, BI applications analyze the implications of every transaction, transaction aggregates, and patterns across multiple dimensions such as time, geography, product line, and customer segment, among others.

For many large enterprises, BI remains and will continue to be the "last frontier" of competitive differentiation (see Figure 1 and Figure 2). As a result, Forrester sees growing interest in business intelligence applications across all industries, business functions, and geographies.

Figure 1: The Buyer Side Of The BI Market Is Ripe For Opportunities, While Virtually No Businesses Retrench Their BI Initiatives . . .

"What are your firm's plans to implement or expand its use of the following information and knowledge management software technologies in the next 12 months?"
[business intelligence software]

Interested/considering	28%
Piloting	9%
Implementing/implemented	20%
Expanding/upgrading existing implementation	11%
Decreasing	1%
Removing	0%
Not interested/don't know	30%

Base: 1,015 North American and European IT and strategy decision-makers
(percentages may not total 100 because of rounding)
Source: Enterprise And SMB Software Survey, North America And Europe, Q4 2008

Figure 2: . . . And In 2008, Compared With 2007, There Was A Significant Reduction In The Number Of Businesses That Are Not Using BI

"In 2008, where will your organization be in the adoption of each of the following types of information and knowledge management software?"
[business intelligence software]
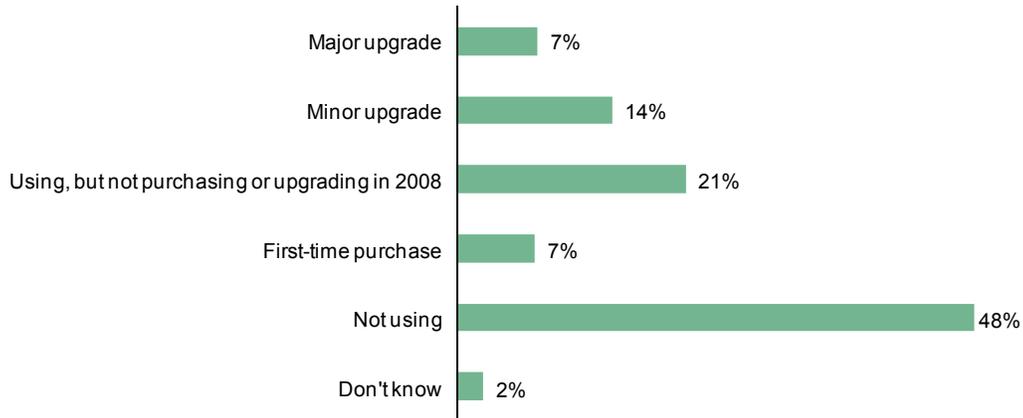
Base: 1,158 North American and European IT and strategy decision-makers
(percentages may not total 100 because of rounding)
Source: Forrester Enterprise And SMB Software Survey, North America And Europe, Q3 2007

Patterns Of Knowledge Workers Within Different Lines Of Business

"Knowledge worker" is a good label for a class of business users of information, but it's also an abstract term. No sales operations professional, product marketer, or business financial analyst would self-identity with the term, nor are there many organizations that have created functions whose job it is to maximize knowledge worker productivity. However, the fact of the matter remains that people who use information are spending more time looking for the right data and content and less time applying their individual genius to that data to add value for the business. The benefactors of increased knowledge worker productivity are the LOB owners they work for:

- **Sales leaders** benefit by increasing the selling time of their salespeople, or by the improved close rates that are linked to individual salespeople being able to better connect the dots between products and services and customer needs.

- **Marketing leaders** benefit by improving the effectiveness of spending realized by individual campaign managers tracking and analyzing mountains of data generated from the programs better, or by uncovering new differentiators found by brand managers poring through transactional data and customer behavior metrics.

- **Finance leaders** benefit by discovering productivity enhancements uncovered by finding redundancies across business silos, by finding more pockets of cost savings with more detailed analysis of vendors, or by performing more audits.

To bring the abstract concept of "knowledge worker" to life for the executives who would be the benefactors of increased productivity, Forrester interviewed 30 professionals in multiple industries within the US, UK, India, and Singapore to evaluate information usage requirements, patterns, and challenges of modern office workers (see Figure 3). Survey participants included decision-makers in sales, marketing, finance, and IT roles: 24 business and six IT professionals. Forrester focused on the specific job functions of those who are:

- Heavy users of information in their day-to-day activities.

- At a level to offer significant business impact, but not senior enough to have a staff of their own business analysts.

- Not in a position to have direct access to IT on a daily basis for various economic, organizational, and other reasons.

In general, regardless of their function, the majority of these professionals waste a tremendous amount of their time trying to find and sort through the information they need to do their jobs. (See Table 1)

Table 1: Forrester Study Key Findings

	Sales	Marketing	Finance	Across all three roles
Sample roles	Sales manager Sales operations	Campaign manager Product manager	VP finance Audit	
Do not use enterprise BI apps; rely mostly on Excel	3 out of 9 9 out of 9	4 out of 9 6 out of 8	4 out of 7 6 out of 7	11 out of 30 26 out of 30
Do not have proper access to IT resources	1 out of 9	1 out of 8	3 out of 7	5 out of 30
Find it difficult to communicate with IT	3 out of 9	4 out of 8	3 out of 7	10 out of 30
Spend more time looking for information than using/acting on it	4 out of 9	2 out of 8	3 out of 7	9 out of 30

Source: A commissioned study conducted by Forrester Consulting on behalf of SAP BusinessObjects and Accenture, October 2009

The Forrester study also found that the traditional lines of demarcation between information producers and consumers are blurred today. Knowledge workers now mostly operate as both information consumers and producers and often don't require help from IT to set up analytical

engines or models. In other words, one knowledge worker's valued-added output is another's data input. They can perform the work themselves, they just need help: organizing all of their information feeds, sorting through the information to locate the nuggets of data they are looking for, and getting that information it a format they can better work with it in their spreadsheets.

Clearly, there are common threads across all interviewees that indicate the potential of a self-service approach to providing knowledge workers with self-service business intelligence capabilities. Translating that potential into concrete business impact requires a more focused examination into some of the roles targeted in the Forrester study.

Additionally, Forrester concentrated on researching and uncovering the specific use cases that are not already fully addressed by traditional BI tools. Use cases stand out when:

- **A businessperson has no time for IT.** What are the types of analysis, queries, or answers that a businessperson might execute by themselves rather than asking IT for help? For example, a businessperson is not going to write a complex report, like a customer/billing statement, but she will probably want to analyze sales trends by region, by product, and by time period on her own without IT help. Typically these are information and analysis needs that change on a daily and/or weekly basis, so IT often cannot keep up with requests.

- **A businessperson is not sure where and how to get started.** There many times when a knowledge worker doesn't have a specific question in mind when an inquiry process is started. A good example is when the object of analysis has many "dimensions". Dimension is a descriptive (nonnumeric, nonadditive) attribute, such as region, time, business unit, etc. If such an object, for instance, is a checking account transaction that has only a few dimensions; one would have a pretty good idea where to start the exploration. But on the other hand, if the object is much more complex, such as a patient in a drug trial, who has hundreds of dimensions, it is often hard to pinpoint exactly where one should start the exploration.

With these criteria in mind, Forrester study uncovered the following opportunities and use cases.

Business Opportunities For Sales Departments

The Forrester study focused mostly on three types of functions within a sales organization:

- **Sales operations professions** perform most of the major analytics of sales performance and are typically the liaison between sales and IT.

- **Sales managers** are responsible for managing the performance of their team while also reporting progress and trends to their management.

- **An individual contributor** who manages large relationships is a person who manages the business relationship with a large account and works with a lot of operational information across both businesses.

From the perspective of working with information, how difficult finding and using information is, and the support each are getting from IT; virtually all shared the same opinion: "This is really hard, and we're not getting much help." Perhaps even more interesting, the patterns were very similar across the industries interviewed: financial services, consumer electronic goods, automotive manufacturing, medical equipment manufacturers, and consumer packaged goods. Respondents

were all very enthusiastic and quick to identify with the benefits they would receive with a self-service BI platform. One institutional investor sales manager in London said, "It's huge, we'd be able to cut out about 3 hours out of our pitch deck development process, which would mean that each salesperson could present to one more client each day." However, when asked about his confidence in his IT group's ability to deliver that to him, a sales manager of a consumer electronic company tempered his enthusiasm. "I'm working with IT on our CRM system; they just don't understand what we need. I know they want to help us; they just don't realize all of the stuff we have to do to make things work."

"Patty Jones", Sales Manager, Automobile Manufacturer, US

Role	Patty Jones is responsible for driving more car orders from all of the dealers in her region. With huge drop-offs in purchases, extreme volatility in the loan markets, and dealing with very nervous dealers, she's had an extremely challenging year. She views her role as more of a business consultant and to help calm the nerves of very stressed-out business consultants, and she's learned to use more facts and figures in her meetings with these independent business owners
What she does	Patty's company maintains a variety of internal and dealer network systems where she can pull almost any combination of information she wants. For example, she might pull various car shipment data from her company and her competitors, sort that information by ZIP code, and compare that information to unit sales of that dealer. Or she'll analyze information from dealers across the country that have similar demographics to find evidence of best practices she can share with other dealers. She takes all of this information and creates specialized reports and plans for each of her dealers to help them run their independent businesses more effectively.
Problems	With such volumes of information to access, and each client having its own unique circumstances, Patty can't really use most of the standard reports generated for her, so she spends a tremendous amount of time navigating different systems, portals, and other information sources to tailor the information her company collects to the unique needs of her dealers. Many of her dealers rely on her to come with specific reports each time, which wasn't a problem in the past. However, with how tight and scary the market is, she's spending more time creating new reports for her dealers and is anxious about how much time she's spending pulling this information together at the expense of all-important "face time" with clients. Patty says that if the data is there, we can find it. The problem is that there is a lot of filtering before she gets to the "right" data. After she asks "the five whys" about a number or issue, she often gives up and moves on to the next challenge. Additionally, getting her clients, auto dealers, to self-service their information needs is tough. Many of them have been in the business for many years and are used to running the business by phone and faxes. Even the most modern BI tools are not intuitive enough for them.
How self-service BI could help	• **Instant answers.** Patty knows what information she needs, but finding these different nuggets she's looking for is very time consuming, and she

	cannot afford to work with IT every time there's a new information request.
	• **Finding information in big stores or across many different source.** There is no one easy source to go to, and when Patty gets to the right places, figuring out how to get what she's looking for can take a long time.
	• **Pushing some of the information to dealers**. Patty would love the idea of pushing the concept of self service more to her customer so that they can get answers to straightforward questions themselves (like how many cars did a dealership in a different state sell last month) while freeing up her time to concentrate on the business analysis part of her job.
Business impact	People overlook how important getting the little details are to selling products. In this case, Patty would be able to more easily share best practices across all of her dealers, thereby making them better businesspeople. With more facts, figures, and data she can communicate with more confidence and help isolate specific things individual dealers can do to make more money. All of these are very important to help overcome the anxiety of dealers to give them confidence to buy more inventory.

The study also uncovered the following use cases in sales departments.

Industry	Business process	Use case	Why new approach is needed
Any B2B	Risk management	Looking for trends in salesperson violation of discount policies	B2B, complex transactions, multiple exceptions. Correlation between discount and individual contract exception may be on many levels
Retail banking	SMB and personal account cross-sell and upsell	Account valuation	Banks generally do a poor job at selling their customers more services. Part of the reason for that is that they treat customers as accounts, not relationships, and therefore miss the potential business that they could be doing with a client. One particular customer segment, the small business account holder, a relationship held by the commercial banking business, represents an additional revenue stream for the retail side of the bank — bringing over the personal banking business of the small business owner. A retail bank branch/store manager or territory manager, with a customer in his/her office needs an intuitive and on-demand ad hoc report that would identify an immediate opportunity to cross-sell or upsell to the client.
Consumer	Sales	Managing	Salespeople must compete against other

packaged goods		major accounts	companies for the shelf space of a retailer and define space already secured. With so many different product lines to manage, different stakeholders to work with, various demographic information and transactional information to share and compare, account executives must turn all of this information into reasonable insights and action plans for customers. Increasingly, the salespeople who can demonstrate how they are helping the retailer become more profitable will win more space. However, the difficultly of collecting the information is too time consuming, creating a barrier for the salesperson from establishing the right level of business partnership with his customers.

Business Opportunities For Marketing Departments

Depending on the business (consumer goods, retailers, business to business, etc.) the role of the marketing organization varies greatly. In some cases it drives the whole business, in others, it supports the business. In either case, practically every marketing leader is under pressure to show a link between what they spend and the business impact of the investment.Today, all marketing organizations are collecting all kinds of metrics and data, but most still struggle to connect the dots between the information collected and real business value. This condition permeates from chief marketing officer down, throughout the whole organization. Some of the market roles survey in the report include:

- **Campaign managers** are responsible for promotional activities to help drive interest and sales.

- **Product marketing managers** are responsible for creating the business plan for a given product set and increasing its market share.

- **Pricing managers** are responsible for creating effectives pricing strategies for the companies products and services.

As one CMO of a large global pharmaceutical company told put it, "If I want a seat at the table, I have to show linkage to business results. If I want to keep it, my people have to be able to do the same." To understand the information challenges faced at levels underneath the C-suite, we focused our efforts to interview product managers, product line marketing managers, and campaign managers. Across the board, regardless of role or industry, everyone interviewed was focused on showing some sort of connection between what they do and how it adds value to the business.

"Sumit Aggarwal", Regional VP Marketing, Telecommunications, India

Role	Sumit Aggarwal is the VP of marketing for a telecommunications company in India and Australia and is responsible for all local branding and promotions in his geographic region.

What he does	With so many competitors in the market, a large product portfolio, and a rich and diverse set of customers, sorting through a variety of information to analyze these trends and make sense of this data is a big part of Sumit's day.
Problems	Even though he engaged an external service provider to aggregate information like market share, customer satisfaction, competitive shipments, and demographics sorted by different segments and product categories, he still spends a large portion of his day looking for this information. Finding the unique combinations of programs, messages, products, and price points for different buyers in a highly competitive market is critical for his company to succeed, and Sumit is always interested in ways to reduce the time spent looking for information and finding better ways to share it.

Sumit says that typically he runs queries for what's easy to get at. He's concerned that he doesn't typically cast his net wide enough because he has limited time and resources to get at what he can view and analyze. Sumit says, "You have to sort of peel back the onion . . . typically you have to go through a lot of steps to get to what you want." |
| Business impact | In a highly competitive and price-sensitive market, the right offer for the right person at the right time is extremely important. With so many different combinations of plans and ways services can be offered, Sumit and his team's ability to find the right patterns before his competitors do has a major impact on his company's market share. |

The study also uncovered the following use cases in marketing departments.

Industry	Business process	Use case	Why a new approach is needed
Any B2C	Campaign management	Analysis of what types of campaigns have historically yielded best results	Large-volume campaign-related transactions

Multiple variables (channels, products, customer segments) may affect campaign effectiveness. |
| **Any B2C** | Competitive analysis | Analysis of competitive new products, pricing and promotions | Thousands of competitors (especially in eCommerce)

Business users need to become proactive and react immediately to competitor actions |
| **Any B2B and some B2C** | Marketing operations | Calculating and communicating the value contribution of marketing | As more and more companies are looking to measure the business impact of marketing, the answer might be different based on who is asking, or what layer of the organization is adding value. Data sources about: advertising data, Web traffic, campaign |

			management, customer segmentation information, market research, and sales data are all common forms of information used by marketers. Being able to answer questions like how the money you spent on a campaign drove revenue for your product is difficult because the information to associate investment with results requires a tremendous amount of manual analysis.

Business Opportunities For Finance Departments

Finance organizations are under tremendous pressure in this climate. The credit crunch has created a lot of focus on the treasury and the fact that more ongoing operations are being financed through income, rather than credit, is a major change. This has a ripple effect on all budgeting and cost models, forcing a lot of change across the enterprise. While companies have removed the big cost items off the balance sheet, CFOs are extremely focused on wringing inefficiency out of the business and recognize that these savings come from looking into processes and finding redundancies across functions. One CFO of a large technology firm told us, "I think we could cut a major chunk out of marketing's budget, I just don't know which chunk to cut." With tight cost controls and a focus to find cost savings, many different roles are being encouraged to find new ways to wring costs out of the business.

- **Auditors** review contracts, policies, or security information to identify anomalies with payments, government regulations, or internal procedures.

- **Business analysts** work within finance to review business functions, budgets, and costs to identify areas for productivity enhancement.

- **Business liaisons** are the finance executive assigned to a business unit or department who assists those groups in budgeting or other business processes while working with corporate finance to coordinate polices, spending, and reporting.

In speaking to these roles, Forrester found similar patterns. These businesspeople are certainly finding big savings opportunities across the matrix, but the level of effort to collect the information to perform the analysis is extremely difficult. In some cases, it can take days to find all of the right information to analysis a cross-functional process.

"Allison Gallagher", VP of Finance for R&D, Global role based in US

Role	Allison Gallagher is the head of finance for the R&D function of her business and also operates as a liaison with corporate finance. Her job is to help the engineers set budgets, create and analyze P&L statements, and to create business cases for investments they want to make; while also driving corporate finance standards.
What she does	Ever since the collapse of the financial markets, her job has changed tremendously, as the company is developing a whole new set of operational

	and financial metrics. Because cash is so precious in this tough economic environment, she's had to develop new models to manage cash and help the executives she works with to better understand the business implications of the volatile global financial situation. She's standardized most of the basic reports to free herself up to work on the variety of complex models and reports required to keep her various department heads informed about the seemingly daily fluctuations in different markets, the cash position of the firm, and how those impact each manager's plans.
Problem	Even though her IT department has invested in a variety of systems that she can pull information from, Allison still spends more than 60% of her time trying to find the information she needs to do her job and finds this task more difficult each year. She's looking for information that's so specific to the analysis she's performing that the data pulled from the various systems in her company (like HR, sales, procurement, etc.) are not in a usable format and require her to manually sift through these reports to find the nuggets she's looking for. For example, the R&D people want to increase the amount of equipment they have to expand their focus on a particular technology they are developing, and management now has new rules about the types of business cases that must accompany a capital expense. She now has to provide a variety of options (cost of no decision, five-year projection, impact on facilities, utility costs, various risk factors, outsourcing options, etc.) that were not required before. Her systems are not designed to give her this information, and she has to go to many different places to find the piece parts of information she's looking for across the organization.
How self-service BI could help	• **Instant answers from a single place.** She knows what she's looking for; getting the right nuggets of information to do complex analysis is incredibly time consuming. • **Finding small slices of information in big databases.** To do the kinds of detail analysis that Allison does, she often has to go to several big systems and pull down a large set of information that she then has to go through manually in a spreadsheet to separate out what she doesn't want before she can even start looking at the data set she wants to use.
Business impact	As Allison develops more complex and sophisticated spreadsheets to model the cause-and-effect relationships across budgets and different data sources, she's increasingly aware of the risks emerging for her company. More and more business leaders rely on her specialized reports to navigate a complex environment, and sinse she spends so much of her day collecting the data to run her models, she hasn't documented that. Because no one else could easily pick up her work, Allison worries about the risks to the business should she be forced to be away from work for an extended period of time. She thinks a lot of this risk could be avoided if it weren't so hard to get the information she needs.

"Charles Vickers", Manager of Internal Audit, Large State Government, USA

Role	Charles Vickers is a manager in the audit department working for the government of one of the largest states in the US. His job is to make sure all of the various agencies within his state comply with state and federal regulations while also providing oversight to contract and procurement processes.
What he does	Depending on the audit, his team of specially trained professionals takes small samples of transactions within accounts (like the last 20 purchases made by a field office in the department of transportation) and reviews them to determine if everything is in order. Pulling the information from all of the difference sources of records (e.g., procurement systems, departmental budgets, approvals, work performed, payment records, etc.) is extremely time consuming and can take days.
Problems	While most audits are routine, some accounts (where the state has prepaid for servers) are very complex. His team always finds big savings for the state – usually in the millions of dollars. However, budget limitations prevent Charles from hiring more people to find do more audits and find more savings. Due to staff limitations, Charles estimates that on the high end, a large sampling of an account would comprise less than 5% of the total transactions and the big limiting factor to doing more audits is his team's time. Also, traditional BI tools, even Charles' favorite, spreadsheets, aren't doing a great job of finding a needle in the haystack — which is exactly what the auditors are tasked for. Traditional BI tools are great at answering very specific questions, but Charles often is just throwing darts at a board to see if he gets a hit with a mismatched transation or a transaction that violates a rule. Specifically, some of Charles' accounts use complex data sets, that Charles has to sift through. He says "The [current tool] is a series of cubes, and it's not always clear what's in these cubes, you have to go to each cube one by one to determine which one has the information you are looking for. A tool that can search across the cubes would be of tremendous help"
Business impact	By reducing the amount of time his team spends looking for and formatting information by just 25%, his team would be able to dramatically increase the number of account to audit, and thereby find millions in more savings.

"Steve Owen", Senior Financial Business Analyst, Consumer Electronics and Scientific Equipment Company, USA

Role	Steve Owen is a senior financial advisor for a company that manufactures a variety of scientific devices ranging from simple calculators and microscopes to specific laboratory equipment. With the economic downturn's tremendous impact on retail sales, the company created a new role for him to find more sophisticated ways to save money without impacting production efficiencies. He reports to the CFO, but was tapped for this position because of his operational expertise in production.

What he does	In an effort to better control and manage costs, the company is acutely focused on understanding their whole value stream, doing cost/benefit analysis of every spend item, and tying the whole system to orders. To help establish these tight controls, Steve has been pulling information from different internal systems: sales, shipments, materials, manufacturing operations, financials, and external sources: economic forecasts, industry benchmarks, competitive shipments, etc. Steve's goal is to tie individual activities back to the income statement and create models to help with decision making, and ultimately move to a place where they don't accept delivery on anything until the last possible minute it's needed.
Problems	He spends an enormous amount of his time looking though all of these different sources of information, mining out the details he's looking for, and populating them in to a "gigantic" spreadsheet. This file is shared with all managers the value stream to help eliminate waste. So far, they have been about to cut millions of expenses out of the income statement by focusing on driving linkages between the different operational groups that are managed as silos. Steve knows he's only scratching the surface, but because it takes his well trained eye to find all of these little data parts, the complexity of his model, and the frequency of how often it needs to be updated – he's quickly becoming a slave to his own creation.
How self-service BI could help	A typical microscope is made out of hundreds, sometimes thousands of complex parts, with multiple interdependencies. Furthermore, these parts are not easy to categorize by common attributes. For example, a lens has a magnification dimension, but a handle does not. On the other hand a handle has material, color, texture, and finish attribute, but a lens does not. Traditional slice and dice BI tools do not work well with such uncommon or "unbalanced" attributes. Searching for and analyzing parts by categories and multi-faceted – unbalanced – attributes is a task for a very specialized BI tool.
Business impact	Steve's already helped the company save millions, but he believes it is only the tip of the iceberg. However, he's mostly concerned with reaching a threshold level to where most of his time is spend caring and feeding his model – rather than finding new ways to drive efficiencies across the organization. Self-service BI will allow free up more of his data gathering time and even help train other people to run models he developed so he can focus on the next generation of productivity improvements.

The study also uncovered the following use cases in finance departments:

Industry	Business process	Use case	Why new approach is needed
Financial services	Anti-fraud/anti-money laundering	Analyzing all new accounts, withdrawals, and	Need to analyze every aspect of a huge number of transactions (size, parties involved, account numbers, country of

	(compliance/risk management)	other transactions; spotting irregularities and discrepancies that might be risks	origin, etc.) to identify individuals or locations on watch lists, report events for compliance purposes, and spot irregularities (e.g., many transactions just under the monitoring threshold) that might suggest fraud.
Healthcare providers	Revenue cycle management	Find opportunities to improve the claims submission process	Small changes in an insurer's requirements for health claims can create delays in payment and unnecessary administrative expense. Exploring claims rework rates by payer, procedure type, or other criteria (often several dozen dimensions) allows hospital finance execs to streamline the revenue claims process, reduce operational costs, and accelerate cash flow.
Healthcare Payers	Regulatory compliance	P4P (Pay For Performance)	P4P, vs pay for procedures, will be phased in and mandated by government payers like Medicaid and Medicare over the next few years, and be surely followed by private payers. Researching, investigating and connecting procedure outcomes and patient conditions to claims will require complex multidimensional analysis with hundreds of potential cause-effect variables.
Any public company	Investor relations	Providing alternate value justification models	Many investors use different models and assumptions to determine whether or not to invest in a given company. The information readily available to investors to compare one company to another is contained in the financial reports and filing of these respective businesses. Each business defines a business strategy they think will differentiate themselves from their peers; however the metrics to evaluate the impact of those strategies are not reflected in the financial reports. If a business believes its stock is undervalued, the investor relations team must provide measurable evidence and the logic as to what their real value should be — but in a way that can be fit within a given investor's model so they can perform their own assessment based on their portfolio. Because this information needs to be pulled from so many different sources, manipulated in a variety of ways, and mapped to so many different investor models; this work is performed manually

			by highly skilled analysts. If they had an easier way to locate and consume the information, they could expand their focus from just major institutions to include smaller firms and increase their ability to influence how their stock is perceived.

Other Use Cases

The study also uncovered the following use cases in other departments across multiple industries:

Functional area	Industry	Business process	Use case	Why a new approach is needed
Customer service	Any B2B (manufacturing, CPG, capital markets)	Customer retention	Looking for reasons for drops in customer satisfaction	B2B, complex transactions, complex customer requirements. Root/cause analysis of customer satisfaction levels with events, reasons, etc., may be on many levels
Paralegal	Legal	Case support	Case support based on prior cases and rulings	Complex case data with multiple dimensions. Need instant answers — judges don't wait
Quality and compliance	Healthcare providers	Clinical quality management	Looking for potential process changes to improve patient outcomes	Reporting tools are built around a narrow set of performance metrics. Flexible exploration allows clinical quality

				managers to expose areas of process change or training to reduce medical errors, cut operational costs, and deliver more effective care. Doing this in near real time allows quality managers to engage with clinicians quickly.
Clinical research	Life Sciences	Drug research	Patient trials	Researching, investigating and connecting drug treatment to outcomes and patient requires complex multidimensional analysis with hundreds of potential cause-effect variables.
Operations	CPG, Retail, Manufacturing	Cost management	Customer, product profitability	It is no longer sufficient to use standard costing routines for extended production runs, since such an approach may not reveal hidden variations that may change on a

				daily basis. Operations analysts need instant analysis of costs with multiple variables to address root causes of variations.
Project management (Manufacturing)	Aerospace/defense - government contractor	Project risk management	Tracking thousands of risks and remediation efforts across hundreds of suppliers/partners	High expectations for project delivery need to quickly identify potential project delays and cost overruns, frequent project update meetings, need to drill down with root-cause analysis for rapid remediation.
Loss prevention	Any B2C (High–tech, retail, telecom)	Investigations management	Opening and managing investigations related to risk events, including theft, unauthorized access, etc.	Investigations can include very detailed evaluation of log files (application, system, or physical access) identifying trends or inter-related events that point to inappropriate behavior, etc. Content must be accurate to support potential

				legal cases.
Legal/general council	Fortune 1,000 (any large firm)	eDiscovery	Filtering through millions of archived emails, voicemails, spreadsheets, databases, and other files to find inter-related evidence supporting legal/regulatory defense.	Huge amount of structured and unstructured data, need to analyze for keywords, individual actors, file date, and complex relationships between these factors to build case. Potentially massive penalties if relevant legal data cannot be produced as required.

Barriers To Unlocking Maximum Knowledge Worker Value

Unfortunately, as the demand for pervasive and comprehensive BI applications continues to increase, the complexity, cost, and effort of large enterprise BI implementations increases as well. As a result, great examples of successful BI implementations among Forrester's clients are typically outnumbered by underperforming BI infrastructure and applications.

Challenges Of Traditional BI Approaches

There are plenty of reasons for these less-than-stellar BI implementations — mostly business reasons such as lack of top-down mandate and sponsorship, clear business ownership of information, proper data governance organization and processes, and conflicting line-of-business (LOB) and front-/back-office priorities. Enterprise architects, developers, and BI vendors share their portion of the blame with complex architectures, heavy product footprints, high degree of customization and integration requirements, and long wait times between tangible deliverables.

While there are numerous best practices to aid organizations in designing, architecting, and implementing successful BI environment and applications, enabling end user self-service is potentially one of the most powerful successful BI enablers. Why? Unlike its operational applications cousins like enterprise resource planning (ERP), customer relationship management (CRM), and supply chain management (SCM), requirements for BI applications are notoriously difficult to specify upfront for many reasons:

- **Ever-changing business requirements.** New business opportunities, new regulations, and unanticipated challenges spring up unexpectedly all the time. By the time a typical BI application is specified, designed, architected, built, tested, and rolled out, the world has gone and changed on us. For example, in the financial services industry, the BASEL II methodology for economic capital calculation (and analyzing the implication of changes) may change on a daily or weekly basis. Time and time again, Forrester sees examples where the majority of the requirements for reporting and analysis (often as much as 80% or 90%) come only after a BI application is implemented and rolled out.

- **Need to explore before defining requirements.** Additionally, in many situations, business stakeholders need to "explore" the data first to find connections, analyzing it to determine relevancy and meaning, so they can't really tell IT specifically what they are looking for. This often leads to a vicious circle of "tell me what you need" versus "show me what you have and I'll pick and choose."

- **Who is doing the analysis?** Regular knowledge workers, like salespeople, look for information that will spark an idea or find a problem; they're not really looking for a report, just some ideas. Whereas a power user — someone in a sales operations role, for example — has a goal to use the information as part of a value-added process and make something more valuable for the rest of the organization. Often IT will take this as lack of direction (or that the business doesn't know what they want from them) — but this is really an issue where most business users have an idea what they'd like to be able to do but can only describe it based on their work experiences (which IT cannot relate to) while IT is looking for more specific requirements (which businesspeople cannot relate to).

- .**Incomplete, isolated solutions.** Two components of BI — searching and reporting/analyzing — are addressed by different, often disconnected technologies. Office workers spend too much time looking for information and not enough time using it. In the current study, Forrester found that out of the total time during the day when office workers leverage information to make decisions, they spend:

  - 42% of the time looking for information.

  - 58% of the time using (reporting, analyzing, acting) the information.

- **BI is not easy.** Forrester constantly hears from our clients that traditional BI applications are not very intuitive and easy to use for nontechnical office workers. As a result, and for many other reasons, office workers rely heavily on IT to deliver BI functionality and enhancements or resort to homegrown, non-enterprise-standard BI applications. (See Figure 4)

- **BI does not address information "black holes".** One of the biggest challenges of traditional BI application is addressing the "I don't know what I don't know" question. Since every report and every query have to start with a specific question, asking the right question becomes key to getting the right answer. And one never knows whether one has asked the right question.

Figure 3: IT Still Develops Most BI Apps; End-User Self-Service Remains Elusive

"Who develops your BI applications? (select all that apply)"

Reports and dashboards are developed by IT professionals — 72.0%

Reports and dashboards are developed by power users (business stakeholders with some BI skills) — 57.3%

Reports and dashboards can be created by any end user with limited BI skills — 18.3%

Other — 2.4%
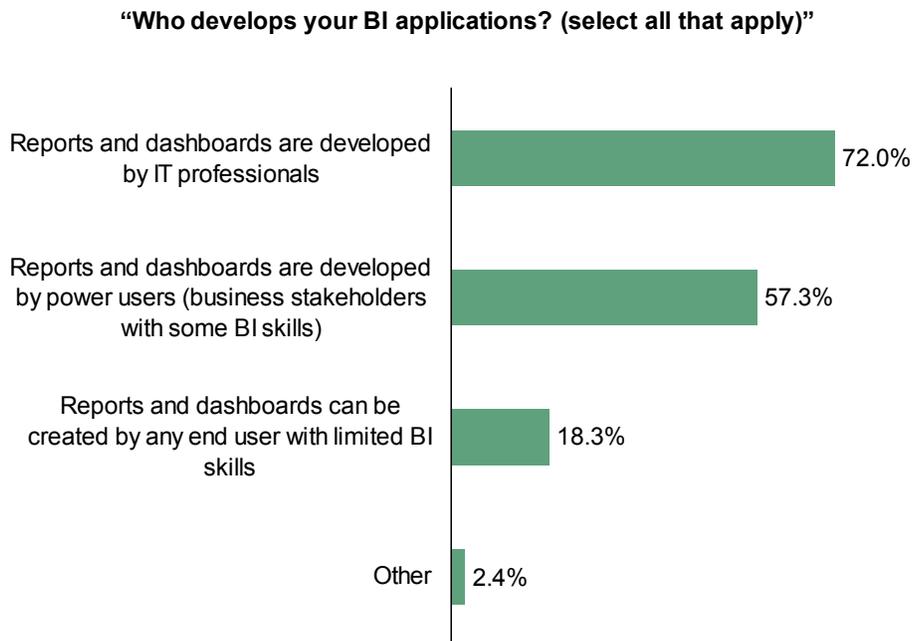
Base: 82 IT decision-makers
(multiple responses accepted)
Source: Forrester's August 2008 Global BI And Data Management Online Survey

Figure 4: End Users Continue To Feel That Their BI Apps Remain Difficult To Learn, Navigate, And Use

"Are your BI applications easy to use?"

Base: 82 IT decision-makers
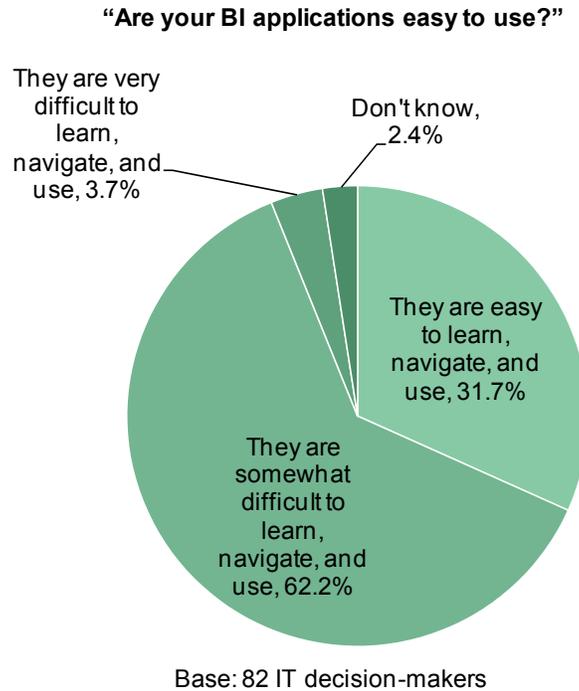
Source: Forrester's August 2008 Global BI And Data Management Online Survey

As a result, Forrester finds that most of the nontechnical office workers rely on self-built BI applications, like spreadsheets. In this study, 88% of responded that they relied exclusively or heavily on spreadsheets for their reporting and analysis needs

Issues With Typical Self-Service BI Approaches

To address their dire need to get answers to new questions when and where they need it, some business users turn back to good old spreadsheet tools for analysis or procure and implement low-cost BI tools bypassing corporate procurement and IT standards. While you can't blame them for going this route — after all, business is business and you can't wait for IT to provide answers in untimely manner or you may lose that deal — such approach creates multiple issues. These are obvious, as these homegrown BI applications:

- Often drive additional support requirements in the long run.

- May violate single version of the truth objectives for which every enterprise strives.

- Do not leverage existing BI vendor investments.

- Inevitably increase operational risk.

- Do not seamlessly address requirements for searching, looking for information, and reporting/analyzing.

The Result? Rift. Disconnect. Lost In Translation.

The bottom line is that traditional planning and preparation approaches do not work here. This "build it and they will come" scenario does not lend itself nicely to traditional IT support, and hence enabling end user self-service for the majority of new reporting and analysis requirements — such as "react versus plan" approach — is key. Alas, typical homegrown BI applications are also not the ultimate answer for many reasons discussed earlier in this study.

Therefore, this is the crux of the eternal tug of war between business and IT: Business is tasked with reacting to events and adapting to new requirements, while IT is tasked with planning for controlled, standardized, secure, and optimized infrastructure and applications. These two often diametrically opposing forces are creating a rift in what otherwise could be smoothly flowing BI processes. This rift is fostering an age-old problem of business and IT struggling to find alignment. Many business leaders feel that IT stays in a comfort zone of efficiency and productivity gains in back-office operations rather than actually enabling adaptability, innovation, and ultimately a strong competitive position that drives growth and profitability. But this rift and lack of business/IT alignment also creates an opportunity (see Figure 5).

Figure 5: A Rift (And An Opportunity To Align) Between Business And IT

Source: A commissioned study conducted by Forrester Consulting on behalf of SAP
BusinessObjects and Accenture, October 2009

Study Conclusions And Recommendations

Is there a happy medium between end users' needs for self-service and the IT charter to provide control, security, centralization, and optimization of BI environments? In this study, Forrester explored what the business and IT features and requirements for such a solution should be.

Business Requirements

From the end user point of view, such a solution should provide:

- **And intuitive user interface (UI).** Even with the most modern user interfaces, business intelligence (BI) tools are still not completely intuitive, especially for non-technically-savvy users. Business users think in terms of output, or using their own models, but they don't really think about different types of data, data structures, etc. It is often challenging and nonintuitive for these end users to translate a business question that they have in their minds into metrics, measures, and "facts and dimensions" on a BI screen. An ideal self-service BI tool does not have to require any familiarity with BI user interfaces. Beginning the exploration should be as intuitive as using a search engine text box and typing in a question.

- **Exploration capabilities.** Traditional BI tools are great at analyzing answers to the questions that are well formed, such as, "I need to understand the cause of the drop in sales in the Northeast region from Q1 to Q2." However, these tools typically do not address "exploration," such as a need to get answers to a question that is not very well formed in one's mind, such as, "I am about to visit my client, what information should I investigate and analyze to get ready for the visit?" One doesn't know what one doesn't know, so a BI tool can't always rely on the user asking the right question. An ideal self-service BI tool has to address both use cases: when a user knows exactly what he is looking for and when he doesn't.

- **Guided exploration capabilities.** Just exploration is not enough. Traditional search technology, which may seem like an appropriate approach to the second use case, does not work in this example for several reasons. Traditional search will return results organized by the search engine interpretation of relevance. The answers to your question may lie on page 42 of the results — which you are unlikely to get to. Guided exploration application has to guide you to the relevant information via filters and prompts. In the customer visit preparation example, an account executive might type in the customer name or account number into the search prompt. Guided exploration application should then return aggregates of the information at the highest level as in "found results for customer XYZ from 1990 to 2009, for NA, EMEA, and APAC regions — A/R, A/P, contact history, sales activity, etc.". The account executive would then filter on time, region, and financial information and after a few steps focus in on precisely the information needed.

- **Seamless integration of exploration and analysis.** But when one needs to analyze the information, even guided exploration alone falls short. As the previous example demonstrated, BI tools are great at analysis, but they do not usually help with finding the initial set of data to analyze. Search tools are great at finding what you're looking for, but stop short and do not let you analyze the results. Even when one uses both tools, they are not integrated, and transferring search results into a BI environment for analysis is typically a manual task, using cut and paste at best and writing down interim results on paper at worst. An ideal self-service BI tool has to allow for both finding the information and analyzing it in a unified, seamless environment.

- **Instant answers.** Data volumes in large global multiproduct enterprises are growing at lightning speed — often approaching petabytes (1000 terabytes). Traditional disk-based databases (where the speed of the query is always limited by disk I/O) can no longer handle such data volumes with practically reasonable response times. In layman's terms, this can be equated to sending a message via postal service: It'll never get there in real time. Getting instant answers to a question while in a meeting or while your customer or a supplier is on the phone requires architecture that allows analyzing the information at RAM, not disk I/O speeds. We need email speed advantage over postal-service-type information delivery and analysis.

IT Requirements

IT will always insist (and rightfully so) that such a solution must:

- Support business / IT alignment.

- Support standards, vendor, and infrastructure consolidation and centralization initiatives.

- Support a single-version-of-truth objective.

- Leverage existing BI vendor investments, infrastructure, and training.

- Reduce operational risk by providing a secure, policy-compliant, and risk-free environment.

- Provide tangible ROI by:

    o Reducing, not increasing IT resource requirements.

    o Implementing technologies that stop proliferation of applications and servers.

Study Recommendations

The study yielded several important observations and recommendations.

Observations:

- There are several types of roles in organizations that rely heavily on themselves, not IT, for most of their information needs.

- In many cases, information needs for these knowledge workers are not fully addressed by traditional BI applications. One feature missing in traditional BI applications is an intuitive, search-like interface that requires little to no training.

- In most cases, information needs for these knowledge workers are fulfilled by homegrown, self-service BI applications such as spreadsheets or desktop-based file systems.

- Knowledge workers spend an inordinate amount of the workday looking for and not actually using the information.

Conclusions and recommendations

- Knowledge workers will significantly benefit from a compromise-type BI solution that would allow these office workers to fulfill most of their information requirements, while requiring minimal support from IT.

- Knowledge workers will significantly benefit from a BI solution that seamlessly integrates search and BI functionality.

- Knowledge workers will significantly benefit from a BI solution that provides an intuitive, search-like interface that requires little or no training.

- The target audiences for such a solution are mid- and low-level managers and office workers in smaller departments and workgroups. These roles may have little to no support staff and typically have minimal access to IT resources.

- By making BI applications more intuitive and requiring little or no training, BI can penetrate a much broader base of knowledge workers in an enterprise.

- System integrators, especially management consultancies, will also benefit by embracing such self-service BI technology as follows:

  o These consultancies will be able to concentrate on assisting buyers of BI services mostly with strategy, analysis, design, and implementation. The self-service nature of such a BI application should reduce the number of billable hours after the implementation, and therefore make such software plus strategic services packaging more attractive to clients

  o Consultants will also be able to cast a wider net for the audience. A former information consumer who is only comfortable with looking at reports will now be able to perform his or her own reporting and analysis. As a result, consultants can reach a wider target audience and broaden the functionality that they can design and implement.

Appendix A: Methodology

In this study, Forrester interviewed 30 professionals in multiple industries within the US, UK, India, and Singapore to evaluate the information usage requirements, patterns, and challenges of modern office workers. Survey participants included decision-makers in sales, marketing, finance, and IT roles: 24 business and six IT professionals. Questions asked of the participants were around how they use information in their roles, what tools were used, and their interaction with IT (if business). Respondents were offered rewards points as a thank you for time spent on the survey. The study began and was completed in September 2009.

Appendix B: Supplemental Research

Related Forrester Research

"Search + BI = Unified Information Access" by Boris Evelson and Matthew Brown, May 5, 2008

"BI Workspaces: BI Without Borders" by Boris Evelson, June 23, 2008