

Rising above the Crowd: How Top-Performing Knowledge Workers Distinguish Themselves

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Now more than ever, high performance depends on knowledge workers' innovativeness and productivity. Knowledge workers—professionals and other individuals who use knowledge as a primary component of their jobs—now constitute approximately 34 percent of the labor force and are responsible for most of the economic growth in the past decade.¹

Few organizations know how to maximize knowledge worker performance to achieve optimum business results, however. Most executives focus exclusively on attracting and retaining talented individuals; few bother to ask how they can best support and enhance the performance of the knowledge workers they already employ. To determine how organizations can best enhance the performance of their knowledge workers, we studied how high-achievers solve problems and find, use, and share information at work. Our research suggests that the strongest performers share three distinguishing characteristics:

A capacity to learn from experience effectively and efficiently

Large and diverse personal networks, and a dedication to developing them

Access to fluid and customized information environments

Based on these insights, we offer practical suggestions concerning how organizations can improve the performance of all knowledge workers through changes in leadership, organizational design, and technology.

Rising above the Crowd

I think what distinguishes me is an ability to solve problems and move things forward quickly and in a generally correct direction...and a lot of this does come down to my network. I am not calculating about my network or someone that hands out cards at conferences, but I do make it a priority to take care of it. And this pays off over and over. When I need information or help on something, people return my calls because they know I will be there for them. And I can't tell you the number of times that a relationship or doing something for someone pays off later

on. It might be two or more years, but taking care of good people in my network almost always seems to come back to benefit me in big ways.
—Strategy Consultant (Manager)

Now more than ever, organizational success depends on the innovativeness and productivity of knowledge workers. However, these workers pose challenges to conventional management wisdom and organizing principles. They are mobile and concerned that their experiences position them well for future opportunities. They are dispersed across the organizational structure and the globe, yet the collaborative and complex nature of their work requires them to work effectively with others in different functions, physical locations, time zones, and even organizations. The body of knowledge they must have at their command is constantly changing; they must be sure that they are always up to date. And their work is inherently emergent: the important problems they

solve and opportunities they capitalize on are novel and rarely, if ever, standard to the point that the work can become routinized.

Early efforts to promote knowledge worker productivity tended to be technical, as organizations adopted repositories or intranets that could store massive amounts of information or knowledge. Over time evidence has emerged that these repositories, which have grown to mammoth proportions, are difficult to use in the context of daily work. The resultant underutilization of these technical solutions led to a second wave of interventions to promote knowledge creation and sharing within organizations. Efforts to promote communities of practice, social capital, social networks, and human capital have helped to balance

out the overly technical focus adopted early on. Yet these more socially oriented efforts often minimize the enabling role of technology.

Technical and social approaches to improving knowledge creation and sharing can complement each other, but each emanates from different preconceived notions of how knowledge workers get information and solve problems at work. We suggest that it is time to see how accurate these preconceived ideas are by researching the work habits and strategies of the people we want to emulate—top performers in knowledge-intensive work. Our approach is similar to that taken by Robert Kelley in his book *How to Be a Star at Work*. In that work, Kelley made careful observations of top-performing knowledge workers

at Bell Labs.² In contrast to Kelley's work, however, we specifically focus on how the most successful knowledge workers get information and solve problems at work. If we can gain insight into how top-performing knowledge workers acquire information and knowledge and use them to solve problems, we can then design better holistic management solutions—whether appropriate leadership behaviors or technologies or organizational design and human resource practices—to support this work. (See "About Our Research").

How Knowledge Workers Find and Use Information

How do the best knowledge workers obtain information and use it to solve

About Our Research

We used a mixed-method research approach to determine the differentiating characteristics of top-performing knowledge workers in four organizations.

First, we conducted surveys with middle managers or professionals whose work can be characterized as knowledge intensive, though their industries differ. The first two groups we worked with—72 managers of field services and technical operations involving oil drilling in a major petrochemical organization and 102 specialists providing advanced sales and maintenance support for a major electronics organization—work on "things." The second two groups—112 strategy consultants from a well-known consulting firm and 68 information specialists in a leading technology organization—have ideas as their output. Being able to assess all four groups allowed us to generalize lessons

across different types of organization and kinds of knowledge work.

As a result of statistical analyses performed on several different types of information collected in the surveys, the research team was able to identify the differentiating characteristics of top performers. First, the research team collected information regarding levels of expertise as reflected in education, tenure, self-report information, and the use of four different categories of impersonal information sources: (1) paper documents (both local files and central repositories/libraries), (2) personal computer files, (3) intranets and knowledge management databases, and (4) the Internet. Second, surveys were used to collect information regarding each participant's personal network (important contacts from both inside and outside the organization) and his or her bounded network (contacts with co-workers in the

immediate work group). Third, annual performance ratings for each of the participants were collected; top-performing individuals were defined as those who were among the top 20 percent of performers relative to peers.³

To gain more insight into these successful performers and to confirm a set of consistent practices used by them, we conducted 40 interviews with those employees identified as being highachievers. Interviews were semi-structured and lasted approximately an hour.

novel and complex problems at work? Our research, as well as that done by others (see "Selected Bibliography"), suggests that knowledge workers usually turn to one of four sources of information. (See Exhibit 1.)

First, knowledge workers may solve difficult problems by relying on their own knowledge and expertise. Most executives bring on talented people with the hopes of utilizing the new hires' personal expertise and knowledge. But although personal expertise and knowledge are undoubtedly important in the performance of a job, do they truly distinguish top performers from their peers?

Evidence suggests that the answer is no. We found little correlation between expertise—as measured by levels of

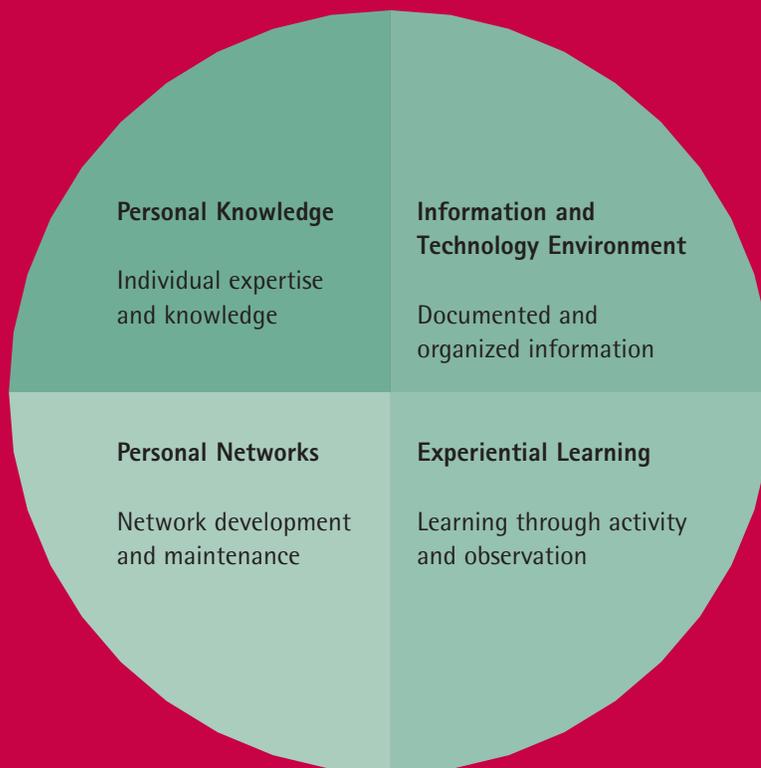
education, tenure, or self-evaluation—and high performance. This may be in part because expertise must be continually updated in today's information-intensive environment, or it may be because it is rare for any one person to know enough to solve increasingly complex problems on his or her own. For example, consider today's medical profession, in which physicians must integrate their personal knowledge with knowledge they acquire from online resources, specialists, and even their patients, who may have made an effort to review the massive amounts of information available on their specific problems.

Thus doctors and knowledge workers in many other fields must be good at finding and assimilating external information and knowledge as neces-

sary—that is, they must exploit their information and technology environment effectively. One way knowledge workers do this is by relying on impersonal sources of information such as databases, the Internet, publications, or courses. While we know employees rely on these sources, we have little insight into the degree to which external sources factor into day-to-day work and affect performance.

A third and often overlooked way that people get information to solve problems at work is through their social networks. Consider your own experience for a moment. When you last faced a new challenge, such as starting a new assignment or important project, did you get the critical information you needed by typing in search terms on the Internet or by

Exhibit 1: Information Sources for Knowledge Workers



seeking information from colleagues or friends of colleagues? Most people choose the latter. In fact, consistent evidence over the past 25 years continues to reveal that people rely heavily on other people for information and to learn how to do their work.⁴

Finally, a fourth way knowledge workers develop expertise and obtain information is through learning by doing, or experience. Some skills and types of knowledge—particularly new knowledge that has not been created before—cannot be taught in a course or looked up on the Internet. Rather, this type of knowledge acquisition requires careful observation, experimentation, and trial by error.

Our research revealed that top-performing knowledge workers have three distinguishing assets that set them apart from their peers and afford them an advantage in finding information and solving problems.

A Capacity To Learn from Experience

Although experience or formal education alone does not distinguish strong performers, interviews with high achievers suggest that the ability to intentionally, flexibly, and proactively learn from experience over time does distinguish them from their more average-performing counterparts.

The high-achieving individuals we spoke with tended to make good decisions in investing time and effort in developing new domains of expertise. These domains often were not natural extensions of current expertise as defined by a given career path, but turned out to help differentiate the high achiever later in life as they were able to integrate seemingly diverse

expertise and skills. Top performers appear to continually update their skills, expertise, and social awareness as a natural part of their work. Where others may compartmentalize learning to classes and may fail to leverage work itself as a vehicle for learning and improvement, top performers seem to make the most of all their experiences: everything is an opportunity for learning for them.⁵ One new project manager explained, “I learned management not from a class, but by reflecting on my past experiences of being managed and through trial and error and conscious observation and reflection on the acts of other managers.”

Many high achievers attributed their problem-solving abilities to the acquisition of a broad base of knowledge. We found that strong performers understood how their work impacted other departments or functions; they could see opportunities to collaborate or help solve problems in other parts of the organization and were able to perceive how two seemingly different kinds of expertise fit together. One manager remarked, “My success relative to my colleagues is due to the fact that I can marry the financials with a thorough understanding of the business. My colleagues, on the other hand, are focused on only one perspective or the other.”

Our successful performers often had unusual career paths, with jobs seemingly not connected in logical ways. However, they repeatedly told us that these different jobs provided them with unique perspectives and expertise in solving problems. In general, we found that lateral moves or seemingly unrelated projects or work that built expertise or perspective within an organization allowed top performers to see opportunities that more parochial colleagues might miss. Working on

these projects also made it possible for the top performers to build a diverse network that could be leveraged as needed—again, an asset that more insular colleagues did not enjoy.

Of course not following a predefined career path within an occupation or organization can be a risky endeavor. Seeking out new experiences, knowledge, and expertise can be risky if these experiences do not help to distinguish a person in various ways. An electronic technician who decided to take on a new role as an expert in Deming's quality control methods observed, “I had always been moving up in the organization—operations was the path to the top. Taking on this new role was incredibly risky. It could have easily become just another program that was sidelined (and me along with it).”

Although the successful performers in our study took risks, they characterized themselves as “calculated” risk takers who consider the pros and cons of investing time and effort into developing a given domain of expertise. They consider projects, rotational assignments, and their own personal endeavors from the perspective of how the expertise they can expect to acquire from those new experiences will distinguish them in the future. This can mean declining certain opportunities. One software developer explained,

When I came here there was a huge pressure to jump on some Web-based applications. Everyone was pushing in this direction, and it was where many of the investments were being made. I kept thinking that it might not be a good long-term bet in terms of skills and expertise, so I focused on different areas. In hindsight this has been a key way that I have distinguished myself. Even without the dot.com bubble burst, I think it

allowed me to develop some more unique capabilities rather than going along with the herd.

But when they do make a decision to pursue a given area of expertise, the high achievers tend to invest heavily. Whereas others might be distracted over time, the top performers described themselves as much more focused in the domains they decided to pursue. Their focus often required fending off other demands on their time or calls for them to become knowledgeable in other areas. This allowed them to excel in their chosen area, however, and to develop a reputation for expertise that draws other opportunities to them. One consultant described the situation thus:

You get a thousand calls in this place. People want you to have something bright to say on pretty much anything at all times. I think this can get you distracted and actually hurt you. I think the thing that has been best for me is to say, “Okay, I will try to keep up on certain issues, but I am going to really stay on top of this one and develop expertise here so that others are coming to me.” It sounds easy, but there are a lot of distractions that can take you off course.

The strongest performers not only reach out to master new domains, they work hard to maintain their expertise in domains they have already mastered. Rapidly evolving technologies and newly introduced approaches to work demand that knowledge workers

constantly refresh and update their store of knowledge. Top performers tend to use very different strategies for mastering new domains, however, than they do for maintaining knowledge in existing domains. Most successful performers turn to specific, known sources of information to maintain their knowledge. Although they rely to some degree on certain Web sites, industry publications, e-learning tools, books, and other externally published information, they rely most on their contacts in personal networks.

People are cited as being a much more efficient source of information, as people can screen out irrelevant information, provide alerts to new and important information in the field, and condense or expand information to the

Tips for Encouraging Experiential Learning

If most knowledge workers learn new things mainly through experience, how can we help them consciously adopt strategies that support that process?

Provide training on experiential learning techniques. One well-known but often overlooked tool for encouraging experiential learning is the formal “after action review,” which can be institutionalized throughout an organization to ensure that some learning takes place from an experience. Some interviewees also mentioned mentoring programs as being particularly useful; knowledge workers appear to learn best from each other.

Allow learning from failure. Humans fail, but organizations often do not let people acknowledge or learn from failure. Senior executives can set a

powerful example by admitting their own failures and describing what they have learned from them.

Hire experiential learners. If the best performers are those who learn from experience, then recruiting processes should focus on identifying individuals who appear to have taken on experiences in order to learn from them and who can articulate what they have learned to others.

Make time for reflection. An important part of experiential learning is reflecting on experience to draw lessons that can be applied in later situations. Managers may encourage reflection by such simple acts as initiating discussion forums over lunch or informally asking employees to think about what has worked—and what has not worked—during the course of a project or job.

Provide rotational assignments or other stretch opportunities. Although we found that high-achieving knowledge workers tend to seek out new opportunities to grow and learn on their own, organizations can formally structure such experiences through providing rotational job assignments or through human resources policies that encourage managers to hire people with room to stretch in a position.

appropriate level of detail required. Often, knowledge workers will quickly browse other sources of information and then turn to people to “fill in the holes.” As one knowledge worker explained, “I can ask people specific questions and therefore not waste time. With a class, only 10 to 15 percent of the content is ever relevant to my specific needs.” Another added, “Learning through courses or written material is too much of a time sink. And with people, you can get behind the PR to get the real story.”

Large and Diverse Personal Networks

In interviews, top performers cited the importance of personal networks; we confirmed that finding in our quantitative analysis. Although there is not one type of network that is right for everyone, we did find that overall, top performers' networks shared certain distinctive characteristics.

First, we found that strong performers are more likely to maintain and leverage more relationships than average performers. Top performers are aware of the expertise of more people in their group, for example, and more likely to be aware of people in subgroups or pockets in the network. This represents an important asset to successful performers, in that they can rapidly reach out to others when new opportunities or problems come along.

Not only are top performers more aware of other people and their expertise, but others are more aware of them. Top performers have on average six more people coming to them for information within their group than average performers. Since reputation itself is an important asset,

this too represents an advantage of the best knowledge workers.

Top performers' networks are also more diverse than those of their average peers. In contrast to average performers, top performers tend to have stronger relationships with those few colleagues within their group who themselves have diverse ties within a network. These bridging ties allow the strong performers to be better connected with more physically distant parts of the organization and with people who have more tenure or who reside higher up in the organizational hierarchy (and who presumably have more expertise).

In their broader personal networks (networks that extend beyond their immediate work group), successful performers have more ties reaching both outside their department and outside their organization than average performers do, and they also tend to have more new people in their networks (that is, people they have known for less than five years). This seems to promote more effective learning, as it keeps the strong performers from becoming overly dependent on a specific set of advisers that might not be relevant to the tasks at hand. Tapping into those with the most expertise (as opposed to those one feels comfortable with) is sure to help improve work and problem solving.

Our top performers provided vivid examples of how their personal networks allowed them to rapidly capitalize on new opportunities or solve tough problems at work. (To determine the strengths and weaknesses in your own personal network, see the sidebar “How Effective Is Your Personal Network?”) Many mentioned the fact that opportunities were brought to them frequently, thus offering them the

chance to learn through experience. The best performers also told us that they were able to quickly leverage others for their expertise when specific information was needed. Employees in the strategy consultancy, for example, recounted stories of winning work or delivering high-quality solutions thanks largely to their network's making it possible for them to obtain relevant knowledge and expertise quickly. Finally, top performers told us that they relied on their network for feedback on whether their ideas and perspectives were on track. One software executive said,

Especially early on in a project, when things are fuzzy, I am bouncing ideas off of the best people I can get to. This might mean technical people to see if the concept is feasible and efficient, or marketing people to see if it will fly. Really, though, I am just trying to nail down the important areas to focus on, and this has a lot to do with the later success of the effort. Without a good network, I would not be able to get the input at such a critical stage.

However, despite the fact that networkers are popularly seen as highly political and career focused, it was rare to hear successful performers talk about using their network to advance their career or for political ends. In part, it seems that our high achievers rarely have to. By spending their time getting work done rather than posturing or pursuing political agendas, our top performers develop reputations and networks that bring them opportunities and resources as needed.

In contrast, top performers described networking much more as a human process of connecting well with others and looking for points of mutual benefit over time. Unlike “social butterflies,” who build numerous

surface relationships, our top performers focus on quality relationships that will be helpful to them in the future. They invest more time in developing and maintaining their relationships than do their average counterparts. And many of their relationships—such as those with people in their immediate work group who furnish bridging ties to the wider network—are much stronger than the relationships cultivated by their peers. Thus while the top performers might not be overly social or political about networking, they do seem to nurture the relationships around them actively.

Three tactics seem instrumental in this pursuit:

Establish a personal connection. Our top performers characterized almost all their network relationships as more than just business contacts. All relationships that had become important assets on a business front had also developed along a personal front as well. For example, people might have discovered similar backgrounds, family experiences, or hobbies that allowed them to connect on more than just an instrumental basis. Personal connections such as these make others more willing to commit time and effort to a successful performer's cause. They also improve the quality of problem solving. When personal connections existed, our strongest performers indicated that they were more willing to take risks with ideas that were still under development and to be more creative in brainstorming. These core contacts in our top performers' networks were also critical for meeting new people, as new contacts usually occurred through referrals from the core network. Only a few top performers relied on "cold" contacts for information, and usually only as a last

resort. One engineer we interviewed explained,

For years, I didn't consciously maintain my network. That's a mistake. If you want to be successful, you have to develop and cultivate relationships. They need to know and trust that you are someone they can talk honestly to. Relationships don't work without trust; I go out of my way to cultivate it and maintain my relationships. I spend a lot of time making phone calls and sending periodic hellos through e-mail to check in with people and keep my network alive.

Follow through. The most successful performers put a high priority on accomplishing tasks and responding to people in a timely manner. A surprising number of people operated on an unwritten "36-hour rule" when it came to responding to e-mails and phone calls, and nearly all spoke of the importance of "acting on and keeping commitments." Because top performers honor their commitments, they earn the trust of others; people are encouraged to invest effort in joint endeavors. The trust top performers earn is also critical for knowledge transfer. One consultant put it this way:

People have to know they can count on you for you to be in their heads when opportunities come up. Probably all of us have been burned by people that talk a good game or make commitments and never come through. This can have big implications for your career if you are taking risks in front of a client or with your boss...The important relationships in my network are ones I know I can rely on and vice versa. We treat each other [as important], and this creates a scenario where everyone is better off in the end.

Actively reciprocate. High-achieving knowledge workers do not just demand information from others; they provide it as well. Many described their networks as two-way streets: they feel that the only way they will receive information is if they make a point of giving information in return. But this intellectual exchange seems to be done in a noncalculated, organic way. One information specialist explains, "If I get something interesting by e-mail, I make a huge point of disseminating it to others who might be interested. I try to share knowledge as much as I can. But I don't think of it as a 'favor bank' in which knowledge is exchanged tit for tat."

Sometimes top performers even go out of their way to make sure that the person receiving the information can readily absorb and understand it. One information specialist we spoke to, for example, makes a point of tailoring the format of the information to the audience that is receiving it, when possible.

Access to Fluid and Customized Information Environments

In this era of information overload, one might expect that top performers distinguish themselves by coping with more information more efficiently than others. One might hypothesize that they keep abreast of their fields and solve complex problems through reliance on impersonal sources of information, such as the Internet, paper files, personal computer files, internal intranets, or knowledge management systems.⁷ Or one might assume that they rely on various features of technology to organize and access volumes of relevant information rapidly. PDAs and e-mail, for example, are just two tools whose list-managing capabilities have the potential to

Tips for Improving Personal Networks

While some people appear to have an innate knack for network development, we also found that managers can do a lot to support and encourage effective network development in their organizations. Do not make the mistake of equating networking with socializing or simply increasing communication, however. Very rarely do overburdened knowledge workers want more offsite retreats or meetings. Rather, managers may try the following techniques to help improve network development:

Help employees develop an awareness of who knows what in the organization.

Job titles alone do little to help people know where to turn when a new problem or opportunity comes along. To solve that problem, many organizations are using skill profiling systems or expertise locators. Alternatively, new technology is emerging that can track e-mail and other electronic information to identify who knows what in an organization.

Recruit for collaborative behaviors.

Managers can employ a critical incident interviewing technique to specifically target and seek out evidence of collaborative behaviors.⁶ Alternatively, some organizations require recruits to demonstrate collaborative behavior in the hiring process via a group problem-solving exercise. In the words

of one manager in the strategy consulting firm, "The problem solving in these things is horrific, but you get a very, very accurate view of who is going to work well in a collaborative environment."

Use career development and performance appraisal processes to encourage collaboration. Once employees have been hired, career development practices can help them assess the current composition of their network and develop plans to improve connectivity in targeted ways. In addition, some organizations use performance appraisals to encourage collaborative behavior; this may be done to assess collaboration on a project, for example, through annual performance reviews, or through 360-degree feedback from people in other organizational units, who can comment on whether and when they have received support from the person under review.

Reward collaborative behavior. Formal rewards send clear signals about what behaviors an organization values. If an organization truly values collaborative behavior above and beyond mere lip service, then it will reward that behavior. It is obviously counterproductive and little more than rhetoric to advocate collaboration and sharing while failing to demonstrate with rewards that this behavior is truly valued.

Ensure leaders inspire a collaborative culture. An important role of leadership is to communicate, model, and reward behaviors supportive of a collaborative culture. Leaders of well-networked groups in our study were described as being able to share information and decision making, connect people around them, and draw peripheral people into the network. Rather than breaking tasks apart in an effort to pinpoint individual accountability, these leaders foster robust patterns of collaboration and seek out opinions from people regardless of their experience or place in the hierarchy. In addition, our research indicates that leaders of well-networked groups are quick to acknowledge collaborative work in public forums, offer spot rewards for those that go out of their way for others, and promote people who are collaborators. They also promote a culture of trust that makes it possible for employees to reach out and share ideas early in the problem-solving process; one way these leaders accomplish this is by being more aware of and taking action on interpersonal tensions within the network.

improve knowledge workers' effectiveness and efficiency greatly. It seems intuitive that those whose work entails solving problems rapidly will perform better if they are more organized and have easy access to documented information.

But our analysis reveals that there is nothing particularly special about how the strongest performers tap into most impersonal information sources. They are no more likely than average performers to employ paper files, personal computer files, internal intranets, or knowledge management systems. In fact, the only thing unique to high achievers on this front is that they are more likely to use the Internet effectively. However, poor performers—those in the bottom 20 percent—are much less likely than top performers to use paper-based sources of information, PC files, and internal knowledge management systems.⁷ Thus, while use of impersonal information sources does not seem to distinguish top performers, failure to use them does seem to hurt, or at least to be associated with poor performance.

Our interviews reflected what we found in our quantitative analysis. We rarely heard successful performers talk about a heavy reliance on technology. Rather than well-defined file structures, rabid use of PDAs, or extensive use of all Microsoft Outlook functionality, we found fairly loose organization and only partial use of available technology solutions. For example, most of our top performers do not enter contacts into a separate address book, but rather rely on memory and saved e-mails to retrieve contact information and remember the context of the information exchange. Only one person carefully wrote down the contact information in Outlook and took notes about the context and date of the

exchange. One knowledge worker, in describing his physical and high-tech information environment, said, "It isn't that well organized or that technology oriented, and it probably takes me longer to find things than it should, but it works." Indeed, although they use technology in their jobs and rely relatively little on paper, most of the top performers we studied felt technology itself was one of the least important factors contributing to their overall success.

What does distinguish strong performers in terms of information use? Without prompting, the high achievers told us. "The single biggest factor contributing to my success compared to others is the ability to juggle and prioritize all the information that is constantly coming toward me. I never let people hang on too long, and I always get things done. But I don't juggle by using technology; it is more of a mental balancing act and way of being than anything else" was how one information specialist put it. Another top performer remarked, "The thing that sets me apart from others is that I constantly keep on top of and reshuffle what I need to do. As information comes to me, I keep it organized (in my head, through keeping my pending e-mail list short, and on a paper to-do list), so that I am sure to act proactively, not reactively." Another top performer explained, "I am most successful because I get it done and get it done on time. I can pull it together when it's not obvious how to pull it together."

What distinguishes successful performers, then, is not that they make greater use of technology or impersonal information sources, or even that they organize their information environments better. Rather, it is the mental ability to juggle multiple tasks

and pieces of information fluidly on an as-needed basis. Top performers do have strategies to help them: they try to keep their incoming e-mail list to one screen; they are careful to save all e-mails and constantly attend to new ones; they make extensive use of paper (or occasionally Outlook or PDA-based) to-do lists that are constantly refined and updated; and they often give their e-mail folders the same names as folders on their hard drive or in their file cabinets. Top performers appear to prefer a loosely organized information environment in which much information is "kept in the head" to one that is rigidly structured or overtly high tech.

Top performers are also distinguished by their ability to "surf" information; they are comfortable waiting for a problem, project, or opportunity to present itself. These people have adapted to a fundamental shift in knowledge-intensive work that challenges managers and executives at all levels: both problems and solutions are much more emergent than planned today.

Top performers share something else as well. Rather than bend their way of working and thinking to the technology, they make the technology support their way of thinking and working, which may mean customizing elements of it or only using certain features. One information specialist, for example, customizes her e-mail so that each is color-coded according to sender. This helps her immediately prioritize her e-mails with just a glance at the screen. She also customizes her toolbars, has set up Outlook's task list to provide her with pop-up reminders of future deadlines or recurring monthly or quarterly tasks, and has set up multiple folders and subfolders that organically evolve over time. Yet she does not use a PDA, and she often

keeps a running to-do list on scratch paper. This knowledge worker may not use all the technical functionality available to her, but the functionality she does use is suited to her unique information environment and work processes.

Conclusion

We undertook this research to gain a better understanding of how top performers get information and solve problems at work, with the aim of identifying tools and practices helpful to aspiring top performers in various settings. To that end, we found some fairly consistent points of differentiation, particularly in the network realm, between strong and average performers.

We expected to find differences in how knowledge workers at idea-based firms manage information and problem solve compared with knowledge workers at product-based firms, but by and large any differences were fairly minimal. This suggests that the practices we have identified are broadly applicable.

We did find that the practices of top performers are highly interrelated. Their approaches to experiential learning, technology use, and networks build on and reinforce one another in specific ways. For example, being strong experiential learners tends to win high achievers a reputation both for expertise in an area and for being a good colleague. This reputation certainly helps to support a rich personal network and is advantageous, as others

seek out the strong performer when they have opportunities or need help. To look at the situation from a slightly different angle, our high achievers' breadth of expertise provides them with unique insights and perspectives when doing work and helps them recognize an opportunity when it arises. They then act on their insights and perspectives through their diverse networks, supported by fluid information environments that help them mobilize all their resources and persuade others to take advantage of the newly identified opportunity.

Most importantly, we hope our work helps correct some misperceptions that exist regarding how knowledge workers actually get their work done. Common wisdom has been that technology is the

Tips for Improving Information Environments

What can organizations do to help improve employees' information environments? Our research suggests that simply providing employees with more technology may not be the most effective way to improve their use, organization, and storage of information. Pursuing the following activities, by contrast, may make a significant impact on knowledge workers' performance:

Provide training in how to organize information and make effective use of technology. This is missing from many management approaches to knowledge worker technology. Many of the people we interviewed did not use helpful features simply because they did not know how. And even when management does provide training, it is in the use of a particular device. This can be helpful, but truly effective

training would also focus on general strategies to most effectively deal with information. Ideally, multiple strategies would be presented so that employees could rather choose the one that works best for them.

Provide managers with an information coach. Training may be one way to acquaint employees with how best to use technology; informal coaching is another way. Executive assistants, for example, could help managers set up an organizational approach to technology that is tailored to the way the individual manager works. They could then provide ongoing coaching and assistance as needed.

Encourage knowledge workers to set aside time to information surf. Many knowledge workers today are so busy in their jobs that they do not do anything that is not immediately relevant to their tasks at hand. But the top-performing knowledge workers we

spoke to talked about the importance of setting aside at least a small amount of time for information surfing, that is, for keeping alert to new developments in their field or useful contacts that might not be applicable to their immediate needs. This might be done, for example, by reading periodicals in their field or subscribing to and browsing online newsletters. Although targeting specific information sources that seem most relevant to a job seems like a reasonable strategy, many of the knowledge workers we spoke to felt it is important to keep alert to a wide range of sources, as it is difficult to pinpoint where a new problem will emerge or where a project or opportunity will present itself. Giving knowledge workers at least a little time and leisure to take in developments and information not immediately relevant to the tasks at hand may do little to improve short-term job performance, but it can have a significant payoff in the long run.

key factor in improving knowledge worker productivity. This has led organizations to invest more in e-learning tools than in mentoring programs, for example. Our research has shown that on the contrary, knowledge workers learn mainly through experience and from other people, not through e-learning programs. While not denying the importance of technology, our results do suggest a need to increase investment in practices that nurture social and human capital.

Selected Bibliography

Early efforts to improve knowledge worker productivity focused on initiatives to capture, screen, and store knowledge. Works in the national press that examined the programs many organizations implemented in this first wave of knowledge management include some of the following publications:

Davenport, Thomas H., and Laurence Prusak. *Working Knowledge: How Organizations Manage What They Know*. Harvard Business School Press, 1998.

O'Dell, Carla, and C. Jackson Grayson, Jr. *If Only We Knew What We Know: The Transfer of Internal Knowledge and Best Practice*. Free Press, 1998.

Ruggles, Rudy. "The State of the Notion: Knowledge Management in Practice." *California Management Review*, 1998.

Stewart, Thomas A. *Intellectual Capital: The New Wealth of Organizations*. Doubleday, 1997.

A second wave of knowledge management advice then emerged that recognized the more social and psychological nature of knowledge creation and sharing in organizations. In this vein, we suggest the following more recent works:

Brown, John S., and Paul Duguid. *The Social Life of Information*. Harvard Business School Press, 2000.

Cohen, Don, and Laurence Prusak. *In Good Company: How Social Capital Makes Organizations Work*. Harvard Business School Press, 2002.

Davenport, Thomas H., and John C. Beck. *The Attention Economy: Understanding the New Currency of Business*. Harvard Business School Press, 2001.

Dixon, Nancy. *Common Knowledge: How Companies Thrive by Sharing What They Know*. Harvard Business School Press, 2000.

Our own perspective was influenced by two streams of literature on this front. First are works such as Robert Kelley's *How to Be a Star at Work: 9 Breakthrough Strategies You Need to Succeed* (Three Rivers Press, 1999), which focuses on understanding the unique characteristics of strong performers. Our interest in one telling feature of successful knowledge workers—their development of personal and social networks—leads us to recommend the following works as well:

Scott, John. *Social Network Analysis: A Handbook*. Sage Publications, 1991.

Wasserman, Stanley, and Katherine Faust. *Social Network Analysis: Methods and Applications*. Cambridge University Press, 1994.

The second stream comprises work on learning in organizations, which documents the rich ethnographic evidence accumulating within the situated-learning and community-of-practice traditions. This work is making clear the large degree to which people learn how to do their work not from impersonal sources of information but through interactions with other people or through experience and practice. In addition to Brown and Duguid's *Social Life of Information*, mentioned above, important works in this tradition include:

Brown, John S., and Paul Duguid. "Organizational Learning and Communities-of-Practice: Toward a Unified View of Working, Learning and Innovation." *Organization Science*, 1991.

Ericsson, Anders K., and Neil Charness, "Expert Performance: Its Structure and Acquisition," *American Psychologist*, 1994.

Lave, Jean, and Etienne Wenger. *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press, 1991.

Orr, Julian. *Talking about Machines: An Ethnography of a Modern Job*. Cornell University Press, 1996.

Wenger, Etienne. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge University Press, 1998.

How Effective Is Your Personal Network?

To conduct a quick assessment of your own personal network, follow the steps below.

Step 1: Write down the names of people you rely on for information or problem solving in your work. These people can come both from within and outside your department or organization.

Names

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Step 2: Please answer the following questions about your relationship with each person identified in step 1.

Name of person you network with	Vertical Dispersion	Horizontal Dispersion	Physical Proximity
	What is this person's hierarchical level relative to your own? 1 = higher than mine 2 = equal to mine 3 = lower than mine 4 = not applicable	a). What part of the organization does this person work in? 1 = within same group 2 = within same business unit 3 = within same division 4 = within same organization 5 = different organization	b). What is this person's physical proximity to you? 1 = same building 2 = different building 3 = different city 4 = different country
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Name of person you network with	Intentional Interaction	Time Investment	Time Known
	c). To what extent are your interactions with this person structured into your job 1 = never 2 = sometimes 3 = often 4 = frequently 5 = very frequently	d). How much effort do you put into maintaining this relationship? 1 = 1 hour or less per month 2 = 2-3 hours per month 3 = 1 hour per week 4 = 2-3 hours per week 5 = 1 hour or more per day	e). How long have you known this person? 1 = less than 1 year 2 = 1-3 years 3 = 3-5 years 4 = 5-10 years 5 = more than 10 years
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Step 3: List the number of relationships that fall into each category.

Vertical Dispersion

- 1 = higher ranking
- 2 = equal ranking
- 3 = lower ranking
- 4 = not applicable

Intentional Interaction

- 1 = never
- 2 = sometimes
- 3 = often
- 4 = frequently
- 5 = very frequently

Horizontal Dispersion

- 1 = within same group
- 2 = within same business unit
- 3 = within same division
- 4 = within same organization
- 5 = different organization

Time Investment

- 1 = 1 hour or less per month
- 2 = 2-3 hours per month
- 3 = 1 hour per week
- 4 = 2-3 hours per week
- 5 = 1 hour or more per day

Physical Proximity

- 1 = same building
- 2 = different building
- 3 = different city
- 4 = different country

Time Known

- 1 = less than 1 year
- 2 = 1-3 years
- 3 = 3-5 years
- 4 = 5-10 years
- 5 = more than 10 years

Step 4: Take a look at the composition of your network and identify biases that may affect how you do your job. For example, do you have a tendency to go only to people who are accessible to you rather than to those who may have more

relevant information? Our research suggests that top-performing individuals have large and diverse personal networks; the larger and more diverse your network, the more likely it will improve your performance.

Strength / Bias

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Implication / Action

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outsourcing experience to conduct innovative research and analysis into how organizations become and remain high-performance businesses.

Notes

- 1 The U.S. Bureau of Labor Statistics estimates that 34 percent of the workforce occupied "managerial, professional, and technical" positions in 2003. The rapid growth of knowledge-oriented companies is evidenced by the doubling of the ratio of market to book value over the past twenty years.
- 2 Robert E. Kelley, *How to Be a Star at Work: 9 Breakthrough Strategies You Need to Succeed* (Three Rivers Press, 1999).
- 3 Two major criteria we had for including companies in our research was that their performance management systems were reliable and that those systems' overall ratings were based on both objective and subjective assessments from many vantage points.
- 4 For a good overview of the schools of research that have identified the importance of people as a vehicle for learning, see Etienne Wegner's *Communities of Practice: Learning, Meaning, and Identity* (Cambridge University Press, 1998).
- 5 For more information on the importance of leveraging experience in learning, see, for example, Robert J. Thomas, *Achieving High Performance through Leadership Simulation* (Accenture Institute for High Performance Business, 2004) or Morgan W. McCall Jr., Michael M. Lombardo, and Ann M. Morrison, *The Lessons of Experience: How Successful Executives Develop on the Job* (Free Press, 1998).
- 6 A critical incident interviewing technique probes into specific past behaviors as it relates to specific job skills. The technique is based on the premise that past actions are the best indicators of future behavior.
- 7 They were also less likely to use the Internet, though this finding was not statistically significant.

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