Economist Intelligence Unit

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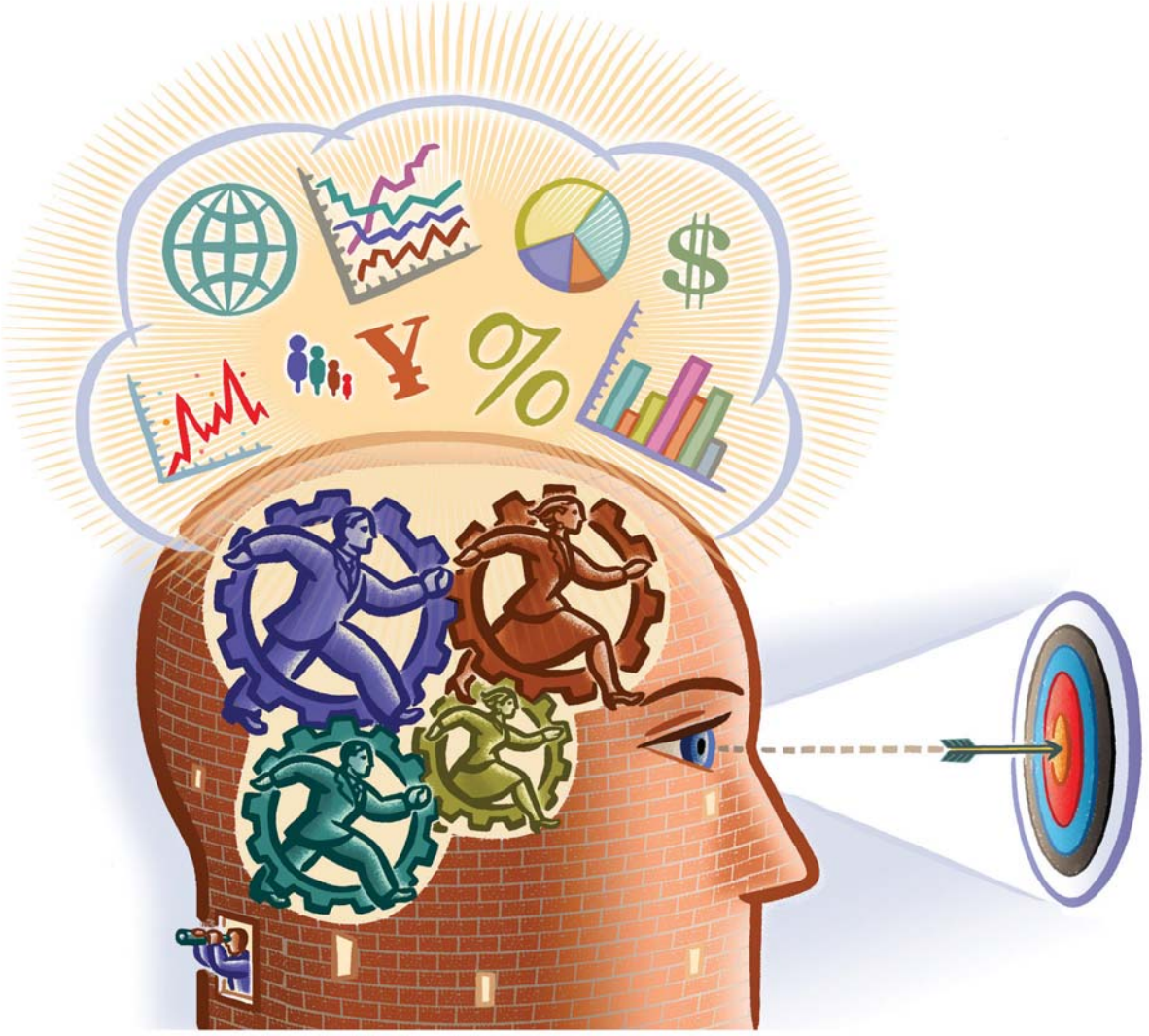
Business intelligence

Putting information to work



A report from the Economist Intelligence Unit

Sponsored by SAP and Intel

Preface

Business intelligence: Putting information to work is an Economist Intelligence Unit white paper, sponsored by SAP and Intel. The Economist Intelligence Unit bears sole responsibility for this report. Our editorial team executed the survey, conducted the interviews and wrote the report. The findings and views expressed in this report do not necessarily reflect the views of the sponsors.

Our research drew on two main initiatives. We conducted a global online survey in March and April 2006 of more than 300 executives from various industries. To supplement the results, we conducted in-depth interviews with executives familiar with how BI plays a role within their organisations. Interview subjects work for companies from around the world.

The author of the report was Ted Kemp and the editor was Rama Ramaswami. Mike Kenny was responsible for design and layout. Our thanks are due to all survey respondents and interviewees for their time and insights.

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Executive summary

Business intelligence (BI) can be considered critical to the very existence of most organisations. However, efforts to gather such intelligence—commonly defined as collecting, consolidating and analysing information about the organisation's operational processes, financial situation, business performance and other indicators—are hampered by inconsistency among data sources, problems with data quality, an often cobbled-together approach to BI systems, and a lack of clarity about how to take the knowledge gleaned from BI initiatives and turn it into practical and positive changes to the business.

To find out the views of executives on the topic, the Economist Intelligence Unit conducted an online survey of 386 senior executives from a range of industries and companies located in the Americas, Europe and the Asia-Pacific region. The majority of respondents to our survey are enthusiastic about how BI can potentially improve their organisations.

About our survey

In March 2006 the Economist Intelligence Unit queried 386 executives on their current and planned use of business intelligence applications. Approximately 57% replied from western and eastern Europe, 20% from the Americas and 23% from the Asia-Pacific region and other parts of the world. Respondents represented a wide range of industries and functions. About 50% of the respondents were C-level executives or board members. At 49% of the total sample, companies with less than US$500m in annual revenue were the most heavily represented group.

Although BI is still mostly a technological luxury restricted to the boardroom and executive suite or to technology-savvy analysts, the future of BI, as forecast by our survey respondents, indicates a flowering in coming years of so-called operational BI that helps lower-level workers make quick—and intelligent—decisions about the business tasks before them.

The purpose of our research is three-fold: to explore whether and how companies are using BI to improve their businesses; to identify the obstacles they encounter in its use; and predict how BI will evolve in the next ten years. Relying on insights from industry experts, researchers and consultants who have identified best practices for BI, this white paper, sponsored by SAP and Intel, identifies four main trends that are shaping the ways that companies are using and will use BI to improve their operations.

- **BI will be shared among more employees.** Business executives want to distribute analytical data to a wider range of employees. These include not just high-level decision-makers, most of whom already have access to BI data, but also middle management, operations employees and even front-line staff. The desire of our respondents to share BI with more people stems from a belief that workers can do their jobs better if they have the right information to improve operations.

- **Performance management efforts will reach maturity.** Performance management, the next level of BI's evolution, involves setting operational goals, designing key performance indicators (KPIs) to serve

as benchmarks for those goals, using BI tools to measure and gauge KPIs, and then changing operations to improve the chances of attaining the desired goals. However, only 55% of respondents say that their companies effectively measure progress towards performance goals. About 34% of respondents say the same when it comes to getting KPI data into the hands of employees who can apply them towards improving processes. And only 37% believe that their companies effectively change processes that fall short of performance goals.

● **Large companies will need to catch up with their smaller counterparts**. Surprisingly, big enterprises are not much more efficient or successful than small firms when it comes to gathering BI. In fact, in some cases, it is smaller firms' lack of scale that seems to help them succeed in their BI projects. Large companies are hampered by having to use tools from several vendors, greater amounts of information stored in separate data locations, and more departments and groups that do not co-ordinate their BI initiatives.

● **Both large and small companies will strive to manage their BI efforts centrally**. Defining the parameters of BI data, how the information is gathered and analysed, and the types of tools to be deployed are still not centrally driven in most organisations. This state of affairs exists even though many executives in our survey expressed a desire to manage their BI efforts in a more centralised, organised way, and to do so using fewer separate applications.

Simple reporting for diverse data

The data that comprise BI come from a variety of sources, and can cover anything from sales invoices to balance sheets to purchase orders. Turning this raw data into accurate, up-to-date and readily accessible information, however, is tricky. The executives in our survey show a heavy propensity to favour simple reporting tools for examining or sharing the output they get from their analytics packages. They prefer to use software with which they are already comfortable and that they will not need to be trained to use.

Reports delivered by e-mail are by far the most popular medium for BI data output—80% of our respondents say that they receive BI information this way. Spreadsheets—those simple column-and-row applications that most corporate-level staff know so well—are a popular format, used by 71% of respondents. "I employ professional engineers, [and] as engineers, we've all used Excel from the beginning," says James Bell, managing director of FoundOcean Ltd., a UK-based builder of offshore oil and gas platforms. "Spreadsheets are something we understand."

Surprisingly, given the high-tech nature of BI algorithms and data processing, as well as the strong reporting functionality built into many BI tools, simple paper documents are the third most popular output medium. More than half of the survey respondents, 58%, use paper reports.

Mike Redwood is a board member for Fabreeka, a conveyor belting manufacturer based in Stoughton, Massachusetts, and a former executive at Fortune Brands. Simplicity, he says, is often the name of the game when it comes to the tools that support BI output. "The best system we used at Fortune Brands … was actually a variety of spreadsheets inside Lotus Notes databases," he says.

Alarmed and alert

Relatively few survey respondents use advanced data output media. Among the more technologically sophisticated reporting techniques, intranets and

What is business intelligence?

The information technology (IT) practice today commonly called business intelligence (BI) began with software packages called "executive information systems" more than a decade ago. Such tools were designed to give corporate decision-makers different views into sets of business data. However, the tools were much simpler than the advanced analytical BI products available today.

Traditionally, BI could be broken into three components: (1) information sources, or the databases and software applications where data resided; (2) integration, or the act of compiling data from various sources before it was analysed; and (3) the analysis and reporting of the data itself. As the tools have become more complex, though, so have the amount and types of data that businesses want to examine. Often, BI efforts involve loading data from various applications into a data warehouse, and then pulling the necessary information from the data warehouse into analytical engines. More advanced tools evolving today tap information where it lies, or are otherwise designed to integrate the various components of BI. Increasingly, the trend is to deliver analytic information directly to the user within the context of a specific business process or business activity, and often via a general office productivity tool.

Case Study: Handling Variety

Sometimes it is not the volume of data, but the diversity of its sources, that presents the biggest challenge to executives who look for business intelligence.

Much has been made of the exploding volume of data that exists in the modern enterprise business environment. As operational processes connect with computing applications, the resulting increase in data volume presents processing and storage challenges. Just as difficult a problem, though, is analysing the many varieties of data that come from multiple sources and in multiple formats.

Such was the case for Reliance Infocomm of Mumbai, India, a company that sprang to life in the late 1990s and quickly became one of the premier telecommunications firms on the subcontinent. Reliance serves more than 10m customers, and stores data on "every phone activation, every customer complaint, every customer bill, every payment, every adjustment and every transaction with other network suppliers," says Rajiv Gupta, head of the decision support system for Reliance.

Reliance also studies that data and makes it available to 800 in-house users. However, such a broad array of data does not come from one, two or even a dozen sources. Reliance gathers transaction information from 15 different sources. Data from its enterprise resource planning (ERP) system feeds directly into its BI application. Other information from flat files and relational databases loads first into an extract, transform and load system before finding its way to a repository database.

Users of the BI system include Reliance's business analysts, network managers, product managers and other executives. Mr Gupta explains how users can, for example, investigate by customer type to see which types of people make calls, which rate plans they use, where they are located geographically, whether they make local or long distance calls, and which vendor networks they use. "Our analysts can also find out if people are talking more in the evening or in the morning, or which days of the week are the busiest," adds Gupta. "Best of all, they can get this information on the fly, without having to come to us first. They go to the Web, and they can drill in wherever they want and get immediate, accurate information."

Ease of data integration makes this possible. Reliance chose a BI system with an open adapter framework that resolves integration problems. The vast majority of the data Reliance loads into its BI application—Mr Gupta puts it at 95% of all the data analysed—comes from various systems outside of the central ERP system. From the BI data repository, the data goes into 25 subject-based "data marts" that can be tapped by users carrying out analysis.

This integration-friendly BI platform supports Reliance's growth plans. Other components of its BI application will be added in the coming months, Mr Gupta notes, pointing to scalability as an important benefit of the system. "We'll be bringing on many additional users," he says.

portals are the most popular, cited as tools of choice by 44% of respondents. Less than one-tenth of respondents use reporting tools that are part of pure BI packages, advanced graphics software, mobile applications or software designed just to produce reports. However, almost one-quarter of those surveyed say that they use reporting tools that are part of larger, enterprise applications.

BI "alerts" or "alarms," often touted as indispensable for obtaining up-to-date information, are not widely used among respondents. Typically, alerts are warning signs. For example, they can tell an executive if a stock price has moved or a supply chain's output is slipping. Jan-Joost Rueb, chief executive officer (CEO) of Emessenger, a Web-based chat service in the Netherlands, has his alerts sent as a short message service (SMS) to his phone if there is a sudden change to data after work hours. In his industry, staying on top of the business is a 24-hour endeavour.

Almost 11% of companies with an annual revenue of more than US$10bn say they use BI alerts. Among companies with sales of less than US$500m, that number drops to slightly fewer than 7%. For the most part, however, when it comes to reporting, there is little difference between organisations with annual revenue exceeding US$10bn and those with sales of under US$500m. E-mail, spreadsheets and paper documents rank highly with both groups. Executives

from big organisations, however, are much more willing to use intranets or portals for their reporting needs (57%) than are their counterparts at smaller firms (34%).

Piecemeal efforts

As for leveraging information, companies big and small employ just about every arrangement of hardware imaginable. A large portion of organisations, 44%, turn to unstructured data sources, such as office documents and sound or even video files, for information, in addition to structured data in formats such as Extensible Markup Language (XML), which can describe many different types of data. Executives also depend on single data warehouses and databases, multiple data warehouses and databases working together, and multiple enterprise-level software applications. All these options get the vote from significant numbers of respondents.

BI efforts often begin at the department or group level, sometimes with no co-ordination among groups. This can create inconsistencies in data and result in information arranged in multiple formats in many data storage locations. The diversity of data sources often leads to haphazard intelligence-gathering.

"We have some 300 'cost' centres, and the funding process tends to force us to do [BI] piecemeal," says the chairman of a US$120m managed-care services organisation in Australia. "Thus implementation takes a long time, and developing an organisation-wide system is very difficult."

The disparate data sources used, and the problems such diversity can engender, help explain a decidedly middle-of-the-road assessment from executives on how satisfied they are with their organisations' ability to integrate and analyse all relevant data. Only 4% of executives are "very satisfied" with their companies' data integration and analysis. More than one-third claim to be "somewhat satisfied," while more than half say they are either dissatisfied or neither satisfied nor dissatisfied.

Taking BI to the Masses

Most experts agree that true operational-level BI is still in its infancy. The spread of BI tools to the information worker will increase in coming years, however, as our survey responses indicate. And if lower-level, less technically savvy workers are to use BI systems, the thinking goes, the software needs to be fail-safe, featuring more intuitive interfaces and requiring less supervision from IT teams. Often the trade-off for simplicity and user-friendliness is reduced availability of querying functions in the BI program. But simpler software serves a key goal for the user: It enables access to specific information as it is needed.

For now, BI is a tool still used predominantly by high-ranking executives, senior management and middle managers, with extensive support from IT and

Case Study: Risky Business

Many companies want to apply BI in the "real" world—to go beyond executive dashboards that help with strategic decision-making and use analytics to help information workers in the field or office who can benefit from data insights to perform their jobs better. Fewer companies have succeeded in taking BI that far, but some have, with winning results.

Such is the case with Accion Texas, a San Antonio-based US non-profit organisation that has pushed BI right onto the desktops of non-executives who handle core operations. The firm is a micro-lending organisation that creates small business loans for individuals who do not have access to bank credit. For Accion Texas to operate successfully, it had to have a reliable way to gauge whether an individual was a bad loan risk. BI applications provided the solution.

Accion Texas deployed an entrepreneurial BI platform. A reporting tool is included in the organisation's portfolio management system. An advanced analytics engine builds scorecards that judge creditworthiness and uploads that data directly into the portfolio management package. Another program performs predictive analytics.

"We have data from 4,000 customers," says Accion Texas chief financial officer (CFO), Gustavo Lasala. "We have about 40 different criteria that can be used to do segmentation or be used in analysis to predict default. So we need a pretty powerful tool." The combined tool identifies variables that help the firm to predict statistically which would-be loan recipients are the most likely to default over time. Other, descriptive statistics, Mr Lasala says, help Accion Texas create a profile of its ideal customer. The organisation then builds marketing campaigns and materials specifically designed to appeal to this type of loan recipient.

At Accion Texas operational personnel—the so-called people on the ground—have access to BI. Loan officers and the firm's underwriting department use the analytical toolset to generate a fast risk assessment on loan recipients. Many of the entrepreneurs requesting loans are such high credit risks that traditional scores from credit bureaus are inadequate for assessing whether Accion Texas should lend to them. Others have no credit history at all, so the company has designed algorithms that analyse things like the number of years recipients have been at their current address, their income levels, the entity that referred them to Accion Texas, and other non-traditional criteria. All this information appears directly on workers' computers. "It basically pops up right there—is this person a good risk or a bad risk?" says David Gonzalez, the company's vice-president of IT.

Mr Lasala estimates that Accion Texas's foray into BI has increased the number of loans it can process in any given timeframe by 50%. Prior to installing the BI system, loan officers had to review each file individually, which often involved spending large amounts of time on the phone, tracking down people and information. "You had a lot of underwriters going over files and spending time on analysis themselves," says Mr Lasala. "If we can automate the process as much as possible, we can make much better use of our time."

specialised business analysts. Eighty-nine percent of survey respondents say their senior executives take advantage of BI tools. Even a majority of middle managers, 61%, have access to intelligence platforms. On the lower end of the worker spectrum, however, the prevalence of BI applications falls off sharply: only 35% of frontline supervisors, and less than 30% of non-supervisory frontline workers, have access to BI data.

However, this will change, respondents say, noting that they expect lower-ranking employees to use BI more often in the coming years. Among middle managers, 18% will have access to BI data in the next 12 months, and 16% will follow suit in the next one to three years, according to respondents. Less than 4% of respondents say middle managers will "never" have access to BI data. About one-third of frontline personnel (including supervisors) at respondents' companies should have access to BI data in the next three years, according to the survey results, although a disquietingly large segment of non-supervisory frontline personnel, 20%, are expected never to obtain access to BI tools.

The earliest BI tools were designed to support general and financial management, and, predictably enough, survey respondents with jobs in general management, finance, and marketing and sales have the most access to BI applications that support business and operational decisions. These three job functions dominated answers from both the largest and smallest firms surveyed.

Several executives that we interviewed say that BI is either exclusively or almost exclusively used for general management tasks at their firms. Analysis of competitors and their financial standing came up frequently as a prevalent use of BI tools. "We use BI data on a tactical level for short-term decision-making, mainly to monitor our nearest competitors' configuration, business strategy, competencies and their value proposition to the market," says Jan Berg, a strategic planner for Datagraf Auning AS, a Denmark-based printing firm. Says Fabreeka's Redwood, "We use it primarily to look at competitors, and examine the market, as we have been involved in acquisitions and divestments. Getting the big picture is important."

Patching up Humpty Dumpty

Several questions in our survey were designed to identify the "pain points" that most often impede BI initiatives. As might be expected, poor data quality, far-flung data sources and disparately formatted data prove to be major impediments to successful BI deployments. Analysis of bad data cannot, after all, yield anything but bad analysis.

Almost 72% of survey respondents say their organisation's data is sometimes inconsistent across departments. Unreliable methods for gathering data and a lack of standardisation in formatting can contaminate data. Acquisitions of other companies that use a different IT infrastructure also can make data "dirty" over time, says John Hagerty, vice-president of research at AMR Research, a US-based technology and supply chain consulting firm. For instance, financial institutions may buy rival banks and then have difficulty finding cross-selling opportunities because they cannot determine which of the acquiring bank's customers also do business with the buyout target. Names, addresses and other data are almost always going to be stored differently, with varying fields and formats, from one institution to the next.

"Companies are like Humpty Dumpty," says Wayne Eckerson, director of research and services at The Data Warehousing Institute, a BI research and education organisation in the US. "They always fall off and break into a million pieces. And then BI is like all the king's horses and all the king's men, trying to put Humpty Dumpty back together again."

Top management must take the lead in maintaining data quality and establishing clear data governance policies, and some "enlightened" executives are doing so, according to Mr Eckerson. In addition, to be analysed efficiently, disparately gathered data has to be formatted to fit common schemas. This is no simple task. Mr Berg of Datagraf Auning says his firm gathers data on competitors' finances from a variety of sources: annual reports published by the Copenhagen Stock Exchange; reports on non-public companies posted on fee-based online databases; and information on rivals' business activities from their Web sites. Other data sources, such as insights from conversations with customer prospects, have to be written down and entered into a database manually.

Aside from bad data, frequently cited problems include an excess of different kinds of BI tools in use at companies, and a lack of centralisation when it comes to managing them. Sixty-three percent of respondents say they would like to consolidate their information on fewer BI platforms, and an identical number say that their current and legacy BI systems are sometimes incompatible.

As for the actual number of vendors whose BI analytical packages are in use at any given company, our survey reveals that companies are awash in separate, varied and—it must be assumed—often incompatible BI platforms made by different firms. And the problem is a messier one for big companies than it is for smaller ones. More than one-quarter of respondents from companies with more than US$10bn in sales say that their firms use between four and seven BI vendors; 15% say their companies use tools from eight or more vendors; and just 6% of large companies surveyed use only one vendor's tools.

Reversing the problem will not be easy, according to a corporate director at a multi-billion dollar investment

banking firm. "It's going to be a hard slog, because people love their BI tools. The best way that I have found [to prevent the problem] is that things have to be imposed from the top, with very strong direction given [on how to] start rationalising your BI tool."

That top-down direction is lacking at most firms, large and small. Few companies impose an overarching, centralised strategy for managing their BI deployments. Only 43% of respondents say that they usually install BI tools as part of a strategic mandate. Almost half deploy BI tools on a department-by-department basis.

Smaller firms use fewer tools than their big counterparts—most likely because their operations are small. Fewer tools often equate to fewer compatibility problems. Only 9% of respondents from smaller firms use four to seven BI vendors, and less than 1% use packages from eight or more vendors. More than 18% say they use tools from only one vendor. Others have lost count. Thirteen percent of small firms do not know how many tools they use. "We do not use one standard system, but have added [systems] piecemeal," says the chairman of a US$120m managed-care firm in Australia. "That is our real issue. We have a large number of small, add-on systems."

Larger enterprises indicate that they are more likely to use BI tools isolated within individual departments than smaller companies are. Moreover, big firms are less likely than little ones to link their BI tools from group to group. Less than 31% of big companies link their BI platforms from one department to the next, whereas almost 40% of small companies connect their BI systems across departments. Interestingly, when surveyed about the main bottlenecks, both large and small firms cite "poor internal communications" more frequently than any other problem.

Case Study: Culling Data from a Management Interface

Our survey reveals that almost one-third of respondents use reporting tools built into large enterprise applications. An advantage of such a system is that data can be pulled and analysed directly from the central tool that already manages that data, such as an ERP system or account management platform. Sequoia Asset Management, a privately held wealth management firm based in Switzerland, is adopting this approach—plus a few additional features.

Currently, the company executes buy and sell orders manually, and communicates with the different banks holding its clients' assets through separate channels. Pierre Noel Formige, founder and managing partner of Sequoia, wants to change all that. The firm is removing a proprietary asset management programme built by a contractor. This year, Sequoia plans to install an off-the-shelf asset management system that will consolidate links to various banks and include much-improved analytics. The company is assessing various applications that can form a centralised data management system. "It will be the root of the entire business," says Mr Formige. "To date, there's almost no company [in Switzerland] that has this kind of system. Companies like ours haven't focused much on that. I'm trying to be ahead of the curve by investing in this software."

Mr Formige wants to handle risk management, back-office work and front-office account management through a single system. His goal is to be able to follow all the investments that each of the firm's business units manages and track the commissions generated. The system should be able to execute trades of any kind through a single interface. However, to really understand his business, Mr Formige points out, he needs the capability to analyse all that data and segment it by asset type, client and business unit. "With the analytics, we can calculate with each business unit what portion of revenue they generate and for which clients," he says.

Although Mr Formige himself expects to take control of the system, with access to information on all the accounts that Sequoia manages, individual business units can tap into information about their own clients, and the firm's back office will be able to access account data as the need arises. When it is operational, the new platform is expected to slash the amount of paperwork that Sequoia generates and to lend itself to much more detailed research.

Why they buy

Our survey's aggregate results indicate three primary factors that shape companies' purchasing decisions for new BI tools, as well as three factors that are of secondary importance, but that still rank highly among a significant portion of respondents.

BI tools' cost, ease of use and ability to integrate with existing infrastructure score the most votes as factors critical to making purchases. Highest on the "very important" list is cost (49% of respondents), followed by ease of use (48%) and integration with existing infrastructure (45%). It should be noted, however, that the acquisition costs of BI applications are only a small part of their total cost of operation, which remains stable over time because of the consolidation of many disparate tools and streamlining of processes.

The second set of purchasing factors, all of which are rated "very important" by more than one-third of respondents, are vendor technical support, the tools' ability to integrate with existing software and robustness of functionality.

A wide discrepancy exists between respondents from big firms and those from small companies when it comes to the importance of ease of use. Among respondents from firms with annual sales of less than US$500m, almost 57% consider ease of use very important; by contrast, less than 37% of respondents from businesses with revenue exceeding US$10bn rank ease of use so highly. No other purchasing factor reveals such a wide difference of priorities between large and small enterprises.

As operational-level BI gains traction over the next five years, the importance of user friendliness will

Case Study: BI Evaluates Executives

BI seems to have as many possible uses as there are companies to come up with them. Bancredito, a large bank based in Costa Rica, doesn't only turn executive-level dashboards over to bank officials; it also uses BI to monitor those officials.

Bancredito uses a "balanced scorecard" package to gauge the strategic performance of its CEO, chief information officer (CIO) and chief technology officer (CTO), as well as risk, credit and technological committees. Bancredito board members can access the scorecard—a method for measuring a company's activities related to its vision and strategies—through a BI interface. In particular, board members can check if managerial segments of the bank are meeting performance goals that the board sets.

"As a board member, I look for information concerning corporate governance: the CEO role, the monitoring activities of auditors, and the global results of the strategies being applied by our officials," says Bancredito board member, José Gomez-Laurito.

Bancredito also uses BI to measure its performance against that of competitors. "Today when regulatory agencies put all the basic financial information of each institution on the Internet, [it] is relatively easy to pool all the information you need to benchmark your bank," says Mr Gomez-Laurito.

The financial institution is heavily dependent on proprietary, individualised marketing studies, but Mr Gomez-Laurito says he finds that such research complements the sort of analytical insights Bancredito can gain from off-the-shelf BI tools. The bank uses BI software to spot market trends. Mr Gomez-Laurito says he sometimes depends on those BI-generated insights to verify the "general perspective" offered by the market research data that the bank purchases.

grow. The profile of BI users is changing fundamentally, says Mr Hagerty of AMR Research. Many off-the-shelf BI tools today require the involvement of IT or "super users" in order to perform complex queries or analysis. However, this will have to change as less technically inclined operations-level employees use the tools more and more.

"As BI underlies more of the business, people are going to need insight into their jobs, their areas of responsibility, and it's got to be presented to them in such a way that they can get the [information] out of the BI tools that they have," says Mr Hagerty.

Our survey also asked respondents to speculate on the benefits of "BI/data warehouse appliances," defined as pre-integrated hardware and software suites that serve a full range of BI-related needs by themselves. The question found no broad differences of opinion between big and small companies. Out of ten possible benefits offered as options in the poll, only three scored votes from more than half the respondents: faster administration (63%), superior performance (54%) and faster response times (50%). Ease of installation might be expected to be a big draw in the case of technology, but only 38% of respondents view faster installation as a perceived benefit of BI/data warehouse appliances, and just 28% cite cheaper installation.

Managing performance

More than three-quarters of the executives surveyed by us either "strongly agree" or "somewhat agree" that their organisations could improve operational performance if BI data were disseminated more broadly at their companies. However, that belief does not translate into broad levels of success with full-blown business performance management.

The practice of business performance management, like many areas of IT expertise, goes by many names. It is sometimes called corporate performance management, or abbreviated as BPM or CPM. (What is even more confusing is that BPM is also an acronym for business process management, which is unrelated to performance management and not within the purview of this white paper.)

In short, performance management is the application of BI tools to help companies understand and improve their performance. It requires setting performance goals (sales targets would be an obvious example) and then monitoring key performance indicators that tell decision-makers whether they're on track to succeed at those goals. Performance management also requires businesses to make process changes or take other actions that can get them back on track when analytical data indicate that they are falling short of their desired objectives.

BI plays a critical role in performance management—and some experts believe that performance management is the next evolutionary step for BI—but performance management is more than a technical expertise. People are needed to enact changes to processes. "The state of the art today is that systems can propose actions, but humans have to take the action," says Dave Menninger of BPM Standards Group, a performance management advocacy group in the US. Humans also have to design KPIs, which require expertise in whatever area of operation the KPIs are designed to measure.

Our survey respondents indicate wide-ranging challenges when it comes to using BI data to improve operational performance. Improper association of metrics with business processes (34%), inability to generate metrics (27%), and lack of monitoring of KPIs (26%) and of their measurement (25%), not to mention an outright inability to determine KPIs in the first place (25%), all rate as significant barriers to effective performance management efforts. Five other difficulties, including the inability to model operational processes and to disseminate data in a timely manner, are cited as obstacles by 17% or more of respondents.

The design of KPIs requires a high level of knowledge and understanding of strategic objectives specifically related to whatever business function the performance indicator is designed to gauge. In other words, IT alone isn't up to the job (unless a company is measuring the performance of IT). Mark Truby is the head of corporate finance at UK-based Camden Corporate Fleet Services. The US$1.9bn company manages other firms' automotive fleets. When it comes to Camden's design of KPIs, Mr Truby says, "the customer is king. Identify the service and expectations of the customer and then attach those requirements to the KPI for individuals and/or departmental functions. The customer will set expectation levels of good service."

KPI design will fall to each individual business unit and to the right people in the organisation who are

capable of determining what level of performance is acceptable. Our survey respondents are not overwhelmingly negative about their ability to manage performance goals, but they give self-assessments that are decidedly lukewarm. Asked if their companies effectively measure their progress towards performance goals, the largest group (37%) agrees—but not strongly. A smaller portion of respondents agree that their organisations effectively change processes that fall short of performance goals.

Conclusion

What lies ahead for BI? Although it has yet to realise its full potential to enable businesses and their information workers to operate more intelligently, strategically, and efficiently, the trends outlined below will transform BI into a potent force of organisational change in the next few years.

● **Consolidation and standardisation of BI applications**. Traditionally, BI programmes have been a patchwork of legacy systems, custom interfaces and add-on components from different systems and vendors. Today, however, fully integrated and scaleable BI software packages are increasingly available, and in the future will become the norm.

● **Integration of BI tools into mainstream business processes and analysis**. In addition to becoming simpler and more user-friendly, BI tools will grow beyond the "query metaphor" and move into the "search metaphor," according to Mr Hagerty of AMR Research. BI tools continue to adopt functions traditionally thought of as belonging more to Internet search engines (sometimes, in fact, BI vendors turn to search vendors themselves for those functions). Related to this search metaphor is Mr Hagerty's belief that BI tools will spend more and more time analysing traditionally "unstructured" data, such as e-mails and other text-based formats. "They're going to pull value from the written word," he says. And ten years down the line, he predicts, even many low-level business users will not differentiate the act of data analysis from any other common, day-to-day activity.

● **The evolution of technologically driven performance management**. Companies interested in performance management are not happy with their progress so far, but the technological components of true business performance management are taking shape. Increasing regulation, particularly in the US and Europe, is pushing companies to improve the reporting that they do on financial data. As Craig Schiff, CEO of performance management services firm, BPM Partners, based in the US, points out, "spreadsheets aren't going to cut it any more" when it comes to finances. Those companies that have reached a high level of financial data reporting are expanding that level of reporting expertise into other areas of the business, particularly operational analysis. A BI-dominated, technological side of performance management is developing.

The growth of software "verticalisation," where products are designed for specific industries that have their own key measures, will also drive the adoption of performance management. Costs will come down and the learning curves will shorten, Mr Schiff says. He predicts that in five years, such industry-specific tools will be one of the main ways in which companies understand their own operations. And such an understanding of operations, combined with proficiency at BI, will improve performance management.

● **Faster computer processing speeds**. The 64-bit processing environment, and almost unlimited network bandwidth, allows for amounts of computing memory that are hundreds of times larger than what was available previously, says Mr Menninger of BPM

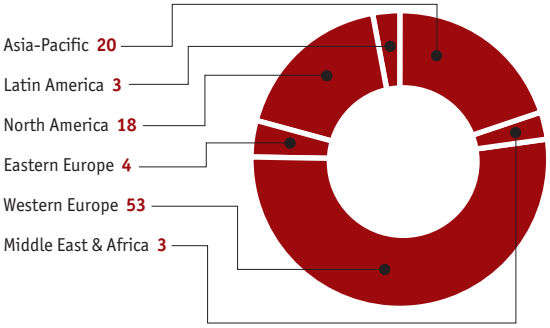
Standards Group. Improvements to computational speed are always valuable, of course, but the real benefit that 64-bit processing will yield for BI is the amount of data that companies will be able to collect and analyse. With data volumes growing exponentially from almost all corners of corporate operations, that processing speed will find itself heavily used.

- **Better understanding of data quality and governance**. Companies are beginning to understand that assembling and maintaining high-quality data require that top management establish clear data governance policies. Few executives have not seen expensive IT initiatives implode because of bad data, or not dealt with complaints from customers who were misidentified or improperly categorised. When data quality reaches the top of the agenda in the executive suite, it will become a top priority throughout the enterprise.

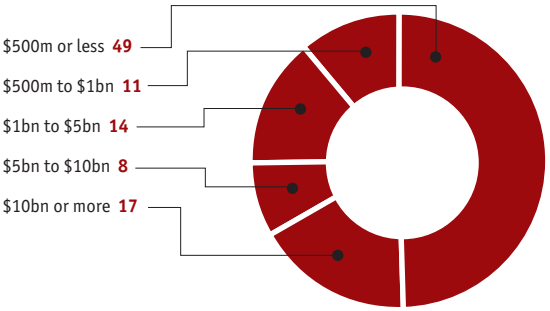
Appendix: Survey results

A total of 386 senior executives participated in the Economist Intelligence Unit's online survey in March 2006. We thank all of them for their time and insights.

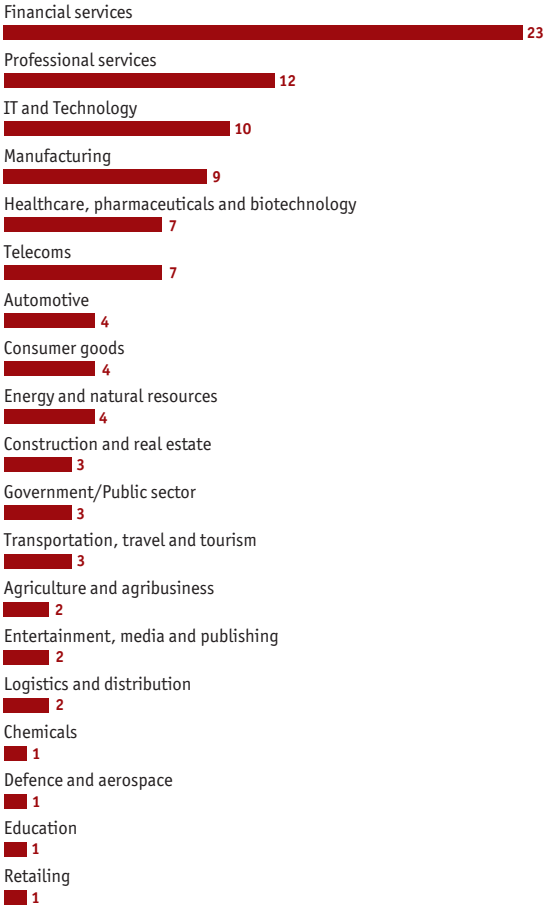
In which region are you personally based?
(% respondents)



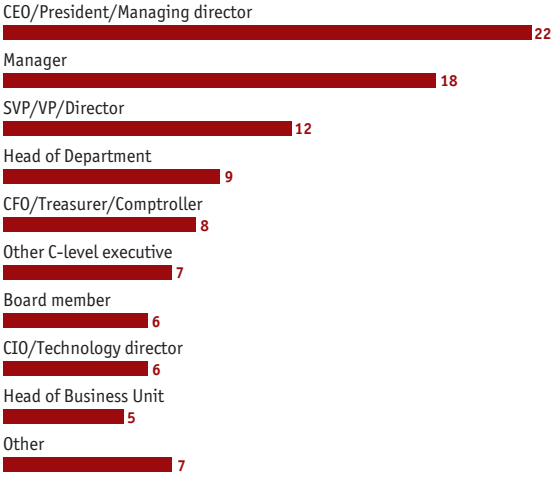
What are your organisation's global annual revenues in US dollars?
(% respondents)



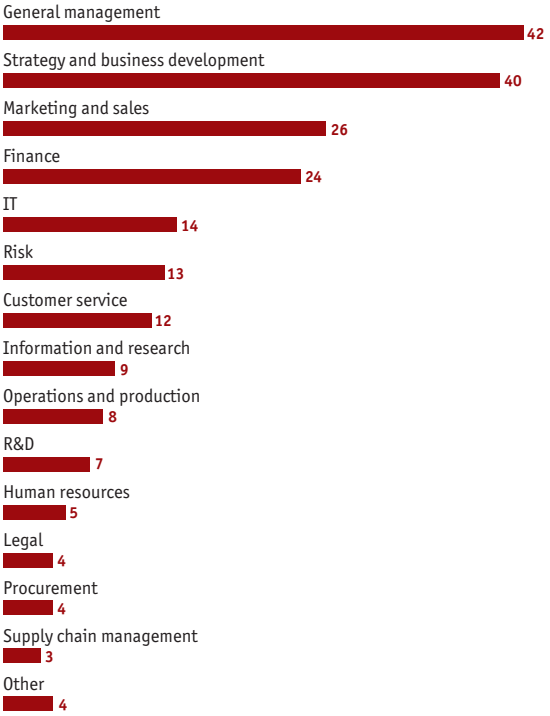
What is your primary industry?
(% respondents)



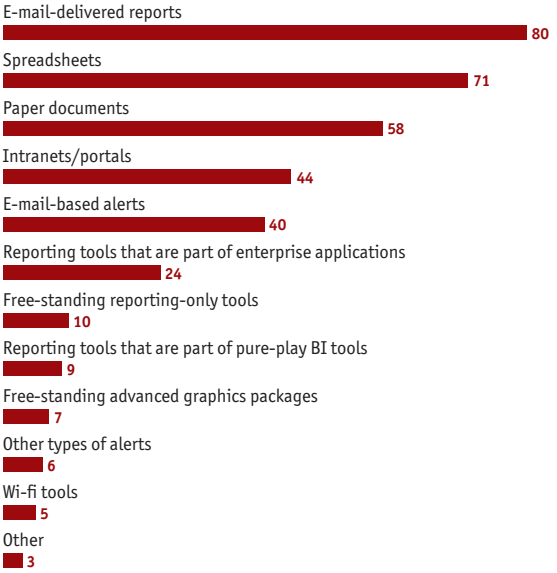
Which of the following best describes your title?
(% respondents)



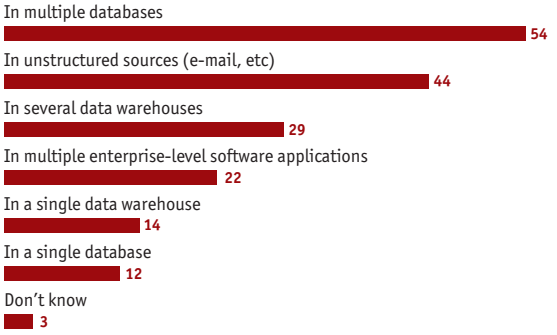
What are your main functional roles?
Please choose no more than three functions.
(% respondents)



Which media do you personally use to output business intelligence (BI) data?
(% respondents)

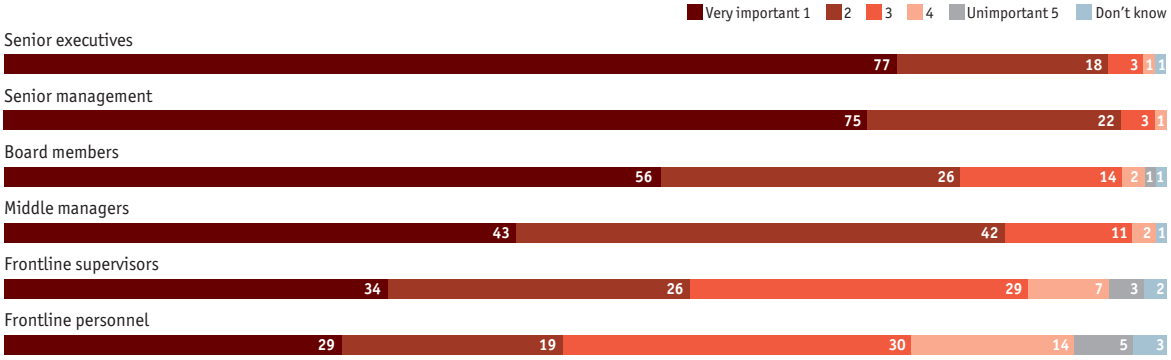


How widely dispersed is the business intelligence data you analyse?
(% respondents)

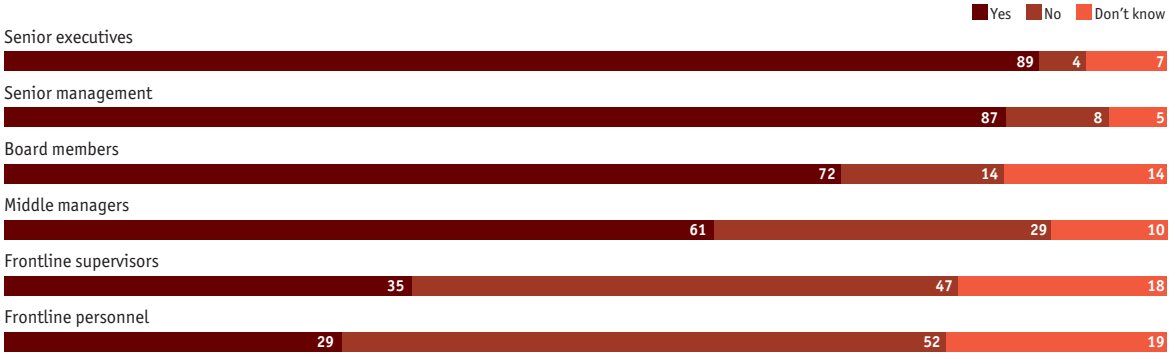


How satisfied are you with your ability to integrate and analyse all the relevant data within your organisation?
(% respondents)

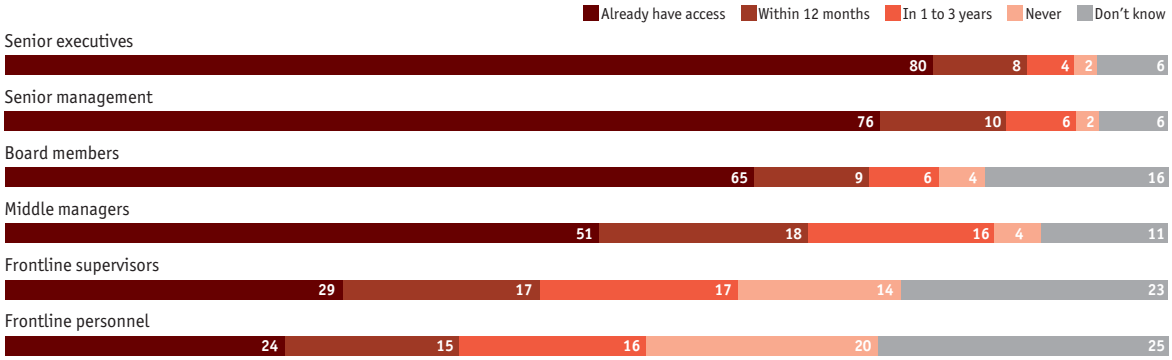
In your opinion, how important is it that the following groups of employees receive timely business intelligence?
(% of respondents)



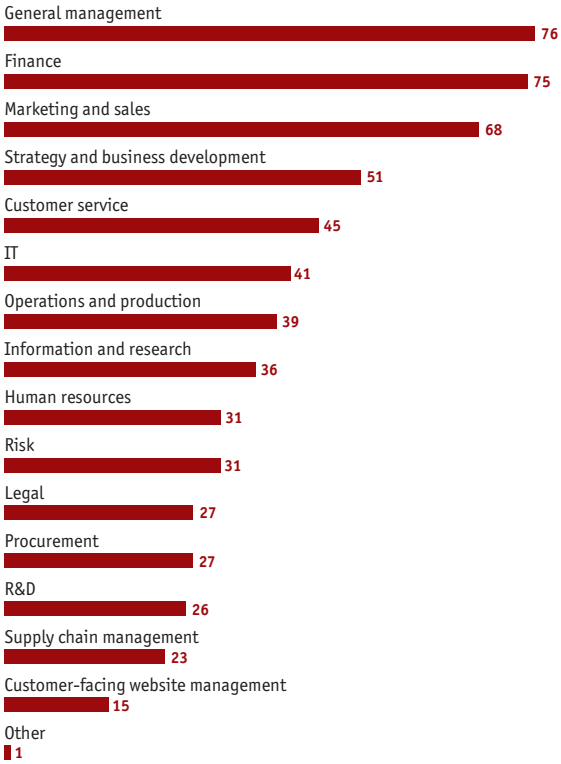
Do the following groups have access to business intelligence data at your company?
(% of respondents)



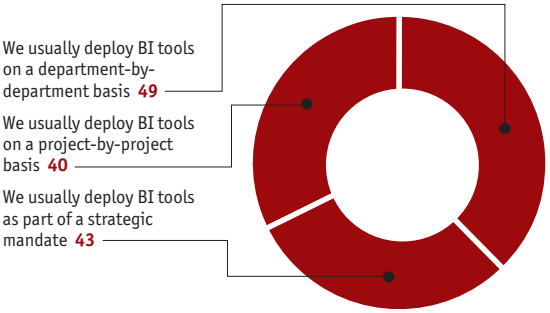
When do you expect these groups of employees at your company will have regular access to all relevant business intelligence data?
(% of respondents)



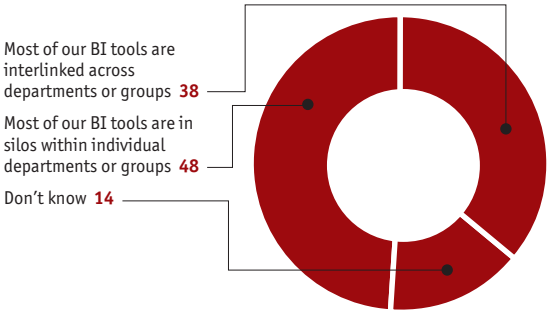
Which of the following functions in your organisation have access to business intelligence applications that support business and operational decisions?
(% respondents)



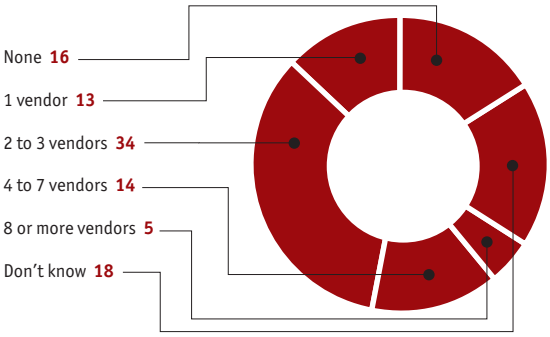
Which of the following would you say are true of your company's business intelligence deployments?
(% respondents)



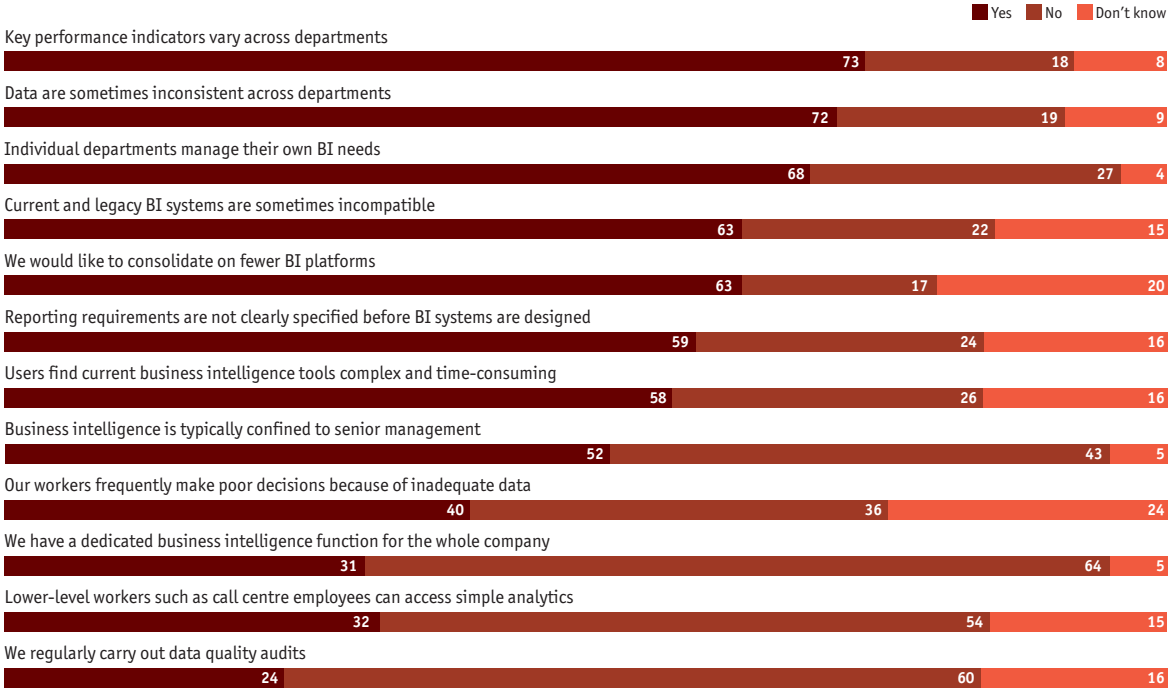
How are your company's business intelligence tools distributed across the organisation?
(% respondents)



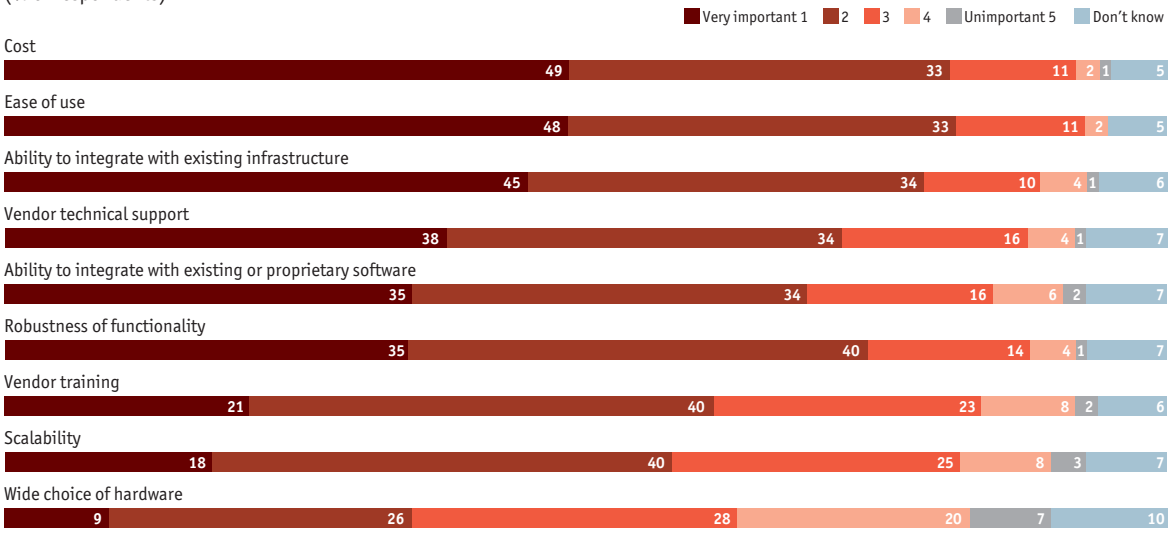
How many vendors does your company use to supply business intelligence analytical packages?
(% respondents)



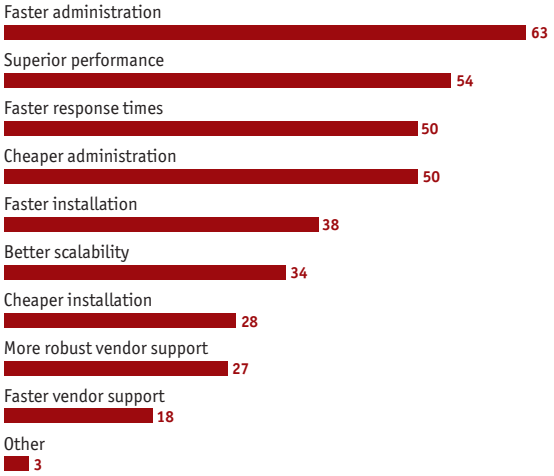
Do the following statements apply to the use of business intelligence in your company?
(% of respondents)



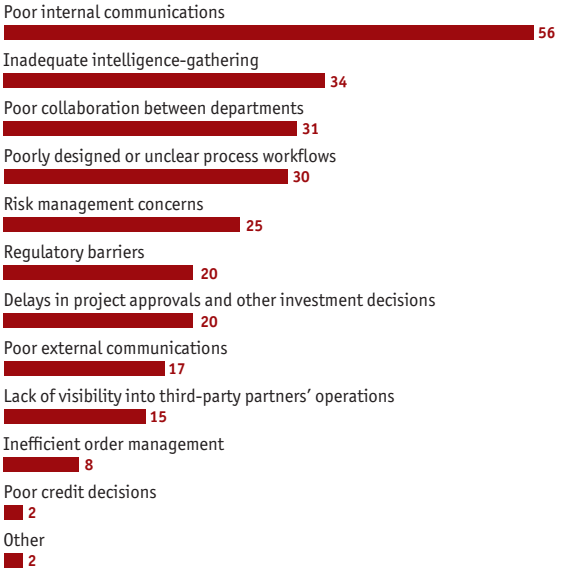
How important are the following factors when making purchasing decisions for new business intelligence tools at your company?
(% of respondents)



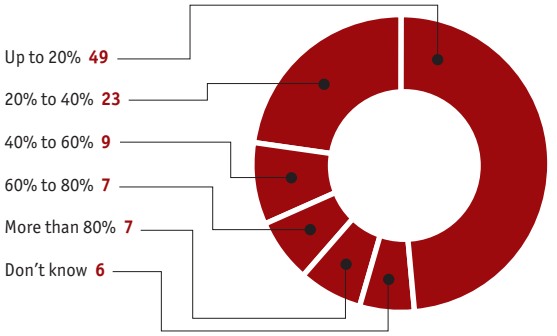
"BI/data warehouse appliances" are pre-integrated hardware and software suites that serve a full range of BI-related needs on their own.
Please indicate which of the following, if any, you think would be the benefits of such appliances.
(% respondents)



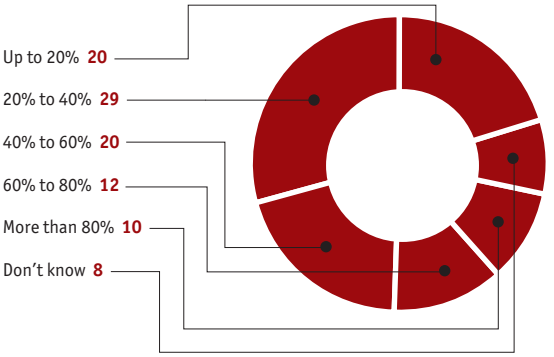
What do you believe are the chief process bottlenecks that impede your company's operations?
(% respondents)



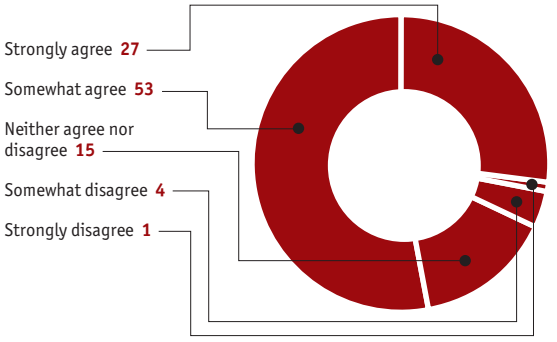
Roughly what percentage of the employees in your company currently have the authority to make decisions that could improve business processes?
(% respondents)



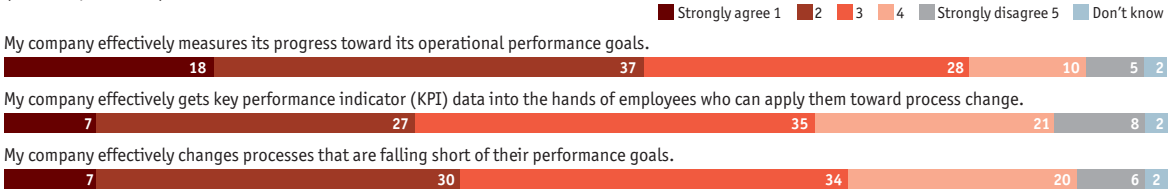
If business intelligence tools were universally accessible in your company, what percentage of employees do you think could be granted the authority to make decisions that could improve business processes?
(% respondents)



How strongly do you agree with the following statement?
My organisation could improve its operational performance if BI data were disseminated more broadly.
(% respondents)

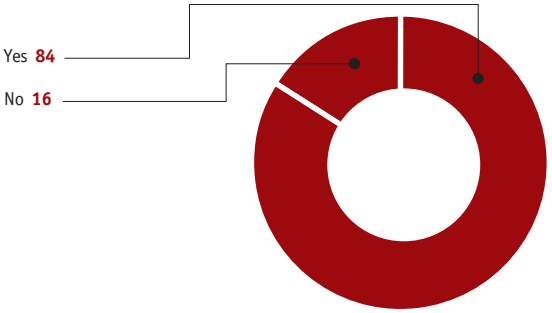


How strongly do you agree with the following statements?
(% of respondents)



Which of the following obstacles do you most frequently encounter when trying to use business intelligence data to improve operational performance?
(% respondents)

Does your company set operational performance goals?
(% respondents)



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