

Tales from the Hiring Line: Effects of the Internet and Technology on HR Processes

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Any time we can get information to people that is personal, that's empowering. Any time we can remove an intermediary, that's empowering. And any time we can give employees the decision support tools to analyze and improve their situation, that's empowering.

–Marianne Jackson,
Cisco Vice-President of
Human Resources

The e-revolution has finally freed HR to focus on strategies to support the company business—the acquisition, retention, and growth of the company's most important assets: its people and their collective knowledge.

–Watson Wyatt,
HR Consulting Firm

Business is in a state of rapid adaptation, moving from the industrial to the information age. The pervasiveness of the Internet continues to accelerate. In his book *The Business of E-Commerce*, May reported that the number of people connected to the Internet

increased from 171 million people in May of 1999 to over 200 million people in September of the same year. The proliferation of Internet and technology use in organizations has important implications for organizations in general, and human resources (HR) in particular. Effective management of human resources can provide organizations with a significant competitive advantage in adapting to the challenges of the 21st century. However, there have been few investigations that provide a comprehensive look at how human resource management (HRM) has been affected by the Internet and technology.

This gap in our knowledge must be rectified, as managing HR effectively is critical for executives because of the significant direct impact that human resources have on profitability. The potential cost savings to organizations that effectively use technology and the Internet in their HR function is compelling. For example, the “war for talent”—or the ability to attract and retain qualified personnel—has been identified as one of the greatest challenges for organizations in the 21st century. HR is at the forefront

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of responding to this challenge and saving a great deal of money by advertising on the Internet. The use of technology in training and development has contributed positively to the bottom line for many organizations like IBM Corp., which generated over \$100 million in cost savings due to on-line training. General Motors Corp. has realized substantial cost savings as well, by implementing an HR Internet portal. In sum, the effective integration of technology and the Internet within each of the HR functions can generate tremendous cost savings for organizations.

Because of the importance of HRM to executives and to their organizations' future successes, in this paper we provide managers with a better understanding of the unique challenges and opportunities related to HR during this time of rapid technological changes. We examine five key HR processes and look at how the Internet and technology have affected the major activities within these processes. The five key HR processes and their major activities (listed in parentheses) are: (1) acquiring HR (recruitment and selection); (2) rewarding HR (performance evaluation, compensation and benefits); (3) developing HR (training and development, career management); (4) protecting HR (health and safety, employee relations/legal issues); and (5) retaining HR (retention and work-family balance). We provide a discussion of overall HR trends along with a specific comparison of traditional HR versus e-HR practices. We then conclude with recommendations for organizational executives.

HOW WE KNOW WHAT WE KNOW

Our data was collected in two ways. First, we examined a wide variety of articles and books from academia and the popular press and identified the major ways that the Internet and technology has affected HR. Second, we conducted in-depth interviews with 12 HR executives to find out about their direct experiences with HR and technology. From



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these interviews and the archival data, we identified and analyzed key trends within each of five key HR processes that demonstrate the shift from traditional HR to e-HR activities. For more information on the selection criteria of participants, our interview protocol and questions, and analytical process, see [Appendix A](#).

TRADITIONAL HR TO E-HR: WHAT'S CHANGED AND WHAT HASN'T?

There is no question that the role of HR is undergoing a major transformation driven by changes in technology and the view of HR as a central player in organization's strategic planning and implementation efforts. However, what has been less clear is how technology has changed each of the main HR processes. The results from our interviews with HR executives and our archival research have enabled us to develop the following thorough comparison of traditional and e-HR practices.

Acquiring Human Resources

Recruiting. Recruiting is the HR process that has arguably been most influenced by the Internet and recent technological advances. Given the low unemployment rates (up until 2001) of the past decade and the emphasis on growth in U.S. companies, recruitment of the best talent has played an even more critical role than in the past. Companies are using more elaborate and creative methods to hire the right people from a shrinking labor pool. More often than not, HR professionals are using technology—and the Internet in particular—to enhance their recruiting effectiveness. *CMA Management* reported that Internet usage for recruiting purposes in Global 500 companies increased from 29 percent in 1998 to 88 percent in 2001.

Based on the interviews, three consistent themes were identified. First, more companies are using the Internet for posting jobs

and receiving resumes, which are also being received via e-mail in substantially greater numbers. Second, the use of these technologies has significantly reduced both the cost and turnaround time needed to fill most positions. Third, the quality of applicants has not suffered and, in fact, the Internet gives companies access to global talent instead of limiting companies to a local applicant pool constrained by geography. The following example shared by one of those executives illustrates these three major trends in recruiting.

The Internet is the major tool for our company as far as recruiting goes. In the past it took \$6,000–\$7,000 for an ad, and then it took two to three months for the recruiting process to be conducted and someone brought in to fill the position. Now it's different. A week ago Monday morning, we posted an ad on the Internet for a senior HR generalist. Within the hour after it was posted, 200 mostly quality resumes had been submitted. By the end of the day, we had narrowed those applicants down to the 2–3 that we wanted to interview and potentially bring to our offices here. By the end of that week, we had made an offer, and the person's first day at work was the following Tuesday. From three months to eight days—that is the impact of the Internet on our recruiting. (Tony)

While some argue that Internet postings are largely ineffective for most job applicants, there are others who argue that the success of e-recruiting is the catalyst driving the "webification" of other HR processes. The HR professionals we interviewed all use the Internet at least partially to recruit. Those interviewees working in high-technology industries stated that they do all or almost all of their recruiting via the Internet. Three web sites seemed to be most prominently mentioned for job postings by our sample companies—Monster.com, Hotjobs.com, and



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Headhunter.net. Web sites of specific professional associations and targeted occupational groups are also frequently used for job postings of tough-to-fill positions. Use of the Internet and e-mail allows companies to receive most of their resumes in electronic format, which has numerous benefits articulated by our interviewees: dealing with less paper; ease of archiving and storing resumes in databases; greater ease of sharing information with others involved in the hiring process; and the rising potential of application-tracking systems to analyze statistics of the company's applicant pool.

The reduction in average cost per position and the time savings that Internet recruiting offers, compared with traditional methods, is substantial. For example, Penny estimated that an average time to hire has been reduced by at least 50 percent because of the Internet whereas Dave estimated that 35 percent of the available jobs at his organization can now be filled through the Internet. Many of our other interviewees also acknowledged the cost savings, especially with the three big web sites mentioned earlier. There are some electronic databases available to employers for a fee that can be less cost-effective. These tend to be databases of very specific employee populations where the demand is less broad. Those services notwithstanding, the Internet typically provides cost savings and less turnaround time to fill positions.

The third effect is that companies are no longer limited to the local geographical labor pool. This allows for spreading a broader net to catch the best talent. As a follow-up question in the interview, respondents were asked about the effects of Internet recruiting on the quality of applicants. The overwhelming majority indicated that the quality was equal to, and in most cases better than, traditional paper methods of recruiting. Those companies with global operations in our sample were especially cognizant of the benefits of the Internet for hiring the best people from around the world.

Another example of companies using technology to their recruiting advantage is

the database system used by Electronic Arts Inc. (EA), as described in a recent *Fast Company* article. EA is the world's largest video game company, and to maintain a top-notch talent base for IT recruitment, EA uses a web-based application called e-Recruiter from Hire.com. This on-line virtual recruiter runs through its applicant database and notifies applicants of jobs in their expertise areas each time EA posts a new job opening. This innovative technology allows EA to gain a recruiting advantage over competitors. For example, EA needed to hire 40 people willing to work in Orlando, FL. It accessed its database of existing applicants (about 18,000) and e-mailed the opportunity to them. EA received almost 3,000 interested responses for the positions.

Although the Internet seems to be viewed as having mostly positive effects on recruiting, we cannot overlook the challenges HR professionals face in light of these changes. First, the potential for resume overload and keeping up with the speed of e-recruiting can be daunting. One HR executive indicated that his company received 70,000 on-line resumes in the past year, and that is in a medium-sized organization. The following example illustrates the overload challenge:

It's very difficult to project how many people you need to have involved in a process when you go to recruit. And like they recently put, posted the job out on the Internet and they had 500 resumes in one day. Well what do you do when you get 500 resumes in one day? And you used to maybe get 5, or maybe 15 if you were lucky. (Gerald)

Second, we got the sense from our interviewees that the Internet is not as effective a recruiting tool for senior executive positions. For example, Dave indicated that "if I was looking for a director or a vice-president, you would not ever find people responding on Monster to that. At least not good quality." Whether this is the reality is less clear (no

empirical research as of yet) but the perception was echoed by others in our sample. A final caution is to carefully review the reputations and effectiveness of various web sites and databases before using their services.

Selection. Technological advances have provided computer applications to screen resumes and applicants; however, they seem to be less sophisticated and effective at this time. This appears to be an area where companies are redirecting the cost savings from using the Internet to attract a broader base of applicants. In his book *Discovering the Soul of Service*, Berry concluded that successful service companies typically exhibit very patient hiring processes to ensure that individuals selected from the applicant pool meet necessary skill requirements, but more importantly, fit with the corporate culture and values of the companies. The three areas of selection where we found the most influence of technology are: (1) resume scanning applications; (2) on-line testing and assessment tools; and (3) initial interviewing.

The process of screening applicants' resumes is typically a collaborative process between HR personnel and some type of applicant-tracking software. One of our interviewees, Melody, described one such application from her experience in public sector organizations: "There is an application (not at our organization) called the Sigma Applicant Tracking System that helps HR professionals more effectively manage large applicant pools. It does some statistical analyses as well." Most screening applications compare some list of pre-programmed keywords with the content on the resumes and simply eliminate those resumes without the keywords. However, there are more detailed applications that are occasionally used.

One of the main issues with this use of technology for screening resumes is that applicants are becoming savvy in knowing the keywords and incorporating them into their resumes. Emitte addressed this concern:

One of the problems is that some applicants spend a lot of time trying

to "beat the system" with their on-line applications. For example, they will place certain buzzwords on their scannable resumes so they make it past the first screening process. However, they may not really be able to perform that skill or technological competency.

A few of our respondents use technology for on-line testing or assessment. Not many of these HR professionals were enamored with personality testing, in part because of concerns with instrument validity and reliability. Tony stated "we focus less on technology at this stage and more on the process and practicing the process [of selection and interviewing]; our focus is on behavioral predictors and much less on personality." Several of our participants mentioned the benefits of doing on-line assessments in terms of obtaining instant results and having lower costs by not having a third party administer the assessment.

One possible use of technology that has been largely overlooked in the selection process is conducting more of the initial interviews on-line. Both Dave and Janet gave examples of other organizations—Cisco Systems Inc. and Mrs. Fields Cookies Inc.—which ask applicants some on-line questions and use their responses to help determine whether a good match exists. Riverside County's Human Resources Department has taken on-line pre-employment testing a step further in the public sector. A 2002 article by John Mooney, in the journal *Public Personnel Management*, describes how this organization uses on-line testing as a selection tool for information technology (IT) and probation positions. The on-line testing at Riverside County offers benefits of speed and timely feedback for employers and convenience and instant feedback for applicants. This testing approach also led to more positive perceptions of Riverside County by applicants, which leads to stronger applicant pools. Videoconferencing is another technology sometimes used in place of face-to-face interviews. This allows companies some cost

savings, and the visual quality of the technology is improving so that the body language of the applicant can be better assessed during the interview. Overall though, HR professionals seem to be proceeding with greater caution in this area, and technology has not had the same impact as with recruiting. Not surprisingly, there is still considerable desire to have significant human interaction in making personnel selection decisions.

Rewarding Human Resources

Performance management. The tasks of defining the right performance outcomes and evaluating performance levels for diverse employees and positions are skills that differentiate great managers from average and poor managers. It does not appear that technology has revolutionized the performance management process or eliminated the common challenges identified with traditional forms of performance appraisal.

The HR professionals suggested that technology has helped primarily in the distribution of performance evaluation materials. Most of our interviewees talked about the ability that HR now has of making the appraisal forms available on-line, but that most organizations still want hard copy documentation of the evaluations for their records. Results reported recently in *Human Resource Development Quarterly* support this assertion, stating that 65 percent of 360-degree feedback programs still rely on traditional paper-and-pencil administration. From our interviews, Penny indicated that she has been trying to find an effective 360-degree feedback on-line tool but has yet to encounter a proven tool that will crunch some data and conduct some basic analyses for her. This is consistent with other respondents' comments that the Internet tools in this area are less widely recognized for consistent effectiveness than tools in other HR functions. Many interviewees mentioned using some type of PC-based 360-degree

feedback application to obtain data, but these applications provided no analysis.

Another example was provided with some details of how the costs and the effectiveness of the appraisal process were influenced by a PC-based approach. For example, one interviewee suggested:

We set up the 360, which up to that time had been paper-driven, and it was a tremendous expense in terms of input cost. We had perhaps over 250 people who were using this, and of those 250 each one would have at least 10 sources. Like anything else, the cost was at the front end in terms of the design. ... I think what we saw, though, was a higher rate of response, because it's easier just to sit at your computer and type it out. We found less opportunity for error, input error. And I think it also enhanced the ability to score and manipulate the data in different formats for the person who was receiving the final report. I would say that effectiveness, consistency and speed were increased significantly.

In summary, there are some success stories, but our overall finding from our interviews is that this is an area of HR that has been less developed in terms of technological tools.

Compensation and benefits. The number one cost for most organizations is the compensation and benefits provided by the employer to its employees. At the current time, benefits have been calculated at an average of about 41 percent of payroll, which translates to an average of approximately \$15,000 per employee (Dessler, *Essentials of Human Resource Management*, 1999). Benefits administration has been radically changed due to the Internet. In fact, this is one of the most obvious differences about traditional HR and e-HR. In addition, the types of benefits desired (and in some cases expected) have also undergone some changes in the past few years. There

are also some clear differences in high-technology companies with highly technical employees. From our interviewees in these types of organizations, four critical musts are: (1) an overall compensation plan that is at or above market levels, including stock options; (2) quality of life with flexible work times and more vacation time; (3) opportunities for personal development and recognition; and (4) performance- and skills-based incentives.

One clear theme that surfaced in our interviews is that the administration of benefits is now more of a self-service operation on the company's web site or Intranet. HR explains the benefits options and sets the boundaries, but then the employees go online and complete their contact information, select desired options, and make modifications as needed. The technology has significant implications for freeing up HR personnel, and to a lesser extent the company's managers, for more value-added activities. General Motors provides a great example of this e-HR trend with their on-line HR portal called the Employee Service Center. GM started putting benefits information on its company Intranet in the latter part of the 1990s and now offers employees several interactive web-based tools so they can flexibly administer their own benefits plans within company guidelines. Continuing with this idea from our interviews, one HR professional suggested:

We have really been able to take the process and make it completely e-savvy. I mean each manager on his computer can sit there, can do all of their compensation planning, make their recommendations, send it to their manager. If the manager approves it, we took a cycle that was probably at the end of the year, probably a month and a half, and we really have brought it down to a week or less—it's terrific. (Dave)

A second clear theme from the interviews is that employees want the compensation and benefits to have incentives based

primarily upon performance, but also on skill development. As Emitte succinctly and emphatically pointed out, "The big thing is that pay-for-performance *is* IT—seniority doesn't exist anymore." Penny added that her employees "mostly desire recognition and incentives on completion of an important project, a project which was very demanding both on the technological side as well as in terms of time invested to meet the deadlines." Employees, especially in technology organizations, are constantly seeking for additional skill development and opportunities for personal growth. Part of this desire is to maintain or enhance marketability, but the Internet provides significant chances for people to spend time learning more about diverse topics that would have been more costly to explore previously. In fact, Tony stressed that in his company (a high-technology company), he viewed employee development as something his employees desire even more than stock, and that was when the stock market was going well.

There are a few other themes related to technology use and the administration of compensation and benefits. First, several of our interviewees mentioned more frequent outsourcing of this HR function to consulting firms that specialize in this area. Technology allows for greater flexibility in the plans and puts more of the onus of selection in the hands of the employees. Second, the Internet has given the employees much greater access to relevant information about compensation and benefits. Employees are more savvy with these areas, they can go look at Salary.com and compare how their organization stacks up to others. They are becoming better educated in stock options and 401k plans, so HR employees must be very well prepared to discuss the plans. Third, monetary compensation is critical for attracting high quality talent.

For example, one interviewee suggested, "Your company has to be at least in the 75th percentile in terms of compensation, which can be tough at times. We tend to have to compete with a lot of startup funding over

some period of time." (Tony). Fourth, new startups have a more difficult challenge because of the greater complexity found in most company benefits programs. Michael indicated that his startup company developed a salary grading system from scratch, eventually designing two scales, one for administrative staff and one for technical staff. The past decade of high returns in the stock market helped to make stock options an integral part of most compensation packages. Even with a currently turbulent stock market, most of our interviewees highlighted that area as a significant change in the benefits plan.

Developing Human Resources

Training and development. Training and development is an important expenditure for most organizations. According to a 1998 PricewaterhouseCoopers study, 65 percent of CEOs cited the lack of skilled workers as a potential barrier to future company growth. As the need for training and development increases, companies like Bell Atlantic have found that technology and the Internet provide a lower cost solution in the guise of on-line training or e-learning. Cost reductions for on-line training pertain to several major categories of expenditures including: (a) direct costs of travel, and indirect opportunity costs of time away from job; (b) production of training materials; (c) maintenance costs for content updates and course refreshers. In addition to cost reduction, on-line training also offers a number of important advantages, such as the ability to help the employee learn faster and in some cases better; deliver learning free of the limitations of time and space; and track and evaluate the effectiveness of the training more effectively.

Helping employees to learn better and faster is a key concern for training and development professionals. How best to do it is a topic of considerable debate. One interviewee, Emitte, mentioned that, "We've had quite a few debates about learning and

training philosophies, mostly over computer-based training versus classroom instruction with a live human being guiding the training." Several of our HR professionals also shared stories related to their clients learning more effectively through the use of technology.

We use a technology called Same-time, so if I have somebody new starting in New York or Switzerland and they need to learn a particular computer program I can just talk to them on the phone rather than flying to see them. Now I can go ahead and have them log in the same time as I do, using Sametime. . . . It's radically decreased our travel time and it made more effective use of just-in-time training. (Janet)

Another advantage of on-line learning is the ability to deliver learning material anywhere and at anytime. On-line training, such as what is offered at J.C. Penney Company Inc., provides the convenience of 24-hour access, feedback, and interactivity with a tutor and other trainees, and self-paced learning. In addition, a student's curriculum can be customized to meet his or her needs. Material can be interactive, allowing the learner to respond to questions and receive immediate feedback. E-learners have the ability to take more control of their learning agenda, even with something as simple as signing themselves up for courses rather than waiting for their manager to do so. Penny stated that, "Employees are more hungry for learning. The Internet has provided better ideas and greater flexibility to develop self-learning programs."

While employees may be more motivated to pursue learning in areas that interest them, organizations also must offer a vast panoply of compliance training classes in such areas as sexual harassment, age discrimination prevention, and workplace violence prevention. With the sheer number of employees needing to undergo training, use of on-line training can be an important aid in

tracking employee compliance. Not only can technology make it easier to track participant attendance, but can also aid in evaluation of the classes.

Although the number of companies utilizing on-line learning is increasing, experts in the training field are finding that this new medium often results in low retention and completion rates. In addition, not all employees may be comfortable with learning on-line and may miss the social interaction provided by a classroom environment. Other concerns that were cited by the HR professionals we interviewed related to distractions while doing on-line training in the midst of other business. As Sue, an HR consultant, stated:

Imagine a learner taking this two-hour module on-line and getting knocks on her door, and seeing the light flashing on her phone, and her cell phone's vibrating, and the e-mail's coming up and—distractions. There are just too many distractions at your desk. I have read of instances where people have to put police tape around their cubicles.

Perhaps the greatest concern relates to the effective transfer of learning. Gerald noted "I would be concerned as to whether employees just click through the training without learning anything. Then our records show they have taken the training, but did they learn?"

To combat some of these concerns with on-line training, many advocates recommend the use of a hybrid approach or selective approach to designing training. Dave posited:

There are some things that are appropriate for e-learning and things that are not. For example, I just don't think reading it on-line is the same as having your president in front of the group talking about what it means to work at our company. However, when I think about the training I've done over the years, I can think

of a number of topics that could have been frontloaded with e-learning.

Career management. Career development programs, such as mentoring, have been linked to organizational outcomes such as greater organizational socialization commitment, and citizenship behavior leading to higher levels of retention and productivity. In fact, career growth and learning is a critical reason that employees remain at a company. When one considers that the average cost of replacing a quality employee is 70–200 percent of that employee's salary, and that the average turnover rate is 50 percent every four years, then the costs of not empowering employees to develop in their careers are considerable (Kaye & Evans, *Retention: Tag You're It*, 2000).

According to our HR executive interviewees, the greatest change that technology brings to career development is that "it allows employees to be responsible for themselves and their own careers," (Dave). Being responsible for oneself can be manifested in several ways. First, technology enables employees to self-assess the gap between skills desired and needed, and to utilize tools on-line to close the gap. Second, the Internet allows employees to develop on-line networks and professional relationships both within and outside of the organization.

Conducting a skills-gap analysis used to be the purview of trained career professionals only. Now, with the help of tools on-line, employees can ascertain for themselves what skills or competencies they need to move forward in their careers. Some of these tools are part of existing human resources information systems. Doreen explained that PeopleSoft uses a succession planning module and can track what training and development activities have been completed by individual employees. The module includes a feature to conduct analysis of gaps in employee skill development. Sometimes tools can be developed internally and thus offer a more customized approach. Tony, vice-president of HR, mentioned that:

“A major area for our company is the on-line development program. It was internally developed and has a graphical diagram that helps employees track their progress in skill and competency development.”

As several of our participants also mentioned, there are a number of assessments and career-planning tools available on-line that can be readily assessed as well. In general, although there seems to be a greater openness or perhaps a “self-serve” approach to career development, many of the HR executives we spoke with also cautioned expecting employees to develop completely on their own. Most felt that these tools available on-line were most helpful if used in conjunction with a live counseling session with a manager or HR professional.

Several of our interviewees also mentioned that the Internet has eliminated the geographical barriers to networking, and thus enables employees to network with a much broader range of professionals than ever before. Indeed, one unique type of networking that is growing rapidly and becoming an integral part of an individual’s career plans is on-line mentoring. Some examples of on-line mentoring programs are MentorNet (an on-line mentoring program for women in engineering, science, technology, and math that pairs students in these areas with female professionals) and Mightymentors, a site that facilitates on-line mentoring for teachers. Managers and HR professionals would be well advised to encourage employees to utilize the number of on-line resources available to them to aid in their career development.

Protecting Human Resources

Employee safety, health, and well-being. Maintaining employee safety and health is an important concern for organizations today. Workplace injuries and compensation claims related to employee stress can be extremely costly for organizations. It is not surprising, with the sheer number of employees who use computers regularly (according to labor statistics, 49.8 percent in

1997), that numerous employees complain about visual and musculoskeletal disorders. In addition to injuries on the job, organizations are also concerned with the impact of stress on employee health and well-being. According to the National Institute of Occupational Safety and Health, high levels of job stress are related to employees overall health, sleep disturbances, and increase the likelihood for upset stomachs and headaches. In addition, job stress is related to workplace injuries, higher levels of absenteeism, tardiness, and turnover.

Increased computer use has created numerous concerns about the health and safety of employees. Several themes regarding health and safety emerged from our interviews. First, it is imperative for organizations to be aware of and control injuries that result from computer use and work processes. Second, with increased technology have come new types of stressors that employees experience. Finally, while technology has created tremendous flexibility for employees to work in numerous configurations (e.g., telecommuting, flexible work hours, etc.), with this flexibility has come the blurring of boundaries between work life and personal life, and for many employees, increased levels of stress.

One concern for human resource professionals is to ensure that workstation design and environmental factors do not create injury. Although computer use can appear to require little physical exertion, the repetitiveness of the actions can cause localized pain, wear and tear, and long-term injury (e.g., carpal tunnel syndrome). Almost all of the HR executives we interviewed reported that they were concerned with ergonomics and the physical problems associated with extensive computer use. They suggested that it was difficult to monitor how and when employees use technology, but that education of the workforce was an important first step. Several of those we interviewed suggested that they educate employees about the importance of taking breaks and moving during the day (and make every attempt to ensure that breaks

and lunch are taken). In addition, several HR executives suggested that they require ergonomic training, and even have employees who were specifically trained to be experts in this area (and can make routine inspections of employees' workspaces). Janet explained, "we started doing ergonomic training about two to three years ago. We do that consistently now for everyone who comes through the door." In addition to providing training, many organizations offer special equipment by request.

In addition to the ergonomics issues, technology has created new concerns regarding stress in the workplace. While many of the stressors related to computer use are the same as in any organization (e.g., excessive role demands), there are stressors specific to increased technology use that are important to be addressed. For example, high-tech stressors may include concern with technological breakdowns and slowdown, performance monitoring, and human computer interactions. Technology has also led to a change in the "tempo" of work. We all expect quick responses and immediate feedback in regard to work. A recent *Newsweek* article entitled "We've got mail always," discusses how the number of e-mails can be seen as one's measure of success or importance. In fact, Tony explained that "the Internet and e-mail have resulted in information overload, and so lots of screening of messages takes place. We use a strategy called '10 times' communication. Important messages are communicated 10 times, usually via different media." All of these technological changes in the work environment have led to higher levels of fatigue, stress, and overload.

Employee relations and legal issues. Treating employees fairly and avoiding litigation is a critical way to reduce organizational personnel costs. However, high-profile class action settlements such as Texaco (\$172 million) and Coca Cola (\$192.5 million) highlight the additional need for organizations to pay attention to legal trends related to technology and e-business. In fact, there has been a rash of lawsuits

related to the area of wrongful termination, as there are several cases of employees being fired for distributing inappropriate e-mail related to sexual harassment or discrimination. One particularly high profile case, reported in the *Los Angeles Times*, involved Dow Chemical. Over 6,000 employee e-mail accounts were reviewed, resulting not only in over 90 terminations, but also hundreds of suspensions or written warnings for storing and distributing sexually explicit and violent material.

There are several key issues related to employee relations and technology that were salient for the HR executives we interviewed. All of the executives mentioned that the greatest challenge for employee relations and labor law presented by technology was the issue of employee privacy and inappropriate uses of e-mail and the Internet. One of our interviewees, Gerald, mentioned specifically that the concerns regarding privacy were so great that some organizations have even created new jobs—such as chief officer of privacy.

Other concerns relate to the inappropriate use of e-mail and the Internet during work hours such as visiting porn sites or more mundane activities such as on-line shopping. Indeed, the greatest challenge for managers seems to be finding the right balance of permissiveness and scrutiny. As Janet noted:

We definitely keep track, but it is important to note frequency and what an employee does. If somebody goes in to look up a flight on their lunch, or if they're planning for the weekend and want to check availability at the House of Blues, that is not a problem unless it occurs frequently. However, if it happens a lot, or it is pornography, then that raises a huge red flag at our IT Security Desk.

Nearly all of our HR professionals mentioned that another issue with e-mail related to employee relations is the over-reliance on it as the primary form of communication and

the ensuing miscommunication that can result. Problems with on-line communication include increased likelihood of misunderstandings due to lack of nonverbals, and a tendency to be abrupt or perceived as cold. Michael said:

The biggest mistake that people make with e-mails is that they don't think, as they are often in a hurry. If you put in punctuation or a comma in one place versus another it can totally distort your entire meaning. I see a lot of conflict resulting from that. And also what you see too is with the inappropriate use of cc (carbon copy) functions. Sometimes people will go over people's heads by attaching a superior on to a string of e-mails and all of a sudden you're playing kind of a political ballgame over e-mail.

Horror stories of e-mails being inadvertently sent to the wrong individuals through an accident or hacking can result in hurt feelings, low morale, turnover, and in some cases litigation. One of our dot-com professionals related the following incident:

We were doing a round of layoffs and our CEO had e-mailed me a list of the impacted employees. Someone hacked into my e-mail a couple days before we were to give the layoffs and grabbed the document and posted it on a private web site. The repercussions were huge, morale-wise. Moreover, the list was not completely correct, so there were some employees who thought they were going to be let go, but were not, and vice versa. It was a public relations nightmare.

E-mail and Internet use have a number of important advantages as well. Some of these advantages are: (a) rapid communication and maintenance of a written record; (b) ability for employees to work from remote

locations; (c) communication that is more concise and enables the sender to ensure that a message was received; and (d) important research tools that save organizations time and money, and in some cases, increase productivity. The challenge for the HR professional is to balance these advantages and disadvantages.

Retaining Human Resources

Retention strategies. Retention of talented employees is critical for organizational long-term profitability. The financial savings to organizations with more effective retention are substantial. For example, SAS Institute, in a *Fast Company* article, reported that they save approximately \$50 million annually because of their microscopic 3 percent annual turnover rate, compared with an industry average of 20 percent. HR professionals in both brick-and-mortar and dot-com companies are employing a plethora of techno-savvy techniques to meet this challenge. We have found it fascinating that in looking at Human Resource Management textbooks from even five years ago, there is little about retention as a key HR process.

From our interviews with HR professionals, the retention of talent is the most compelling challenge facing organizations today. One of our interviewees captured this issue's importance in the current business environment very well.

CEOs now get it for the first time. You don't have to educate them about the importance of retention. When you pay \$20,000 to hire a guy at \$100,000 salary, and 15 months later he's back in the job market, and it took him four months to learn your technology, and you really got maybe eight months of productivity out of him—you can't make money on those statistics. And it doesn't take a CFO or a CEO very long to figure out that this makes no

sense. They've seen those numbers impact their bottom line, and so now there is a big emphasis on it. (Jan)

So what did our sample HR executives suggest for improving employee retention? First, HR has to know and closely monitor the company's turnover rate. Most of these executives talked about two methods of understanding why employees stay or leave—employee opinion surveys and exit interviews. One of our interviewees commented, however, that employees had expressed concerns about the confidentiality of the on-line employee survey they have implemented. This individual added that the completion of the survey depended largely on whether or not a culture of trust had developed in the company. The exit interviews often help employers better understand the rationale of employee turnover. For example, one of our interviewees discovered the following:

In the exit interviews that we've run there are three major reasons why people leave. Number three on the list, not number one, is pay. Number two on the list is almost always the supervisor—the relationship with the supervisor. And number one is they didn't know where they stood in the company. (Dave)

Two items that came up repeatedly in the interviews are the importance of culture and making sure your employees have the best tools to do their jobs effectively. A company's culture is more difficult to imitate and tends to shape much of the activity that takes place in an organization on a daily basis. Tony summed up the importance of having access to the best tools, the latest and greatest technologies: "The people here expect the best tools to perform their jobs. It is difficult to expect leading-edge outcomes if you are using dinosaurs as tools."

This HR function is viewed by these HR professionals as a significant challenge because of the intense competition for talent,

and because employees may leave organizations for so many different reasons. One organization described a very novel approach, in which employees who are considering leaving the company for another offer are allowed a three-day trial period with the new company. If the employee finds that the grass wasn't as green as expected in the new company, he or she can continue in the old job. Retention is truly critical in today's talent wars.

Work-family balance. As more and more employees express the desire to maintain a balance between their work and personal lives, it is increasingly important for organizations to address these issues as a key Human Resources concern—particularly for recruitment and retention. One of the most popular structural changes to ease work and family conflict is flexible scheduling. For example, organizations can offer employees flexibility in their work hours, location of work, and day-to-day work schedule. These types of flexibility at work may be a key component in helping employees manage multiple roles.

Increased access to rapidly changing technology may ease some of the stress and pressure that individuals face when trying to balance work and personal lives by providing more flexibility to employees. For example, pagers and cellular phones allow children to contact their parents instantaneously in case of an emergency. Laptop computers allow people more flexibility in when and where they work. In a recent study by the Families and Work Institute (2001), four in ten employees often or very often use technology for their jobs during typical non-work hours or days. In fact, to have access to a computer at home or to have the option to work from home is often touted as a family-friendly benefit. For example, access to a computer may increase the likelihood that an employee can leave work early, spend time with their children, and finish work later (or cellular phones allow an employee to return phone calls as they drive to work). In fact, the following quotes indicate the

increased focus of employees centered around lifestyle and flexibility issues:

The profile of the e-employee is different, the lifestyle is different; they want a balance, are more health-conscious (exercise and healthy eating), and their question is "what are you going to do for my lifestyle?" (Penny)

Two weeks is a bare minimum now. I don't think you can be at all competitive with a week's vacation, even for the first year. Two weeks is sort of the bare minimum and a lot of companies are offering three weeks as the minimum. So where it used to be three weeks at five years, it's now, a lot of companies are offering three weeks in the door and those that aren't are offering three weeks after three years, kind of thing. So more vacation is definitely, there's definitely a trend there. (Jan)

Emitte added that freedom is crucial for employees; they also desire a casual environment, time off both with flexible schedules and adequate vacation days.

Although flexibility has been found to be one of the key components in reducing work and family conflict in employees, it is possible that the types of flexibility that are based on advanced technology, may in fact increase stress among employees. There is some evidence that while technology helps to ease work-family conflicts by providing more flexibility, there is some concern that our "connectedness" may in fact be blurring the boundaries between work, home and play and creating increased stress in balancing these multiple roles. A 1999 *Newsweek* cover story highlighted the impact of the Internet on our business as well as our personal lives: "Now that we are connected, day and night, across time zones and oceans and corporate firewalls, we are beginning to lose sight of the distinction between what is work and what is play." Several human resources professionals addressed this question and

were indeed concerned with the blurring of boundaries that may result from increased access to technology and increasing numbers of "virtual employees." For example, Doreen stated that:

While telecommuting saves employees childcare expenses and commuting time, the key challenge is to monitor the hours spent on work activities at off-work locations. Technology is destroying work-family balance. You are always connected, or at least you can be connected to work.

In sum, it seems that technology itself may be value neutral, but how it is used can greatly impact one's life and work balance.

TRADITIONAL HR TO E-HR: TRENDS AND COMPARISON

As we have studied the shift from traditional HR to e-HR, drawing from recent literature and our interviews with these dozen HR professionals, we have noted five overarching trends.

These trends include: (1) substantial reductions in cost and time for many HR activities; (2) transition of administrative activities from the HR department to the employees themselves; (3) an increase in information readily available to employees; (4) the need for integrating HR with other organizational systems, particularly with information systems; and (5) increased emphasis on HR as a strategic business partner whose primary challenge is to recruit, develop, and retain talented employees for the organizations.

The first trend is that the time and money spent on certain HR processes have dropped significantly thanks to technology and the Internet. Specifically, we have seen cost reductions in relation to the functions of recruitment, compensation and benefits, performance evaluation, training and development, and career management. However,

technology has also created new challenges for functions such as health and safety, and legal issues such as privacy in employee relations. Overall however, the use of e-HR practices has been reported as a source of considerable cost savings by these participants and past research.

The second major trend is that various HR functions previously administered by HR (e.g., benefits, training and development plans, personnel records) are now administered by the employees themselves, with the aid of technological tools. An example from one of our interviewees effectively illustrates this change.

The whole area of employee self-service has been made possible through the use of technology. And I think, because I particularly have an aversion to the paperwork part of HR, it's a delight for me to have employees be able to go manage that stuff for themselves. And only contact you when, you know, when it really warrants a human intervention rather than having to take up your entire day with administration. ... For example, if you want to change the number of dependents on your W-4 form. That meant going to HR, calling HR, sending HR an e-mail, and then HR having to file the form, and put it in the file and get your signature and so on. Now all that is just on-line. The employee goes to the company Intranet and changes their number of dependents and it's automatically fed into the payroll system and end of story. (Jan)

This shift has freed up HR employees to focus on more strategic, value-added activities. Less administrative paperwork for HR personnel is definitely viewed as a positive by our sample respondents.

A third trend is the increased involvement by employees in HR practices, and the increased knowledge that they have about HR issues. Employees are becoming much

more savvy about HR activities. One effect of this distributed knowledge is that HR professionals must consistently keep up to speed with new developments in their own HR processes. Where information regarding benefits options and salaries were once the private domain of the HR department, the Internet has now made more of that information available to employees throughout organizations.

The fourth trend that has resulted from the influence of technology on HR processes is the increased need for HR information to be integrated with the information systems and other key systems of the organization. Long gone are the days of HR as a standalone department with which employees rarely interact unless people problems arise. Using the Internet and e-mail for recruiting has seemingly triggered this focus on information sharing and coordination concerning the company's most precious asset—its own people.

Finally, the clear objective voiced by professionals in our study is that HR needs to be (and in many cases is now becoming) a strategic business partner in their organizations. Whether that means creating a People Department like Southwest Airlines Co., or by making the head of HR the second-highest-paid person in the company as was done at The Home Depot, HR needs to be practically and symbolically integrated into the strategic leadership team of organizations. HR professionals and line managers should consider working together in assessing how transitioning from traditional HR to e-HR practices can add value to the business of the organization. [Table 1](#) presents a comparison of traditional versus e-HR practices that can be used as a starting point for HR professionals and their business partners to assess how their organization can effectively implement e-HR.

RECOMMENDATIONS FOR EXECUTIVES

We conclude with a number of recommendations for executives based on this research

TABLE 1 COMPARISON OF TRADITIONAL HR TO E-HR

KEY HR PROCESSES	TRADITIONAL HR	E-HR
Acquiring human resources		
Recruitment and selection	<ul style="list-style-type: none"> • Paper resumes and paper postings • Positions filled in months • Limited by geographical barriers 	<ul style="list-style-type: none"> • Electronic resumes and Internet postings • Positions filled in weeks or days • Unlimited access to global applicants
Selection	<ul style="list-style-type: none"> • Costs directed at attraction • Manual review of resumes • FTF process 	<ul style="list-style-type: none"> • Costs directed at selection • Electronic review of resumes (scanning) • Some distance interviewing (still FTF)
Rewarding human resources		
Performance evaluation	<ul style="list-style-type: none"> • Supervisor evaluation • Face-to-face appraisal 	<ul style="list-style-type: none"> • 360-degree evaluation • Appraisal software (on-line and hard-copy)
Compensation and benefits	<ul style="list-style-type: none"> • Time spent on paperwork (benefits changes) • Emphasis on salary and bonuses • Naïve employees • Emphasis on internal equity • Changes made by HR 	<ul style="list-style-type: none"> • Time spent on assessing market salaries • Emphasis on ownership and quality of life • Knowledgeable employees • Emphasis on external equity • Changes made by employees on-line
Developing human resources		
Training and development	<ul style="list-style-type: none"> • Standardized classroom training • Development process is HR-driven 	<ul style="list-style-type: none"> • Flexible on-line training • Development process is employee-driven
Career management	<ul style="list-style-type: none"> • HR lays out career paths for employees • Reactive decisions • Personal networking (local area only) 	<ul style="list-style-type: none"> • Employees manage their careers with HR • Proactive planning with technology • Electronic and personal networking
Protecting human resources		
Health and safety	<ul style="list-style-type: none"> • Building and equipment safety • Physical fatigue • Mostly reactive programs • Limited to job-related stressors 	<ul style="list-style-type: none"> • Ergonomic considerations • Mental fatigue and wellness • Proactive programs to reduce stress • Personal and job-related stressors
Employee relations/legal	<ul style="list-style-type: none"> • Focus on employee–management relations • Stronger union presence • Equal employment opportunity • Sexual harassment/discrimination • Task performance monitoring 	<ul style="list-style-type: none"> • Focus on employee–employee relations • Weaker union presence • Intellectual property/data security • Inappropriate uses of technology • Use of technology monitoring/big brother
Retaining human resources		
Retention strategies	<ul style="list-style-type: none"> • Not a major focal point 	<ul style="list-style-type: none"> • The critical HR activity currently • On-line employee opinion surveys • Cultivating an effective company culture • Mundane tasks done by technology, freeing time for more interesting work
Work–family balance	<ul style="list-style-type: none"> • Not a major focal point 	<ul style="list-style-type: none"> • Development and monitoring of programs • Providing childcare and eldercare • Erosion of work–home boundaries

and comparison of traditional HR to e-HR practices. For acquiring human resources, we recommend that executives examine benchmark organizations in their industry and their use of electronic resumes and Internet postings. Moreover, executives would be well advised to work with their HR advisors to search out on-line resources and databases for hard-to-fill positions or categories of employees. As much of the initial screening can now be done with software, executives may wish to partner with HR earlier in the recruitment process rather than just interviewing final candidates.

For rewarding human resources, the time spent on evaluating performance can be greatly streamlined. Performance evaluation is often seen as an onerous task by managers as it often relies on one data source and subjective impressions. On-line 360-degree appraisals can be easily implemented with technology and are regarded as one of the greatest advantages of e-HR. In terms of compensation and benefits, executives must realize that employees are more knowledgeable than ever before, and thus it is critical to constantly monitor market trends in terms of pay and compensation.

For developing Human Resources, executives should consider assessing the strategic and technical training needs of their employees and phasing in on-line training as appropriate. As employees today are enjoined to take control of their own careers, managers should work with employees to search out on-line career tools and use this as a tool for retention.

The greatest challenges and perhaps biggest downsides of technology are in the areas

of health and safety and employee relations. Executives would be well advised to monitor ergonomic considerations and unique stressors related to technology, such as information overload, to avoid some of the major costs of not managing employee health effectively. As for the growing concern of employee privacy, employers need to carefully consider their policies and practices, or lack thereof, and adopt a consistent way of communicating to employees and monitoring their behavior.

Finally, it is important to note that the increasing emphasis on employee retention through a variety of strategies, including supporting work-family balance, is a critical activity for both HR practitioners and their business partners. Employee retention can be facilitated through cultivating a corporate culture that focuses on employee development and monitoring this culture through the use of employee opinion surveys. Moreover, as the boundaries between work and family continue to erode, organizations that provide information to employees through on-line referral sources and offer flexibility through options such as telecommuting or flexible schedules can enjoy a significant strategic advantage in winning the war for talent. In conclusion, executives and HR professionals must work together to effectively leverage a more high-tech approach to HR, in the form of e-HR practices, yet at the same time balance this with high-touch in the form of a committed and caring approach to employee management.



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APPENDIX A. INTERVIEW SELECTION CRITERIA, PROTOCOL, QUESTIONS AND ANALYTICAL PROCESS

We developed selection criteria to identify 12 HR professionals to gain further evidence and understanding of how HR has been impacted by technology and the Internet. In selecting participants we aimed for diversification in terms of industry, HR functional specialty (i.e., training and development, staffing), and gender. We used lists from HR organizations such as PIHRA (Professionals in Human Resources) and ASTD (American Society of Training and Development) to garner a list of possible contacts. We approached those who were perceived as leaders in their respective areas either through reputation, professional involvement, or organizational affiliation. Nearly everyone we contacted was willing to be interviewed. Our interviewees represented dot-coms, technology-based organizations, and more traditional organizations. Our interviewees held high-ranking positions within HR: managers, directors, vice-presidents, and presidents (independent consulting firms). There were six men and six women in our sample. A complete list of interviewees and their industries can be found in [Table 2](#).

Semi-structured interviews were conducted over a three-month period in person with the interviewees. The interviews were approximately 45–90 minutes in length, and were tape-recorded and transcribed where possible, garnering a typical response length of 15–20 single spaced pages. Fifteen open-ended questions were asked, focusing on general HR challenges and trends, and specifically probing the effects of new technology and the Internet on the major activities of HR. Sample questions include: (a) In what ways do you use the Internet or other technologies to recruit prospective employees? (b) In what ways do you use the Internet or other technologies to conduct performance appraisals and assess employee performance? (c) What is the future of HR in this rapidly changing environment?

The purpose of the data analysis was to examine the effect of the Internet and technology on the various functions of HR as well as on the field overall, from the perspective of professionals currently leading or consulting to leaders of HR organizations. We utilized qualitative data analysis technique and looked for common themes and new insights, while at the same time considering how these themes and insights fit into existing information gained from a literature search. To hone the questions, we spent time

TABLE 2 INTERVIEW PARTICIPANTS

PARTICIPANT	INDUSTRY	TITLE	MAJOR HR SPECIALTY
Gerald	Entertainment	Director, Diversity Development	Employee Relations and Law, Generalist
Jan	HR consulting	President, independent consultant	Recruiting, generalist
Tony	Telecommunications	VP, HR	Generalist
Melody	Education	HR Director	Generalist
Doreen	Healthcare	PeopleSoft Manager	Generalist
Penny	Dot-com	VP, Training & HR	Training and Development
Dave	Health care	VP, HR	Generalist
Janet	Financial services	Director, Training and Development	Training and Development
Sue	HR consulting	President, independent consultant	Training and Development Performance Management
Emitte	Computer software	Director, Corporate Staffing	Staffing
Mike	Publishing	Director, Human Resources	HR generalist
Michael	Dot-com	Director, Human Resources	HR generalist

discussing which questions were working and which were not after the first three interviews. We clarified some questions, added a few questions, and deleted those that seemed inappropriate. Once all the interviews were completed, the final data analysis involved re-reading the transcript of each interview at

least two times in its entirety. Two independent coders also read each transcript to categorize similarities and dissimilarities among the HR professionals within each question. The coders' analyses were used to identify the final content categories represented in our research findings.



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