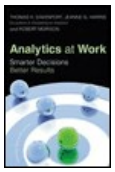

Analytics at Work: Smarter Decisions, Better Results

by Thomas H. Davenport, Jeanne G. Harris and Robert Morison

Chapter 6: Analysts – Managing Scarce and Valuable Talent

Though computers and data drive analytical decision making, they are not nearly as vital as people; we've never seen an analytically oriented firm without plenty of analytically oriented people. Finding, developing, managing, and deploying analysts—the people who make the day-to-day-work of such organizations possible—is critical to a firm's success.

Defining Analysts

In a large corporation, hundreds or perhaps thousands of employees have the word *analyst* in their functional titles, referring broadly to anyone who uses data or information. For our purpose in this book, we define *analysts* as workers who use statistics, rigorous quantitative or qualitative analysis, and information modeling techniques to shape and make business decisions—still a broad range of activity. To fully describe the challenges of managing analytical talent, we need to distinguish four types of analytical people.[1]

Analytical Champions

These champions aren't the kind you'd see in a Gatorade commercial; they are *executive decision makers* who depend heavily on data analyses to make business decisions and who lead major analytical initiatives. Champions are the leading advocates on how analytical techniques and technologies can be used to guide decision making. For example, Tom Anderson of Capital One and then UPromise, profiled in chapter 4, falls into this category. Analytical champions have both strong business acumen and an appreciation of analytical techniques. They communicate well about analyses because they can articulate how analytics will benefit the organization. Often analytical professionals who have been promoted into senior management, such champions establish long-term strategies and specify how to achieve them. Their expertise lies in their understanding of the business and of how analytical techniques and technologies, such as trending, forecasting, and predictive modeling, and enterprise applications systems such as SAP or Oracle, can help achieve business objectives. They often provide guidance to others in their organization on IT systems or process-related topics.

Portrait of an Analytical Champion

Steven Udvarhelyi, MD, Senior Vice President and Chief Medical Officer, Independence Blue Cross and Its Affiliates

Steve Udvarhelyi has overall responsibility for medical management programs and policies, provider contracting and relations, pharmacy services, and informatics at Independence Blue Cross (IBC). In overseeing informatics, Steve is responsible for corporatewide information management and reporting activities.

Analytics come naturally to Steve: "I've been a math- and science-oriented person my whole life. I like working through analytical problems." He sees his role as that of an executive advocate for implementing analytics across the enterprise. He argues passionately for the value of analytical capabilities yet recognizes that "having analytical capabilities and the best data in the world doesn't create competitive advantage. Changing the way the business uses it is the only way to create advantage."

Steve considers the attributes of a good analytical champion to be less about having the technical skills of a professional, and more about having an appreciation for the data. Most important, he says, a good analytical champion can translate the benefits of enterprisewide analytics to businesspeople in order to promote cultural and organizational change.[2]

Analytical Professionals

In the second category are the analytical professionals, the most proficient and knowledgeable employees across the range of quantitative skills. Analytical pros *create advanced analytical applications* by developing statistical models and algorithms to be used by others in the organization. Professionals typically employ advanced techniques such as trend analysis, classification algorithms, predictive modeling, statistical modeling, and optimization and simulation, as well as a variety of data-, Web-, and text-mining techniques.

Occupying the most creative level in the analytical cadre, professionals, like champions, provide analytical guidance to others in their organization. They are often involved in establishing long-term goals, specifying the best strategies to achieve them, and estimating the resources needed to accomplish them. Needless to say, you don't become an analytical professional by reading *Statistics for Dummies*. Typically, these jobs require an advanced degree (often a PhD) in a quantitative field such as economics, statistics, operations research, or mathematics, or a specialty degree in a field like biostatistics, informatics, genetics, or applied physics. For example, health insurer HCSC's special investigations department (which creates analytical solutions to detect fraud and does other specialized analytics) was led by Kyle Cheek, a PhD in political economy whose team included expertise in statistics, epidemiology, bioengineering, and business.

Professionals often have advanced technical skills, including coding in C++, SQL, and SAS.[3] The best professional analysts are not only technical and quantitative, but also skilled at explaining analytical problems and results in clear and nontechnical language. However, such a combination is difficult to find, and as we later argue, many professional analysts need translators to deal with mere businesspeople. Others in the business may view them with a mixture of awe and derision, referring to them as über-analysts, super-quants, or brainiacs. They typically make up only 5 to 10 percent of a company's analyst cadre.

Portrait of an Analytical Professional

Daryl Wansink, Director of Research and Evaluation, Clinical Informatics Department, Blue Cross and Blue Shield of North Carolina

With a PhD in social psychology from the University of Buffalo, Daryl Wansink originally planned on an academic research career: "But once I saw the incredible data that I would have access to [by working for a managed care provider] . . . Data is a statistician's crack and I was hooked." At Blue Cross and Blue Shield of North Carolina, Daryl is responsible for a team of analytical professionals applying statistical and experimental methods to improve health care delivery and business decisions. His biggest challenge is "to get good data from the real world that leads to definitive answers." With more than twelve years of experience, Daryl now has other analytical professionals working for him. But he still actively builds models himself (using SAS, SPSS, S-Plus, and Spotfire) because, as he says, "You have to be touching the data to understand what is going on. It is hard to delegate without getting into the model building."

As much as analytical professionals relish digging into the data, Daryl is quick to point out that "all that data is a double-edged sword. Successful analytical professionals have to have an element of pragmatism. Otherwise, you can get lost in the data for months and years and never find anything of value for the business."[4]

Analytical Semiprofessionals

The analysts in our third category *apply the models and algorithms* developed by professionals on behalf of the rest of the business. The majority of financial and marketing analysts are semipros. They may be sophisticated quants in their own right and may develop straightforward applications on occasion, but their primary role is to apply analytics to business problems for routine or specialized decision making. They are experts in data creation, collection, interpretation, and use—and in understanding the workings of a business through the structure and flow of its information. They perform complex queries and run models on data, link the analyses and insights to business results, and prepare business reports based on these analyses. Semipros are adept at working with analytical applications, visual tools for information analysis, and "what-if" tools, including marketing workbenches, financial planning models, pricing models, and sales forecasting models; statistical software, such as SAS or SPSS; and enterprise systems like SAP.

It's particularly important for semipros to be able to translate the benefits of analytics into lay language for businesspeople—for example, by bridging the gap between hard-core analytical professionals and business managers. Some semipros are primarily business analysts—often MBAs with quantitative orientations. They are often process oriented and certified in process improvement methods, such as Six Sigma. Others are primarily information and decision analysts, usually with advanced degrees in computer science. Semipros may make up 15 to 20 percent of the total analyst cadre.

Portrait of an Analytical Semiprofessional

David Scamehorn, Director of Customer Behavior Analytics, Best Buy

Dave Scamehorn has a long-standing interest in the application of mathematics to business. As an undergraduate at Macalister College, he majored in math, then earned a master's degree in statistics from the University of Minnesota. After an eight-year stint at Xcel Energy (a Minneapolis-based utility company), he was ready for a new industry and a new challenge. Dave joined Best Buy as a model builder and (if necessary) could still operate as an analytical pro. But his mission now is leading a broad customer analytics team of forty people, only fourteen of whom are full-time employees in his group. Their scope includes database strategy, tool selection and implementation, analytic consulting to the retail business, research and development of new analytic approaches, customer segmentation, and customer performance scorecard development.

While Dave has a few analytical pros working for him, most are semipros who rely on data visualization tools. These semipros work with the rest of the merchant organization to interpret and apply insights about their customers to improve business performance. His efforts have had a significant payoff. Best Buy's pricing and assortment decisions for the Christmas holiday season incorporated customer analytics for the first time in 2008, significantly improving profits from Black Friday weekend (the weekend after U.S. Thanksgiving), a remarkable achievement in one of the most dismal Christmas shopping seasons in retail history.

Dave may no longer build models at work, but he still remains an analyst at heart. "I like to keep my hands on the data. I don't get a chance to do it at work anymore, but I tinker on it at home. Strategy optimization is something I still pursue as a hobby."[5]

Analytical Amateurs

In the fourth category are the analytical amateurs, employees whose primary job is not analytical work, but who need some understanding of analytics to do their jobs successfully. By calling them "amateurs," we don't mean to be the least bit pejorative. On the contrary, amateurs are *knowledgeable consumers of analytics* who can apply analytical insights to their work. An amateur might be a business manager using data-driven insights to increase sales volume, a call center employee who relies on a "next best offer" recommendation in order to serve a customer effectively, or a warehouse manager who follows data-based advice about optimal inventory levels. Typically businesspeople who can enter and manipulate data using Excel spreadsheets and other basic information management tools, amateurs put the output of analytical models to work. They also summarize and report data to others in their organization. They include many of the most influential employees and executives in the business, people who combine information modeled by the professionals with their local data, knowledge, and experience to make analytics-based business decisions. Amateurs typically make up 70 to 80 percent (or more) of an organization's analytical talent. To illustrate their range, we profile two very different analytical amateurs.

Portrait of an Analytical Amateur

Will Smith, actor

Hollywood movie star Will Smith proves that an analytical amateur doesn't have to employ complicated math to be successful. An unconventional amateur, Smith has a remarkable track record. He was voted the top money-making movie star of 2008 by theater owners and film buyers.[6] And with good reason: except for the Harry Potter series, movies featuring him have higher opening weekends and average box office receipts than those with any other male lead.[7] How did he do it? By listening to the data. *USA Today* describes him this way:

Smith frequently calls himself a "student of universal patterns." When he first decided to make films, he and his business manager studied the ten top-grossing films of all time and said, "O.K., what are the patterns? We quickly realized that 10 out of 10 had special effects, 9 of 10 had special effects with creatures, and 8 of 10 had special effects with creatures and a love story."[9] This straightforward, analytically based insight didn't take a lot of effort, but it certainly made it a lot easier to choose his next two films, *Independence Day* and *Men in Black*, which were huge international hits.

Smith doesn't rely exclusively on math to choose scripts, of course. But regardless of the film's appeal to him as an artist, he always analyzes data to make his movies as successful as possible. He says one key to his success is realizing that "movie stars are not made in America. Movie stars are made when you can pull $20 million out of Brazil, or when you can do $48 million in Japan."[10] The data convinced him to travel extensively to promote his films internationally. As a result, the recent *Seven Pounds*, a movie with limited appeal in the United States, generated over $168 million gross worldwide box office sales—largely through Smith's insistence on marketing the film to an international audience.

> For all the on-screen charisma that has made him a Hollywood ATM, Smith is, at his core, a statistician with social skills . . . Most Mondays, he pores over box office reports the way sports nuts read box scores . . . "I think of the universe as this big, master computer," he says. "The keyboard is inside each of us. I have a keyboard inside of me. I just have to figure out what to type, learn the code, to make the things happen that I want."[8]

Portrait of an Analytical Amateur

Byrne Doyle, District Manager, Best Buy Michigan

As district manager for Best Buy in Michigan, Byrne Doyle transformed one of the worst-performing districts in the company into a top performer. His colleagues credit his leadership, deep customer knowledge, analytically based insights, and willingness to teach others how analytics can improve business performance.

Byrne has filled many previous roles at Best Buy, working in operations, in customer service, and as regional finance director. This diverse background enables him to view data from multiple business perspectives and is, he says, "a tremendous advantage to how I apply analytics." A quick study who is largely self-taught, Byrne approached each new position as a way to sharpen his business acumen. Although he took some MBA courses to build his functional expertise, he describes himself as "a computer guy and a tinkerer at heart" who learned about technology, business, and statistical analysis largely by doing.

Byrne's naturally competitive nature and desire to understand the root causes of things led him to develop his skills as an analytical amateur. "The foundation of my career is that I am able make connections that other people don't make. I try not to box myself into or anticipate solutions. My first tendency is to go straight to the root cause, find the patterns that other people overlook and work back from there."

Byrne does a great job at balancing short-term (P&L/financial metrics) with longer-term customer and employee metrics. The key to using analytics from his perspective is to "distill the data down to its essence for my team. Others tend to share too much information. In our business, it comes down to some simple nuggets, like 'Grow market share and we can outperform the economy.'"

Byrne mentors his subordinates so they learn to think analytically about the business. He wants his store managers and sales associates to be proactive about how their actions can build the business rather than to react to the "metric of the month."

By focusing on this single goal, he led his stores to win the employee experience award two years ago and the customer experience award last year.[11]

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[1]Jeanne G. Harris, Elizabeth Craig, and Henry Egan, "How to Create the Talent-Powered Analytical Organization" research report, Accenture Institute for High Performance, 2009.

[2]Interview with Dr. Steven Udvarhelyi, December 10, 2008.

[3]Interview with Kyle Cheek, November 24, 2008. Kyle Cheek has moved to another company since we interviewed him for this book and is now vice president of data services and analytics at Emdeon Business Services.

[4]Interview with Daryl Wansink, January 29, 2009.

[5]Interview with David Scamehorn, December 31, 2008. Scame-horn has moved to another company since we interviewed him for this book and is now director of customer analytics at Advance Auto Parts.

[6]"Will Smith Voted 2008's Top Money-Making Movie Star," www.reuters.com/article/entertainmentNews/idUSTRE5013DY20090102, Reuters newswire, January 2, 2009.

[7]R. Grover, "Box Office Brawn," *BusinessWeek*, January 14, 2008, 18.

[9]R.W. Keegan, "The Legend of Will Smith," *Time*, November 29, 2007.

[10]Christopher Kelly, "Box-office champ Smith says 'Seven Pounds' offers him the chance to shed old persona" December 16, 2008, http://www.popmatters.com/pm/article/67010-box-office- champ-smith-says-seven-pounds-offers-him-the-chance- to-she/ or this one from the Will Smith fan site, http://www.willsmithweb.com/2008/12/14/seven-pounds% e2%80%99-offers-chance-to-shed-some-of-his-old-persona/.

[8]Scott Bowles, "Will Smith Has Found the Magic Formula," *USA Today*, June 26, 2008.

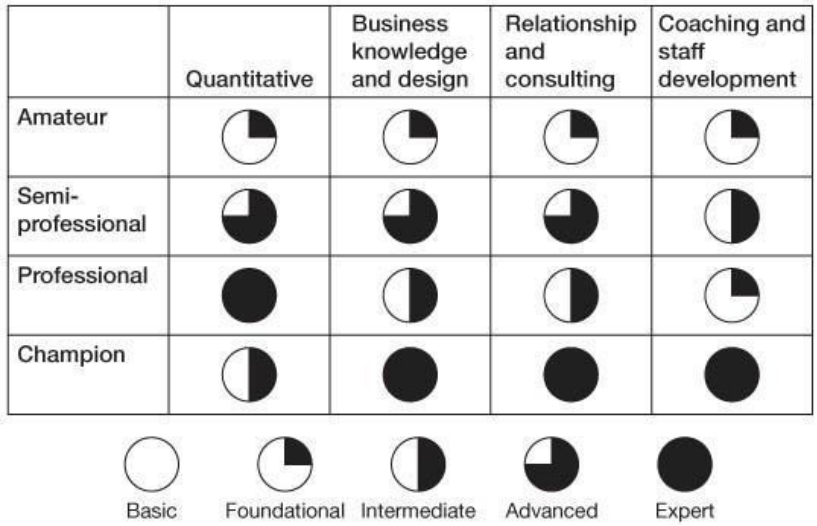
[11]Interview with Byrne Doyle, January 6, 2009. Since our interview, Doyle has been promoted to vice president, territory general manager, a significant promotion.

Analytical Skills

Quantitative skills are the core requirement for any type of analyst. But tuning a regression equation or manipulating a spreadsheet is only the beginning. Effective analysts need to be proficient not only with data, but also with people.

- *Quantitative and technical skills* are the foundation. Naturally, analytical professionals have more quantitative expertise than semipros, champions, and amateurs, but all analytical people must be proficient in the quantitative disciplines specific to their industry or business function: stochastic volatility analysis in finance, biometrics in pharmaceutical, and informatics in health care firms, for example. Analytical people must also know how to use the software tools associated with their type of analytical work, whether it be to build algorithmic models, define decision-making rules, conduct "what-if" analyses, or interpret a business dashboard.
- *Business knowledge and design skills* enable analysts to be more than simple backroom statisticians. They must be familiar with the business disciplines and processes to which analytics are being applied. They need enough general business background to work at the interfaces of business processes and problems. They also must have insight into the key opportunities and challenges facing the company, and know how analytics can be used to drive business value.[12]
- *Relationship and consulting skills* enable analysts to work effectively with their business counterparts to conceive, specify, pilot, and implement analytical applications. Relationship skills—advising, negotiating, and managing expectations—are vital to the success of all analytical projects. Furthermore, an analyst needs to communicate the results of analytical work: either within the business to share best practices and to emphasize the value of analytical projects; or outside the business, to shape working relationships with customers and suppliers, or to explain the role of analytics in meeting regulatory requirements (e.g., utility company rate cases). For this reason, we'd modify Warren Buffett's admonition from "beware of geeks bearing formulas" to "beware of geeks who can't explain the benefits and limitations of their formulas" (though that may be a large proportion of geeks, admittedly).[13]
- *Coaching and staff development skills* are essential to an analytical organization, particularly when a company has a large or fast-growing pool of analysts, or when its analytical talent is spread across business units and geographies. When analytical talent isn't centralized, coaching can ensure that best practices are shared across the company. Good coaching not only builds quantitative skills, but also helps people understand how data-driven insights can drive business value.

In practice, we've found that few individuals come equipped with the full spectrum of skills we've listed (see "About the Analytical Talent Research" for the methods we used); analytical capacity is, apparently, not yet a Darwinian evolutionary priority. Therefore, a company needs the right mix of analytical talent in its ranks of analysts. For example, you must balance pros—who focus on more advanced analytical techniques—with semipros—who have a broader skill set, combining strong analytics with business design and management skills to link professionals to their customers. Figure 6-1 shows the relative strengths of each type of analyst across the major skill categories.



Source: Jeanne G. Harris, Elizabeth Craig, and Henry Egan, "How to Create a Talent-Powered Analytical Organization," research report, Accenture Institute for High Performance, 2009.

Figure 6-1: Typical skill proficiency levels by type of analyst

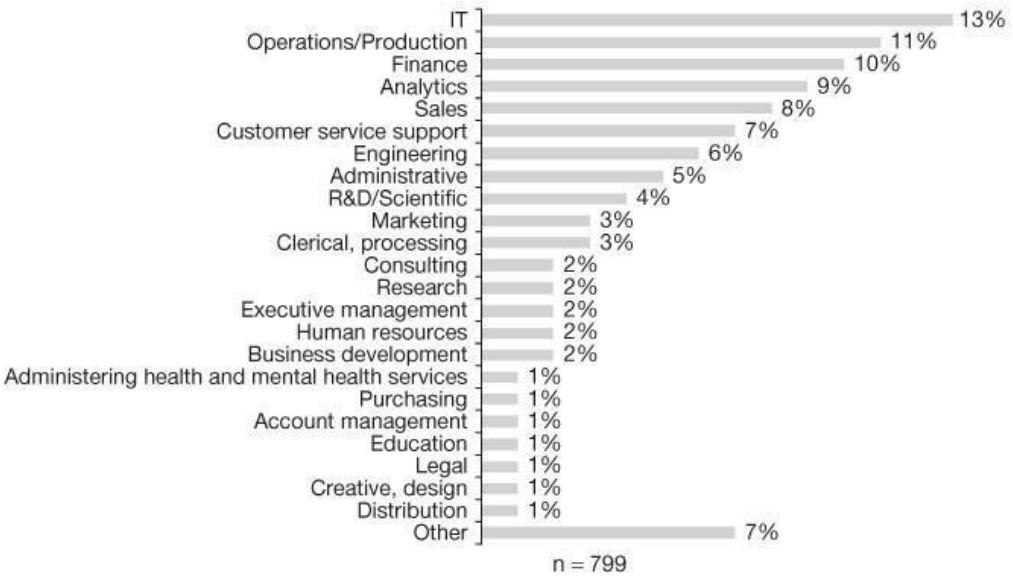
About the Analytical Talent Research

In 2008, the Accenture Institute for High Performance conducted a research study, "Talent Engagement, Attitudes and Motivations," to investigate what influences engagement for employees in general and for "analytical talent" in particular. A comprehensive, Web-based survey measured the personal engagement, work attitudes, and career motivations of full-time employees in a wide range of jobs and organizations. The 1,367 respondents (including 799 analysts) were U.S. employees at companies with at least $50 million in annual revenues. They represented a wide variety of industries and worked across a range of functional areas, including finance, IT, operations and production, R&D, marketing and sales, illustrated in the following figure.

The good news is that our research found that analysts overall are significantly more engaged at work, more satisfied with their jobs, and more committed to their organizations than other types of employees. (The following table contains illustrations of engagement expressed by analytical versus nonanalytical talent in terms of engagement, job satisfaction and organizational commitment.)

Analytical work may seem deadly dull to the nonquants among us. But it actually has many of the attributes that lead to motivating and engaging work. Analytics require the use of a diverse mix of skills (quantitative, technical, and interpersonal), provide the opportunity to complete an entire piece of work, have a significant impact on others, allow some degree of autonomy in performing the work, and offer automatic feedback on work performance. Indeed, the analysts we surveyed reported significantly higher levels of all of these factors than did other employees, suggesting that if Karl Marx had foreseen the rise of analytics he might have been more optimistic in his theories and a generally happier person.

Differences between analysts and non-analysts



Source: Jeanne G. Harris, Elizabeth Craig, and Henry Egan, "How to Create a Talent-Powered Analytical Organization," research report, Accenture Institute for High Performance, 2009.

	Analysts	Non-analysts
Feel like going to work when I get up in the morning	68%	52%
Willing to really push myself to reach challenging work goals	82	66
Ready to put my heart and soul into my work	77	64
Get excited thinking about new ways to do my job more effectively	67	50
Like working at my company	78	65
Really care about the fate of my company	74	59
Willing to put in a great deal of effort beyond that normally expected in order to help my company be successful	70	51

Source: Jeanne G. Harris, Elizabeth Craig, and Henry Egan, "How to Engage and Retain Your Analytical Talent," research report, Accenture Institute for High Performance, 2009.

[12]A common misconception is that most analytical workers lack broader business know-how. In fact, our research found that analytical workers had higher levels of business acumen than their non-analytical counterparts. Analysts in our study showed a greater and often more nuanced understanding of their company's strategy, goals, and core capabilities, as well as the impact of external forces on their organization—such as the actions of competitors or regulators. Analytical champions scored highest on business acumen, which is needed to align analytical capabilities with business priorities. Professionals had high levels of business acumen as well. It's clear that, despite their deep technical skills, pros are not just backroom statisticians, but also must possess strong business insight.

[13]Warren E. Buffett, Annual Letter to Shareholders of Berkshire Hathaway, 2008, http://www.berkshirehathaway.com/letters/2008ltr.pdf.

Motivating Analysts

Securing the analytics skills you need isn't simply a matter of getting HR to hire more quantitative experts. To find and keep analysts, you need an understanding of how they tick and an informed approach to managing them. First and foremost, analysts are motivated by *interesting and challenging work* that allows them to utilize their highly specialized skills. Challenge and complexity are essential for pros and semipros, particularly running sophisticated data analyses and developing new models and techniques. Like most analysts, Sharon Frazee, Vice President of Corporate Healthcare Analytics and Research at Walgreens, values the opportunity to do interesting work: "Money's nice, but I get more excited about doing things that are interesting, not doing the same thing every day, and having opportunities for growth—to stretch my skills."[14] Managers must be mindful of this fact as they design and organize their analyst roles. Perhaps the biggest demotivator for analytical pros is spending too much time on simple analyses and report generation instead of building and refining analytical models. We know of several organizations that have lost analysts who felt they were treated largely as "spreadsheet developers."

Variety in their work and a *sense of personal progress* keep analysts interested and challenged. One grocery retailer found it could attract highly skilled MBAs to an essential but repetitive analytic and reporting job, but could not keep them for long before they became restless and sought out new challenges. Variety comes from fresh assignments and projects, "moving around" the business to expose analysts to strategic problems and priorities, and offering blocks of time for learning and experimentation. For small analyst groups or those without precedent for analyst career paths, the chance to develop new expertise is crucial: developing new knowledge of business functions, quantitative models, analytic techniques, and software packages are just few examples of such opportunities.

Analysts also want to *do important work that makes a meaningful contribution*. The models and applications they build must matter to the

business. As Sharon Frazee told us: “I want the stuff I do to make a difference . . . Being able to do the kind of informatics work that actually gets applied, and to see things changed because of it, is a lot more important to me than a lot of other stuff.” Another big demotivator is feeling that only a fraction of one’s work is actually used. And if the business is not demanding important analytics work, the best analysts sense that it’s time to move on.

Analysts want to feel supported and valued by their organizations, but they also want *autonomy* at work—the freedom and flexibility to decide how their jobs are done. Managers should provide goals and resources, and then give analytical people freedom to organize their own work. Autonomy is not abandonment, however. Managers (and customers for that matter) need to recognize analysts’ work and make their contributions visible to senior management.

In addition to thinking about *what* analysts do, it is important to consider with *whom* they work. Analysts like to be surrounded by other *smart and capable colleagues*. Grouping analysts together—whether physically in functional groups, or virtually in communities of interest—keeps them motivated. It also promotes sharing of best practices, leading to knowledge spillovers, and allows companies to tailor career models and training opportunities to better suit the needs of their analysts.

Companies that can offer analysts the chance to work with other smart analysts and businesspeople have little trouble attracting analytical talent. Steve Udvarhelyi at Independence Blue Cross reports that their informatics organization offers just such an appealing environment that helps to attract analytical talent: “It’s a defined center of excellence. It creates a fertile ground for people to work with other people. It creates a critical mass where you get career opportunities, growth opportunities, and a good professional interaction.”

Designing meaningful jobs and ensuring opportunities for intellectual stimulation and career growth is only half the challenge. Our research points to several other factors important for organizations to hold on to their analysts. In particular, analytical people seek a strong culture of trust—where they feel like they are treated in a fair, consistent and predictable fashion, and where they believe that the other people in the organization are open and honest and act with integrity. Positive relationships with their immediate supervisors are also particularly important to analysts (especially semipros)—even more than they are to other employees. The absence of any one of these factors will often cause analysts to head for the exits.

[14] Interview with Sharon Frazee, November 10, 2008.

Organizing Analysts

One of the most common questions we hear is, “What’s the best way to organize analysts?” When just getting started with analytics, it is easy enough to stash a handful of analysts in a functional department. But deciding how to organize and manage analysts (especially the highly skilled pros and semipros) becomes a management concern once executives begin to take analytics seriously. Because top analysts are a scarce and potentially very valuable resource, naturally you want to maximize their value to the business. It’s wasteful to have them locked up in one part of the enterprise working on low-value projects when there is high-value work elsewhere. It’s also wasteful to have them scattered across the enterprise working on small local problems and unable to band together in “critical mass” to tackle strategic initiatives. Organizational structure matters because it affects how you:

- *Deploy* people on the most important and value-adding work of the enterprise.
- *Develop* skills and experience that analysts need to maximize their potential.

For analytical professionals and semiprofessionals, organizational design boils down to two big questions (your analytical amateurs are by definition distributed across the enterprise):

- *What’s the best way to group people* to align them with business units for geographical and administrative convenience and to enable them to work with and learn from each other regularly?
- *What are the best ways to coordinate* among groups to impart an enterprise perspective, ensure that people are working on the most important projects, improve business performance, and provide ample opportunities for development?

The challenge in organizing analytical professionals and semiprofessionals is to get them working “close to the business” on the most important analytical initiatives while keeping them working “close to each other” to coordinate their efforts and for purposes of mutual learning and support.

In our research and discussions with companies, we’ve found that there may be no single right answer to how to organize your analysts—but there are many wrong ones. So we’ll try to help you avoid the common mistakes, while also showing what an organizational model should accomplish.

Companies with a lot of semipros often house them with the functions they serve, so financial analysts work in finance and marketing analysts work in marketing. On the other hand, when semipros are few and multipurpose, they may be grouped with the professionals. Some companies gather them into a centralized unit, so they can work with and learn from each other regularly. Others align their analysts with business units for geographical and administrative convenience. Figure 6-2 depicts five basic options for organizational structure of analytical professionals and semipros in large, multidivisional corporations. We discuss them in order from the most centralized to the most decentralized.

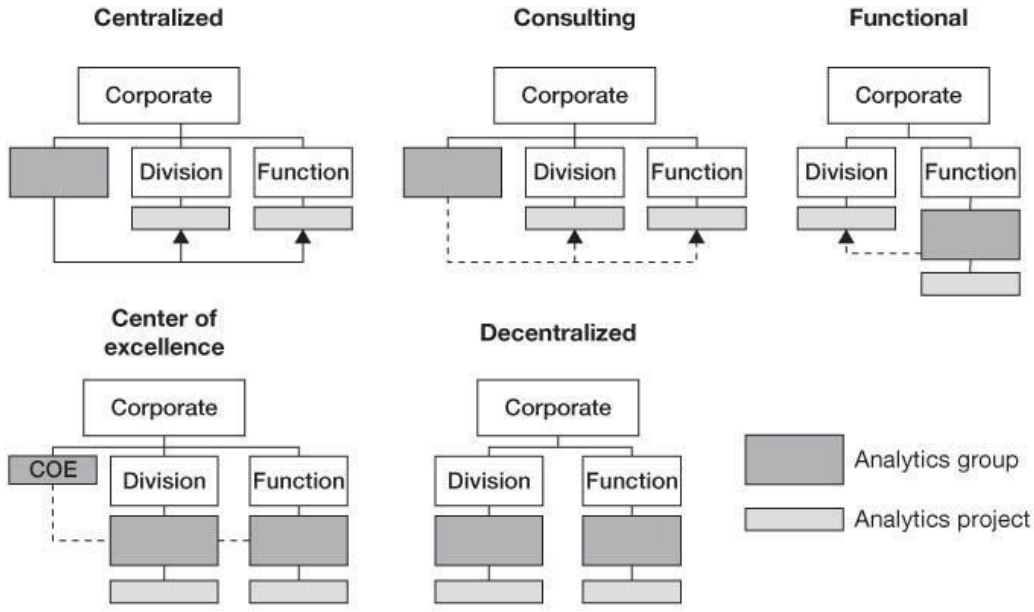


Figure 6-2: Options for organizing analytical talent

Centralized. In a centralized model, all analyst groups report to one corporate organization, even if they are assigned to different business units or functions. This centralization makes it easier to deploy analysts on projects with strategic priority; however, it can create distance between analysts and the business, especially if the analysts are all housed in the corporate location. One organization employing this approach is the candy manufacturer Mars, whose centralized Catalyst group has long-term funding and can be deployed strategically to work with any part of the business. Expedia has also recently formed a centralized analyst group.

Consulting. In a consulting model, all analysts are part of one organization, but instead of corporate deploying analysts to business unit projects, the business units "hire" analysts as consultants to their analytical projects. There are several benefits to this model: it is more market driven than the centralized model, and by consolidating its analysts it also enables an enterprisewide view of what's going on. Even more important, it allows the consultants to educate and advise their customers on how to utilize analyst services—in other words, to make the market demand smart. This model falters under weak enterprise focus, poor executive leadership, or faulty targeting mechanisms, all of which create an environment in which analysts end up working on whatever project the business units choose to pay for (or whatever wheel is squeakiest) rather than projects that deliver the most business value. As with the centralized model, analysts may be resident in business units, but they report to the central consulting organization. United Airlines, eBay, and Schneider National all employ the consulting approach.

Functional. In a functional model, a single analyst group resides in whichever department or function is the primary consumer of analyst services, but the group may also provide consulting services to the rest of the corporation. The functional model allows analysts to migrate as analytical applications are completed, and the analytical orientation of the corporation changes. For example, the analytics unit may report first to operations or logistics, then later migrate to marketing. Fidelity, for example, employs the functional approach; the great majority of their analysts work in the "customer knowledge" group, which reports to marketing. However, its analysts can serve other parts of the organization as consultants when needed.

Center of Excellence. In a center of excellence (COE) model, analyst groups are decentralized. They reside in every major business unit or function that has an appetite for analytics, but all groups are members of (and perhaps report dotted line to) a corporate center of excellence for analytics. The COE model builds a community of analysts who can learn from each other by sharing experiences and best practices. Sometimes a strong COE can also double as a "program office," looking across analytical initiatives, advising on project priorities and staffing, and facilitating when analyst groups need to borrow staff from one another. Both Capital One and Bank of America employ versions of this model: at Capital One the "heavy-duty" PhD statisticians are in a center of excellence; Bank of America has analysts spread around the bank, so it tries to overcome the model's limitations by holding regular conferences and running an online portal to encourage communication among analysts.

Decentralized. In a decentralized model, analyst groups are associated with business units and functions without any corporate or consolidating structure. The decentralized model is the most prevalent according to our research, which reflects the immaturity of most corporations' analytical capabilities today. This model makes it difficult to set enterprise priorities and to develop and deploy staff effectively through borrowing and rotation. We've found that the purely decentralized model is effective only in the rare case of a large, diversified, multibusiness corporation in which the businesses have little in common. Because it wouldn't be a compliment, we won't name any companies with decentralized organizational models—but there are plenty of them.

We have also seen variations on these models. Procter & Gamble, for example, starts with a centralized model, consolidating over 120 analysts in a central shared services organization. But the analysts, who are each assigned to a brand or business unit, work at locations around the world. Still other P&G analysts work on a consulting basis. We've also seen "combination" models—like decentralized analytics groups plus a corporate consulting cadre that provides specialized services and supplemental staff to business unit projects. Finally, corporations with autonomous business units often use a "federated" approach that installs analyst groups in each business unit, establishes a corporate group to drive enterprise initiatives, and coordinates all the groups with clear "guidelines of federation."

Of course, the companies we studied all felt that they had sound reasons for the models they chose. The decentralized model emerged as the

most popular approach, with 42 percent of respondents.[15] Unlike in high school, however, popularity isn't everything. The ideal model ensures that your scarce and valuable analysts (1) are tasked with the most important analytical projects, (2) bring an enterprise perspective to bear, and (3) have ample opportunities for development and job satisfaction.

We think the centralized and center of excellence models (or a federated model combining elements of both) offer the greatest potential benefit for organizations ready to take an enterprise approach to analytics. Analysts in a centralized or center of excellence model have significantly higher levels of engagement, job satisfaction, perceived organizational support and resources, and intention to stay than decentralized analysts or those who work in consulting units. Centralized and center of excellence organizational models are most common in more sophisticated analytical enterprises. And both models were most often found in the industries that we'd expect to have advanced analytical capabilities, including retail, consumer goods and services, financial services, and health and life sciences.

Company size was less of a factor than type of industry, although we found that companies with fewer than a thousand employees were more likely to organize their analysts into one functional area, while larger companies (with over twenty-five thousand employees) were more likely to operate with a center of excellence model.

[15]This section adopts a framework published in Peter Cheese, Robert J. Thomas, and Elizabeth Craig, *The Talent Powered Organization* (London: Kogan Page, 2007).

Managing Analysts

Vital to the long-term success of any analytically minded organization, analysts are often among the most difficult talent to locate, attract, and retain. However, few companies manage their analytical talent as a strategic resource. Because analysts are often scattered throughout the organization, many companies don't even have a clear picture of who their analysts are, where they reside organizationally or how many they have. They certainly don't recognize or manage them as a distinct and pivotal workforce segment that requires its own recruiting strategies, training and development plans, career paths or performance management processes. To effectively manage analysts, companies must: (1) define the organization's needs for analytical skills; (2) tap into new and diverse analytical talent pools; (3) develop analytical and business skills; and (4) deploy analysts so that their efforts are aligned with the organization's strategic goals.[16] The following sections describe these four activities.

Defining Resource Needs for Analysts

The first step in defining a company's needs for analysts is to identify analytical capabilities that a company needs to achieve strategic and operational goals, determine which analyst jobs are "mission critical," and inventory the analytical talent already in place to fill these needs. Armed with an understanding of their analytical resource requirements and current employee skills, companies can make better use of the analytical talent they have and plan their human resource needs more effectively. For example, one global consumer products company predicts its talent needs three years out, based on an understanding of where the business is going and what skills and capabilities will be needed. Bank of America reviewed its employees and identified a subset of its job descriptions as "analytical." The company ultimately identified over two thousand people as analytical professionals, semipros, or amateurs.

Before hiring for a retailer's many open analytical positions, managers first evaluated the skills already available across the business (see figure 6-3) and compared them to where they were most needed. This review of skills and open positions found many people who were either under- or overqualified for their work. Realigning people with positions reduced the number of new hires and had the added benefit of greatly improving employee job satisfaction and engagement.

		Amateurs	Semiprofessionals	Professionals
	# analytical resources	▸ Workbench ▸ Standard reports ▸ Alerts	▸ Multidimensional analysis ▸ Analytical applications ▸ Data visualization	▸ What-if planning ▸ Predictive modeling ▸ Statistical analysis
Stores	50	◑	◑	◔
Buyers	125	◑	◑	◔
Supply chain	55	◔	◔	◔
Marketing	74	◔	◑	◑
Finance	48	◑	◑	◔
Services	25	◔	○	○
HR	12	◔	○	○
Total	389			

○ Basic ◔ Foundational ◑ Intermediate ◕ Advanced ● Expert

Figure 6-3: Analytical skill assessment at a retailer

Tapping into New Sources of Analysts

Given the growing demand for analysts, astute business leaders must ensure that they can hire or source the necessary skills. Organizations used to recruit analysts just like they sought any other white-collar worker. Now, they must discover novel ways to access analytical skills—from using untapped skills of existing employees to finding new talent pools. Doing so ensures that analytical companies are not locked into particular locations or stuck in shrinking talent pools.

Just as adventurers on safari seek out game at the watering hole, you can most easily find analytical people where they naturally gather—analytics conferences like INFORMS (the operations research society), vendor-sponsored meetings, university groups, and industry interest groups. Analysts often prefer to live near quantitatively oriented universities and major financial centers where their skills are in highest demand. Companies looking for advanced skills may also turn to resources like social networking groups (such as LinkedIn), specialty search firms, and quant Web sites.[17] Even poaching analysts from high-performing competitors has become commonplace.

Getting the best analysts can require flexibility. One manager was able to fill several positions at once by allowing new hires to remain in the small town where they lived after their former employer moved their positions to a large city. Another way to gain access to top analysts is to tailor job descriptions to fit the individual. Kyle Cheek was originally hired into HCSC in the special investigations department, in a position created solely to facilitate the hiring of political economics PhDs. Although he had the analytical skills the company needed, his atypical background could otherwise have prevented his getting a job because he did not fit any position requirements.

Any company seeking an ongoing supply of internal analytics capabilities must also forge tight links with the best graduate school programs worldwide—programs with robust reputations for rigorous training in analytics. Sponsorships and internships can form close relationships with academic institutions. Dow Chemical, for example, enjoys a long-standing partnership with Central Michigan University and hires many of its graduates. Similarly, SAS endowed a Masters in Advanced Analytics program at North Carolina State, and companies have flocked to hire its alumni.

Some organizations go even further to connect with future recruits well before they hit the universities. Texas Instruments joined forces with the National Council of Teachers of Mathematics and CBS to sponsor an education program based on the television program *Numb3rs,* whose story lines are inspired by actual FBI cases in which mathematicians solve crimes and prevent terrorist attacks. By generating interest in math, science, and technology, these analytical organizations promote the development of analytical skills at an early age.

Traditionally, companies have either supplemented in-house analysts with independent contractors or outsourced work to specialist firms in North America or western Europe. But given the talent shortage in these markets, businesses are increasingly looking to emerging markets—such as China and India—to bridge the talent gap. Often under-rated as a vast pool of highly educated, cheap number crunchers, these emerging markets are becoming an excellent source of talent as they gain the capabilities and experience to carry out some of the most complex analytical tasks. Leading this trend, India is the fastest-growing market for offshore analytics delivery. By 2011, we estimate that the majority of the offshore market for analytics delivery will be based in India.[18]

Some resourceful organizations have uncovered creative new sources of analysts, proving that your analytics expert does not have to be on your payroll—or even in your home country. For example, some companies are using Web-based “idea marketplaces” such as www.Innocentive.com and www.NineSigma.com to post requests (and rewards) for solutions to their trickiest analytical problems. And Netflix had a competition that offered a top prize of $1 million to whoever can improve by at least 10 percent the accuracy of Cinematch, its movie recommendation algorithm.[19] Even MIT has taken to leaving advanced mathematical equations on its chalkboards after hours, in hopes that one of their janitors happens to be an under-achieving quantitative genius. Oh, wait—that may have just been a movie.[20]

Developing Analysts

Analytical techniques and tools are constantly changing, and the skills demanded of analysts at all levels are perpetually being redefined. To respond to this constant flux—not to mention keep analysts engaged—analytical organizations must invest in updating their analysts’ skills, particularly those that accelerate strategic business benefits.

One approach is to train analysts internally. Analytical amateurs especially benefit from improving their skills in analytical opportunities, methods, and tools. At Procter & Gamble, for example, the central product supply analytics group offers a course called Analytics with Spreadsheets—often the preferred tool of analytical amateurs. The trucking firm Schneider National’s central analytics group offers the courses Introduction to Data Analysis and Statistical Process Control in Services.

Another avenue to increase analytical skills is by rotating developmental assignments. Analysts who routinely analyze the same data and look at the same business problems tend to fall into a rut. Rotational assignments keep them on their toes and help them bring a fresh perspective to different parts of the business. Analytical amateurs also learn well when they have the opportunity to work alongside different pros and semipros on analytics projects. These assignments can be part of a formal job rotation program; when managed well, they can turn their departments into hotbeds of valuable analytical activity. For example, GE Money’s offshore analytics centers in Shanghai and Bangalore loan their staff for temporary assignments in business operations through a formal job rotation program. This has aided retention (in very competitive markets) and improved employee engagement by offering analysts new learning opportunities, task variety, and a sense that they are making meaningful contributions to the business. The local businesses see the benefits, too, and demand for these analysts is growing.[21]

Deploying Analysts

Matching a person’s skills and aspirations with the jobs the business needs is critical; however, it’s no simple trick to find people who can not only deliver the goods today but also develop the skills to deliver different goods tomorrow. Most analytical amateur work and some semipro work is predictable and routine, so if people demonstrate the skills and the company has established performance measures, then matching talent to work is relatively easy. Analytical pros, like PhD statisticians, for example, are another story. Highly educated pros, with rare combinations of knowledge and experience, are in scarce supply. So put your best analysts where they’ll do the most good. Make sure that the

pros are focused on the company's biggest problems and be prepared to move them around as needed.

Deploying analysts appropriately is a win/win. Analytical people have skills that are in high demand, so organizations should recognize analysts as a special segment of high-value workers whose preferences and motivators are distinct from those of the average employee. Organizations must also connect analysts with one another, especially when they are few or dispersed; creating communities reduces ineffective "pockets of analytics" and facilitates learning.

[16]Jeanne G. Harris, Elizabeth Craig, and Henry Egan, "How to Organize Your Analytical Talent," research report, Accenture Institute for High Performance, 2009.

[17]These Web sites include quantfinancejobs.com, jobs.phd.org, wilmott.com, and quantster.com.

[18]Internal Accenture analysis, 2009.

[19]On September 21, 2009, Netflix declared "BellKor's Pragmatic Chaos," a global group of researchers, scientists, and engineers, as winners of its $1 million contest to improve Cinematch. The winning entry improved the model's performance by 10.6 percent.

[20]*Good Will Hunting*, Miramax, 1997.

[21]Interview with Cathy Mildenhall, May 25, 2007, and March 10, 2008.

Managing Analysts Through the Stages

Analytical people may be the last element of the DELTA model, but they are by no means the least important one. An investment in understanding what makes analytical people tick and how to take full advantage of their skills and capabilities has a huge payoff. In the early stages of business analytics, just attending to the care and feeding of your analysts is enough. But as demand builds, the organizational challenges increase.

At each stage, consider how to acquire, develop, engage, organize, develop, and deploy analysts. Recommendations by stage are summarized in table 6-1.

Table 6-1: Moving to the next stage: Analysts

From stage 1 *Analytically Impaired* to stage 2 *Localized Analytics*	From stage 2 *Localized Analytics* to stage 3 *Analytical Aspirations*	From stage 3 *Analytical Aspirations* to stage 4 *Analytical Companies*	From stage 4 *Analytical Companies* to stage 5 *Analytical Competitors*
Identify pockets of analysts and skills. Offer analytical skills training. Encourage analytical components of systems projects. Enlist managers to appreciate and engage analytical employees.	Define analytical positions and use specialty recruiting sources to fill them. Encourage knowledge sharing among analysts of all types. Promote rotational deployment of analysts. Provide coaching and support, especially for analytical professionals.	Evaluate analytical expertise of all information workers, develop relationships with universities and associations, and provide advanced training for analysts. Focus on developing business acumen in analysts and analytical expertise in business executives. Integrate the development and deployment process. Form communities of analysts.	Hire analytically minded employees in all business roles. Formalize an analyst-role/business-role rotation program. Organize and deploy analysts centrally. Regularly recognize analytical employees in all roles, and ensure that analysts are constantly challenged in their work.

From Stage 1 to Stage 2. Start to identify and assess your existing analysts: who they are, where they reside within the organization, and how deep their analytical skills range. It probably won't take you long! Offer training opportunities aimed at developing analytical expertise—in statistical methods, software tools, and applications. Encourage communication and informal links between analysts and the rest of the organization. Enlist senior business leaders to get to know, appreciate, and engage analytical workers.

From Stage 2 to Stage 3. This transition should mark a more sustained effort to obtain, manage, and develop the best analytical talent. Seek out and nurture specialized recruitment sources (Web sites, associations, academic contacts) that target analysts. Customize job descriptions to attract analytical skills and know-how. Encourage networking among analysts of all levels—champions, professionals, semiprofessionals, and amateurs—to share knowledge and skills. Move people who work on similar topics closer together to encourage collaboration and drive efficiency. Support and coach analysts in data-heavy roles—this will help you see how to improve training and development. Finally, foster general business and industry expertise in analytical talent.

From Stage 3 to Stage 4. Build links with academia and industry associations in order to gain access to future recruits and specialized skills. Provide training and development opportunities for professionals and semiprofessionals to keep them up-to-date with the newest processes, software, and technologies. Champion the use of analytics within your organization by developing business acumen in your analytical professionals and analytical knowledge in your business executives. Create wider communities for your analysts, spanning corporate functions, business units, and geographies. These communities allow analysts to keep up-to-date with the latest developments in analytics, solve common problems, and discover opportunities. If feasible, centralize your key analysts.

From Stage 4 to Stage 5. Tailor your HR strategy and processes around analytically minded employees—even incoming amateurs should display a basic level of analytical expertise. Provide interesting and challenging work to attract, engage, and retain outstanding analytical talent. Implement a rotation program to give your analysts greater exposure to the challenges facing different functions, business units, and geographies. Adapt performance management processes to reflect your expectations of analysts, thereby ensuring that your analytical talent will receive recognition for their work.

Keep in Mind . . .

- Top quants are scarce resources, not human calculators. Analysts can feel isolated from their business colleagues and overlooked when it comes to their contributions. They are likely to depart for greener pastures when they feel unappreciated.
- Analytical workers are motivated by interesting and challenging work, not by large paychecks alone.
- Offshore resources, professors and their graduate students, and open competitions are innovative sources of analytic talent. Seek a variety of talented analysts by cultivating sources like universities, social networking sites, and conferences.
- Hire employees with analytical aptitude and give them the training they need to use analytics well.
- Organize and deploy your analysts strategically to leverage their skills across the enterprise, whether in a centralized group or on rotation across the organization.
- Analytics is a broad field of knowledge: analytical amateurs, semipros, and professionals require quantitative and technical skills, industry expertise, and business acumen; but they also need the skills to communicate effectively, build relationships, and coach others.