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HR Information Systems: Exploiting the Full Potential

Abstract
[Excerpt] Human resource management has always faced a fundamental paradox: Top managers in any company will readily agree that the people are the keys to success, but few believe they know whether their people are well managed or if they are prepared to fortify and enhance the transformations facing the organization. The information tools applied to the employees of an organization pale by comparison with the tools used to analyze markets, financial resources and production design.

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WORKING PAPER SERIES

HR Information Systems: Exploiting the Full Potential

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Working Paper 96-02

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HR Information Systems: Exploiting the Full Potential

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This paper has not undergone formal review or approval of the faculty of the ILR School. It is intended to make results of research, conferences, and projects available to others interested in human resource management in preliminary form to encourage discussion and suggestions.

Human resource management has always faced a fundamental paradox: Top managers in any company will readily agree that the people are the keys to success, but few believe they know whether their people are well managed or if they are prepared to fortify and enhance the transformations facing the organization. The information tools applied to the employees of an organization pale by comparison with the tools used to analyze markets, financial resources and production design.

This knowledge gap might logically produce lavish investments in technology and research to improve information and management of people. We might expect to see human resource departments becoming larger, better-funded, and staffed with leading "research and development" specialists dedicated to discovering what works to benefit both the organization and its employees. Reality is different. Investments in HR information are often small, and they typically address tactics and administration, rather than HR strategy.

The trend is clear, if not painfully evident for any manager: Managing people must become better and faster, use fewer resources, and gain greater involvement from key constituents and customers. The ultimate future human resource function may be "virtual HR," where organizations tap HR resources and HR experts wherever they exist. "HR Departments," "HR Managers," and "HR Specialists" may become as arcane as writing payroll checks by hand. Already, organizations are allied with Universities, consulting firms, software developers, and even their own former employees to achieve "HR only on demand," rather than "HR always at the ready." Even organizations that retain an in-house HR presence expect HR managers to be facilitators, change agents, all while ensuring that the day-to-day essentials are accomplished at ever decreasing costs.

The challenge is to preserve the best today's HR, while embracing new opportunities to deliver it more efficiently, and to tear down traditional boundaries. For example, IBM and General Electric use their HR expertise as a marketing tool: If you choose to purchase your power plant equipment from GE Power Systems, your employees will have the opportunity to participate and learn the "change acceleration process" or "CAP" through the GE learning center. HR managers in the GE Power Systems business often spend more than 50% of their time working with customers and suppliers. Clearly, traditional HR systems must change to encompass these new designs.

To become radically more efficient at the basics, and more effective at strategic change, and more boundaryless with internal and external constituents, HR needs help. Logically, technological advances have continually extended the possibilities for HRIS to provide this help, and this should continue. The Wall Street Journal (June 19, 1995) reports

that by the year 2000, US$1,800 will purchase a desktop PC that is 10 times faster, has 20 times the storage area, and can share information at 10,000 times today's speeds. Calculations will occur in an eye blink, data can be transferred from anywhere in seconds, and audio and video information will move quickly enough to mimic face-to-face response.

All well and good, but how can HR managers tap into this potential to create significant changes, and why hasn't the potential been realized more effectively so far? HR has seldom exploited the leading edge of technology. Perhaps one reason is that we typically think about HR, and HR information systems from an administrative perspective. In 1992 (Boudreau, HRMonthly, May, 1992) I suggested that there was great value in using information technology to cut costs (usually by streamlining administrative tasks so that electronic forms could be updated, transmitted, and stored with greater efficiency than paper files). However, I also suggested that focusing exclusively on "administrative" value could produce efficiency improvements with little strategic effect. Strategic impact requires changing important decisions or key behaviors. To do that HR information systems must focus on the ultimate user of HR information, and on what happens "between the PC screen and the brain". HR information systems must not only work as designed and cuts costs. They must cause beneficial changes in the way information receivers behave and make decisions. Moreover, those information receivers will often reside outside the HR function, and even outside the organization.

Yet, the focus of today's HR systems is still on administrative efficiency. List the three most urgent projects being pursued by your organization's HRIS developers. (If you don't have internal systems developers, open any professional magazine and read the advertisements for HR software.) Count the number of times the words "administration" "reports" "forms" and "payroll" are used. Now count the number of times the words "empowerment," "team," "innovation," "learning" or "knowledge" are used. If your organization is typical, I think you'll find that most HR information systems and applications improve HR administration. Very few are ever seen by employees or managers, let alone affecting their behaviors or decisions,

This is quite understandable. Administrative efficiencies produce tangible dollar-valued benefits, while "strategic" benefits are less concrete. Administrative applications are a starting point, establishing the basic information needed to support more strategic work. Yet an exclusive focus on administrative efficiency can be dangerous. It encourages thinking about information systems as a way to cut costs (and probably head

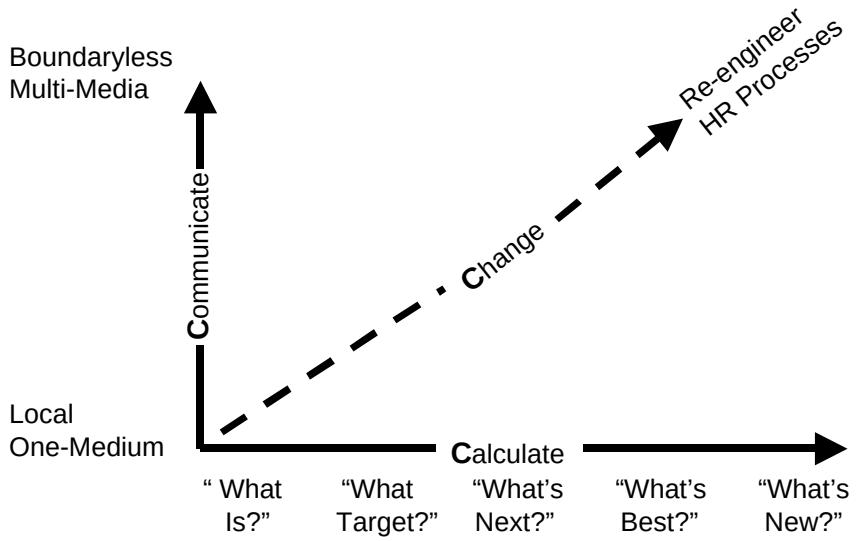
count), which can lead to the worst kind of reengineering, decimating the critical core competencies of the HR organization.

Focusing exclusively on administrative efficiency can also cause HR organizations to overlook opportunities for transforming HR through information. In the year 2000, when desktop computers can exchange real-time images and sound, accomplish complex calculations instantly, and exchange information anywhere in the world, will any CEO will be satisfied with HR information systems that merely cut administration costs? Cutting costs will be the minimum acceptable baseline. The CEO will expect strategic contributions.

HRIS Strategy: Calculation, Communication and Change

To encourage moving beyond the traditional administrative model of HRIS, consider three ways that the HRIS makes a difference in organizations: I label them the "three C's": Calculation, Communication, and Change. Calculation means crunching numbers or analyzing data. Communication means receiving and transmitting information. Change means altering HR activities or processes, sometimes called "reengineering." Each of these processes ranges from very simple and narrow to very sophisticated and broad. Figure 1 shows the "HRIS ValueAdded Framework" defined by these dimensions. Describing HR systems and applications with this framework can help identify opportunities that might be overlooked.

Figure 1: HRIS Value-Added Framework



Key HR Processes: From Activities to Results

The framework in Figure 1 can be applied to any or all HR processes. Traditionally, HR processes reflect HR activities, such as remuneration, hiring, training, dismissal, performance management and planning. However, leading organizations frequently find these categories too confining. They are redefining HR processes to focus on the outcomes of HR, rather than the activities. HR outcomes might include "creating vision" (vs. forecasting), "accumulating talent" (vs. hiring and dismissal), "building capability" (vs. training), "building motivation" (vs. remuneration), "creating performance opportunities" (vs. performance assessment), "nurturing trust" (vs. communication), and "creating change" (vs. providing advice). So, the first step is for you to identify the HR processes that add value in your organization. Then, the framework in Figure 1 can help you stretch your thinking beyond traditional systems or applications.

To illustrate, consider the HR process of "Accumulating Talent". Specifically, consider how job candidates are interviewed, and how the resulting information is used. Interviewing makes a good example because it is one of the most "human-intensive" activities in most organizations. Everyone believes they can do it well, and few would expect information systems to improve it. Thus, it provides a useful opportunity to stretch our thinking. Remember, that the framework in Figure 1 can apply to virtually any HR activity or process.

Calculation: Crunching the Numbers

The horizontal dimension of Figure 1, "calculation" describes the analyses that the system provides to the user, described as a series of questions:

"What is" Here, the user gets information about the current condition of one or a group of employees, typically in the form of head counts, activity levels or costs. With interviews, this might involve producing summaries of the answers to interview questions by one or a group of applicants. This is nothing radical, but it can cut costs by reducing paper processing and hand calculations.

What's Expected? These applications go beyond "what is" by comparing the current situation to goals, such as forecasts, budgets, or industry averages. With computerized interviews, the "what's expected" application might involve comparing actual applicant answers to a template of desired answers. Applicants who closely fit the template move ahead in the hiring process. Though not a radical idea, but the organization can cut the costs of human analysis, gain consistency and possibly reduce biases. Human interviewer can reject unattractive or overweight candidates due to bias or carelessness. A computer

never knows the candidate's appearance or weight, and can be consistent in applying the rules.

What If? Here, we take "what's expected" one step further by projecting the current situation into the future, typically forecasting costs, head counts or activity levels under different assumptions. With computerized interview information, an organization could forecast how many applicants it will reject if current response patterns continue, and then project the necessary interview volume (and costs) needed to meet hiring goals.

What's Best? This form of "calculation" goes beyond projecting the future. "What's Best" applications actually suggest a course of action or calculate an optimal solution. "Expert systems" ask a series of questions, and use pre-programmed rules to provide a recommendation based on the answers. The questions and decision rules are constructed by observing or interviewing "experts" who do the task well. The most famous expert systems are computerized chess players, but the same logic can suggest which flexible benefits are best for employees, suggest strategies for dealing with performance problems, or help HR advisers find the employment policies that apply to a particular problem.

Expert systems are useful when problems are "fuzzy." When questions are more welldefined, "optimization" applications can actually solve mathematical equations to find a solution. Optimization applications can minimum-cost work schedules, or calculate the right strategy to minimize the costs of staffing a new operation. Regarding interviews, a "what's best" application might observe the most successful hiring managers, find out what questions they asked and what actions they took, and store those decision rules in an "expert system" that recommends candidates based on the decision rules.

What's New? Here, the user sifts through information to discover new ideas or trends. Increasing computer power gives HR managers a vast array of information about their employees, often spanning many individuals, characteristics, years, and countries. "What's New" tools help sift through the information to find key information quickly, clarify relationships and identify significant deviations. A good example is applying statistical tools to large organizational data base to discover factors that affect morale or performance. In a recent project at Cornell University, for example, we discovered the top managers with the highest performance were the most likely to stay or leave based on their pay increase. We found that providing significant pay increases for the highest performers added marginally to pay costs, but significantly cut turnover costs and increased retention of top performers.

Regarding interviews, Nieman Marcus company combined several months of computerized interview data with information about which employees stayed with the

company. Using statistics they identified the interview questions that predicted which applicants stayed. The analysis produced a set of weights, giving the most informative questions the most weight. Using the weights to score interviews produced a 33% reduction in turnover costs.

Communication: Static and Local or Interactive and Global?

The "communication" dimension shown running from top to bottom in Figure 1 reflects how and where information is gathered and transmitted. At the bottom are "Local One-Medium" applications, which gather locally-available information (from the unit or company data base) to produce results that can be viewed, usually as numbers or graphs. At the top are "Boundaryless and multi-media" applications that use information from outside the organization, or allow users to interact and manipulate the results. For computerized interviews, a "Static and Local" application would be to have applicants to use the PC to answer a predetermined set of interview questions, allowing instant tabulation and transmission to managers. Few organizations have implemented computerized interviews, but Nieman Marcus and IBM have. In addition to the costs avoided by using fewer human interviewers, these companies also find that applicants may be more honest when "talking" to a computer screen than when trying to impress a human interviewer.

At the top of Figure 1 are "boundaryless and multi-media" applications which are among the most futuristic. These applications will gather information from remote locations, using techniques that make the transfer invisible to the user. With a few clicks of a mouse, a user may tap data at company headquarters, a remote location or an outside library or customer. Using multi-media, including video and audio, the application can involve the user in ways not possible with numbers and graphs. For example, trainees learn more when they can make mistakes and see the results, but usually realistic consequences requires real-world experience. Multi-media applications can simulate everything from rude customers, to safety emergencies, or rule violations, and show the consequences of different responses.

How could this apply to interviews'? At Nieman Marcus, for example, they have augmented their computerized question bank to display a series of sales slips and credit-card receipts to see if applicants can spot those that don't match. They may also use a video to confront the applicant with a difficult customer, and the computer can ask the applicant to choose a response and record their choice.

Boundaryless can mean data overload. Imagine having access not only to your company's data base, but also data from your customers, the company that manages your

benefits, and your salary survey consultant. If that's not daunting enough, internet will soon link every organization to a data base hundreds of times larger and growing faster than anything in history. Chances are that valuable information is out there, but how to find it? Applications that "filter and select" key information will become critical to future information systems. Already, systems exist that learn individual information preferences and "surf' the internet to locate matching information. Applying this power to HR systems might make future recruitment a world-wide undertaking, where applicants are interviewed by simulated video interviewers, submit their applications from anywhere in cyberspace, and where organization systems continually search the world's data bases for candidates. This may sound far-fetched, but several companies are considering establishing just this kind of world-wide job bank. Using the framework in Figure 1 encourages thinking beyond today's boundaries to ask how future technology can enhance HR value.

Change: Efficiency or Transformation?

The third dimension of the framework is "Change", shown running from front to back. At the front is "Efficient Activities" and at the back is "Process Transformation." This dimension reflects a common, if not inevitable, consequence of designing information systems -- process change. Information systems can rarely be designed without a careful look at the processes that are the targets of automation. Such a careful look frequently reveals longstanding inefficiencies or redundancies. Removing them often makes existing processes less costly or more efficient. However, one can look beyond the superficial corrections to the fundamental HR transformations that can be supported by information technology. Reengineering strives to break away from the old rules about how we organize and conduct business. It involves recognizing and rejecting some of them and then finding imaginative new ways to accomplish work (Michael Hammer and James Champy, 1993).

Reengineering can be as simple as changing a clerical policy. In one large multi-national corporation, preparing to design a new payroll system revealed a vast array of payroll practices. Some units paid cash, others paid by check. Some units paid weekly others bi-weekly, etc. Millions of dollars per year could be saved simply by standardizing the frequency of payments to employees, even without implementing the automated payroll system. This is an example of change that makes existing activities more efficient, as depicted in the front of Figure 1.

Yet much more fundamental reengineering can be supported by information technology. At Apple Computer, HR realized that employees and managers got HR information most frequently using "face" (physical meetings with their local HR

representative), then "phone" (talking on the phone to an HR representative), and then "desktop" (finding the answer using their PC). To do more with less, HR professionals needed to spend more time on the high-level consultative questions and less time answering the basics. Apple used technology to reverse the situation. Most basic HR questions can now be easily answered with a PC, more complex questions can be answered by calling an HR service center, and only the most complex questions are referred to the local HR representative. This required friendly and non-threatening desktop applications, comprehensive and self-renewing information, and "smart" screens that anticipate questions and guide the user. In the end, the entire process of HR consultation was transformed, as depicted on the "process transformation" end of Figure 1.

Returning to our interview example, once applicants start being interviewed by computer, why not rethink how HR communicates with applicants, employees and the outside world.. If electronic interviews can help identify candidates for employment, why not use them to help employees identify their training or development needs, or to pre-screen employees for membership on teams? Imagine a system that gathers applicant information from anywhere in the world, interacts with employees and manager, and provides "expert" guidance regarding hiring decisions. This application would reflect the most sophisticated point on all three dimensions of Figure 1.

Taking the Plunge by Visualizing the Future

When HR professionals think about HR information systems, they tend to ask, "How can we solve the most pressing administrative problem, cut our immediate costs, or deliver the report requested by our most vocal constituent?" The result is usually a system heavy on administrative efficiency and reports, but potentially light on strategic change. One way to begin to find strategic value is to ask, "What applications or systems will make people our most powerful organizational asset?" Figure 1 may help to guide the answer to that question, by providing coordinates to map the possibilities. Some of the resulting ideas may seem outlandish. However, in 1990 it was outlandish to presume that US$1,800 dollars would buy a supercomputer in the year 2000. The future value of HR information systems may well depend on just such outlandish ideas.

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